

2022 PROGRAM & ABSTRACTS

Reflecting on the Past,
Imagining the Future

50 YEARS OF
PRESERVING
CULTURAL
HERITAGE



Los Angeles, California
May 13-18, 2022

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This conference is being held on the traditional lands of the Gabrielino-Tongva people. We offer respect to their Ancestors who prepared this landscape for their people, and the present and future members of this community who continue to ensure the welfare of their lands, extended family, and community.

NEED TO KNOW

All listed times are in PACIFIC DAYLIGHT TIME (PDT) for events May 13 through May 18.

Meeting Location: Events will take place at the Westin Bonaventure Hotel unless otherwise noted.

Code of Conduct: See page 4 or read on the meeting website under Register / Registration Policies.

Registration Desk: Registration will be located in the **California Foyer**. We only accept credit/debit cards (Visa, MasterCard, AmEx, Discover) in US dollars.

Thursday, May 12	3:00pm – 6:00pm
Friday, May 13	7:45am – 6:00pm
Saturday, May 14	7:45am – 6:00pm
Sunday, May 15	7:45am – 4:30pm
Monday, May 16	7:45am – 4:30pm
Tuesday, May 17	7:45am – 4:30pm

Tickets can be purchased at www.culturalheritage.org/tickets 24/7 during the meeting. Please pick up any tickets purchased online at the registration desk.

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 publications display!

Online Meeting Community: Check your inbox each morning or visit AIC's 50th Annual Meeting Community for updates to the program and notes from attendees.

Speaker Ready Room:	Mt. Washington, level 2
Nursing Mothers Room:	Santa Monica - D, level 3
Quiet Room:	San Pedro, lobby level

Masks: Attendees are encouraged to wear masks indoors.

Buses: All buses for offsite events will depart from and return to the **Westin Bonaventure, Figueroa Street Entrance** (except where noted). MASKS ARE REQUIRED ON AIC TRANSPORTATION. Staff will check badges and direct attendees.

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

Sunday, May 15, 10:00–10:30am & 3:30–4:00pm
Monday, May 16, 10:00–10:30am & 3:30–4:00pm

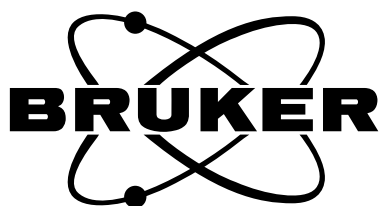
Member Business Meeting will be online, May 25, 10:00am PT/1:00pm ET.

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2022 Program Committees

Poster Session: **Jessica Betz Abel, Lynn Brostoff, Sue Ann Chui, Fletcher Durant, Mary Gridley, Kelly Keegan, Vanessa Muros**
General Session: **Christian de Brer, Marci Burton, Alison Gilchrest, Lisa Goldberg, Jennifer (Jen) Hickey, Kelly McCauley Krish, Samantha Owens, Soon Kai Poh, Cory Rogge, Katherine Schilling*, Emma Richardson, Jessica Urick, Aisha Wahab**
Architecture: **Sherry DeFreece Emery, Amy Elizabeth Uebel**
Architecture/Objects: **Wendy Rose, Lori Wong**
Book and Paper: **Morgan Browning, Dawn Jaros, Margot Healey, Katie Mullen**
Collection Care: **Claire Curran, Lisa Goldberg, Kelly McCauley Krish, Karen Pavelka, Emily Rainwater, Laura Gaylord Resch**
Contemporary Art: **J. Luca Ackerman, Jennifer Hickey*, Giulie Moretto, Jen Munch, Samantha Owens*, Erin Stephenson**
Electronic Media: **Brian Castriota*, Diego Mellado Martinez*, Lorena Ramirez-Lopez, Aga Wielocha**
Objects: **Megan Emery, LeeAnn Gordon, Madeleine Neiman, Skylar Jenkins, Gina Watkinson**
Paintings: **Kathryn Harada, Jose Lazarte Luna, Irma Passeri, Cynthia Schwartz, Erin Stephenson**
Photographic Materials: **Marie-Lou Beauchamp, Juan-Juan Chen, Monique Fischer, Amanda Maloney, Ronel Namde, Fernanda Valverde**
Research & Technical Studies: **Jane E. Klinger*, Federica Pozzi***
Sustainability: **Annabelle Camp, Kimberly Hoffman, Netanya Shephard Schiff, Roxy Sperber, Justine Wuebold**
Textiles: **Kris Cnossen, Kira Engwilmot, Nora Frankel, Beth Suzhay**
Wooden Artifacts: **Trevor Boyd*, Yuqi Chock*, Liz Peirce***
*also planned joint sessions

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**50 Years of Preserving
Cultural Heritage**

WELCOME FROM THE AIC PRESIDENT

It is my great pleasure to welcome you to AIC's 50th Annual Meeting. We have many things to celebrate this year! First, this isn't just our 50th annual conference, it's also our 50th anniversary. Since its beginning in 1972, AIC has grown to be the largest membership organization for conservation professionals in the world, with more than 3,500 members located around the globe.

AIC's annual meeting is a premier international event which brings together conservators and collections care professionals, scholars, scientists, students, and more. The continued growth of this conference demonstrates both its high quality and its impact; the 2022 meeting received the highest number of abstract submissions in AIC's history! In another major milestone, this year the conference is being held both in person, in the beautiful city of Los Angeles, California, and online as a virtual, (mostly) live-streamed event. This has all been accomplished under the capable and creative direction of our many conference program committees, all made up of dedicated volunteers and staff from across the organization. 2022's multidisciplinary program includes a huge variety of offerings from visionary and reflective talks, to small panel discussions, to social events, to presentations of cutting-edge research.

I am delighted that you have chosen to participate, and I invite you to explore this program book to make the most of your time, whether this is your very first AIC meeting or your fiftieth. I extend a special welcome to first time attendees; please find a guide created just for you here: <https://bit.ly/AICFirstTimeAttendees>. As we collectively celebrate and reflect on AIC's first fifty years during this conference, we also know there are imperative areas for growth and change. Your active participation will help AIC construct its future. AIC 2072, we're looking at you!

Suzanne

Suzanne Davis, AIC President

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



Join the conversation by using #AICat50 to tag your social media posts!



Reflecting on the Past, Imagining the Future

THE YEAR 2022 MARKS THE 50TH ANNIVERSARY

of the incorporation of the American Institute for Conservation. The field of cultural heritage preservation has grown immeasurably since 1972, with the introduction of new treatment methodologies, analytical techniques, and conservation materials. During this time span, the nature of the objects and sites we deal with has changed and our philosophies surrounding their care have necessarily evolved. We also must acknowledge that we are facing increasingly global issues such as climate change, social justice, and mass displacement and migration of peoples, all requiring new approaches and collaborations with other fields and stakeholder communities.

As we celebrate and reflect on AIC's first fifty years, we've invited introspective and innovative contributions to examine with modern eyes the history of field, its practice, and practitioners; address concerns we are facing now; and explore and imagine our next half century. We're glad you're helping us meet the future!

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 rseiler@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

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

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

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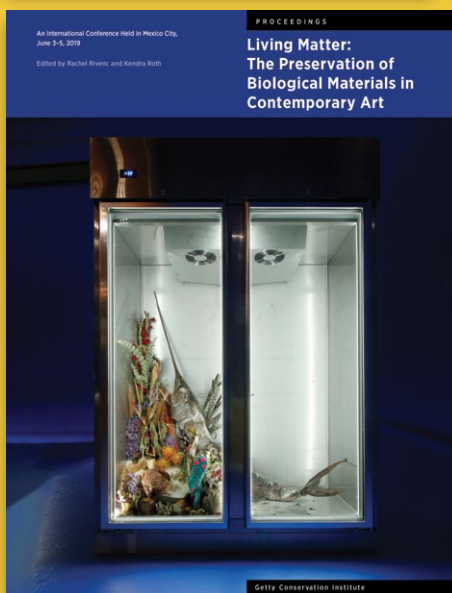
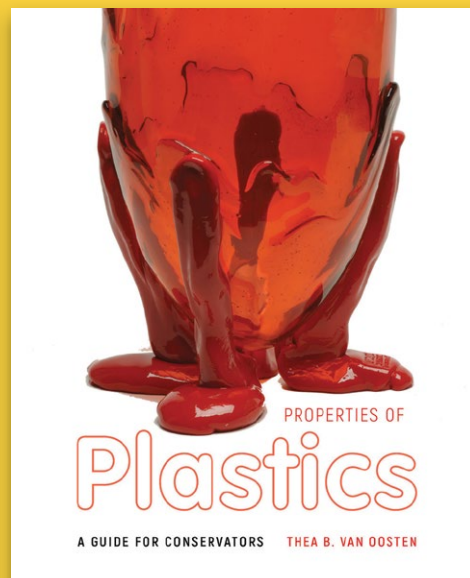
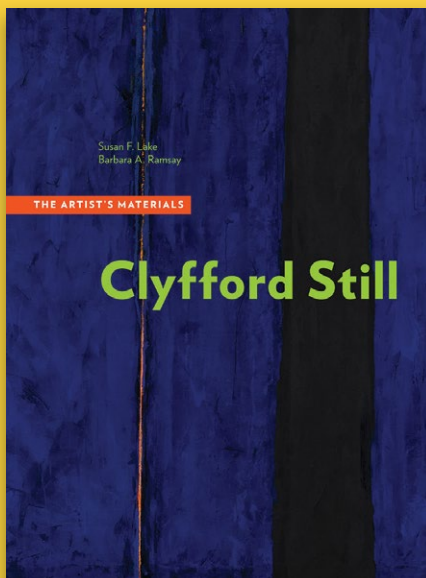
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NEW & FORTHCOMING



Clyfford Still The Artist's Materials

Susan F. Lake and Barbara A. Ramsay

This heavily illustrated and engaging book provides the first detailed account of Clyfford Still's working methods, materials, and techniques.

Living Matter The Preservation of Biological Materials in Contemporary Art

Edited by Rachel Rivenc and Kendra Roth

This groundbreaking publication explores the challenges associated with displaying, collecting, and preserving works of art created with biological materials. Available for free online at <https://www.getty.edu/publications/living-matter/>

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.

Franz Kline The Artist's Materials

Corina E. Rogge with Zahira Véliz Bomford

This heavily illustrated and captivating book provides an in-depth analysis of the working methods, materials, and techniques of American Abstract Expressionist Franz Kline

Book signings with the authors Sunday and Monday during 3:30 break. Stop by the booth to check the schedule.



The Getty Center, provided by Getty Foundation

Saturday, May 14

AWARDS PRESENTATION AND EXHIBIT HALL RECEPTION

4:30 – 6:30pm: Presentation (included in the virtual component)

Celebrate your colleagues and their many achievements in our awards ceremony. See page 9 for details. Afterwards, join us for a fun reception in our 2022 Exhibit Hall.

6:30 – 8:00pm: Preview Reception in the Exhibit Hall

Enjoy a relaxed evening in our 2022 Exhibit Hall. See the latest products and services for the conservation field while enjoying light bites and cash bars.

Sunday, May 15

OPENING RECEPTION AT THE GETTY CENTER

Join us for a magical night of art and sunsets as we gather outdoors for our Opening Reception hosted by The Getty Center. Enjoy gallery access, a light dinner buffet, and amazing sunset views (weather permitting). Lab tour at 5pm is sold out.

5:30 – 6:30pm: Pre-reception Gallery Viewing

6:30 – 9:30pm: Reception

- The first buses will depart from the hotel to the museum starting at 5:15pm with the last bus to the museum leaving at 7:00pm. They will start returning to the hotel around 8:15pm, shuttling until the center closes at 9:30pm.
- This event is included in your base registration, so don't miss out.

Monday, May 16

SPECIALTY GROUP RECEPTIONS

View the Program and Schedule to learn more about your group's reception. Enjoy reconnecting with colleagues. Buy tickets before the events (until 5pm day of the event) via www.culturalheritage.org/tickets. Stop by the Registration Desk so staff members can add the ticket to your badge.

- **ASG/WAG** Joint Reception at the Japanese American National Museum, Family Garden and Foyer area
- **BPG/PMG** Joint Reception at the Japanese American National Museum
- **TSG** Reception – Tour of the FIDM/Fashion Institute of Design & Merchandising Museum & Library, followed by an outdoor reception at the Westin.

Several receptions are on the Westin Bonaventure Pool Deck. Look for the signs to find your reception area.

- **CAN!/EMG** Joint Reception
- **OSG** Reception
- **PSG** Reception
- **RATS** Reception

Tuesday, May 17

HISTORY & CLOSING SESSIONS

Join session moderators Rebecca Rushfield and Joyce Hill Stoner for "50 Years in the Making: The Evolution of Our Profession and Thoughts about Its Future." Representatives of each AIC Specialty Group and several AIC committees and networks will give brief presentations focusing on the developments they feel are most significant for that field. The fourteen short presentations (presented in the order that the Specialty Group or Committee/Network was formed) will be followed by two longer presentations, one on developments in book conservation and the other on developments in textile conservation.

Learn more about the closing general sessions in the abstract section.

Attendee Perks:

- Enjoy free Wifi! Password is AIC50. See the back of your badge for details.
- Purchase tickets 24/7 at culturalheritage.org/tickets
- Get a free tote bag! Buy books onsite!



70 YEARS ADVANCING THE ART AND SCIENCE OF CASE DESIGN



Exhibition Design by Pure+Applied

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Congratulations to AIC's 2022 Award Recipients!

Join us for our Awards Presentation, Saturday, May 14, 4:30pm, California Ballroom

This event will be live streamed and recorded. **Arrive early at 4:15pm for cake!**

Allied Professionals Award

Scott Williams, Professor, School of Chemistry and Materials Science, Rochester Institute of Technology, will receive the Allied Professional Award for excelling as a mentor and as a staunch ally of the field of conservation. With an allied professional like Dr. Williams in our community, the future of conservation looks bright.

Robert L. Feller Lifetime Achievement Award

Stephen Koob, retired Chief Conservator at the Corning Museum of Glass, and **Jeanne Marie Teutonico**, Associate Director, Strategy and Special Initiatives, Getty Conservation Institute will receive the Robert L. Feller Lifetime Achievement Award for their exceptional contributions to the conservation profession over the course of their careers.

Emerging Leader Award

LaStarsha McGarity, Andrew W. Mellon Fellow in Objects Conservation at the National Gallery of Art, current PhD student in the University of Delaware Preservation Studies Program, and 2019 graduate of Buffalo State College, will receive the Emerging Leader Award for her outstanding service to AIC and the conservation discipline.

Forbes Medal

Alison Gilchrest, Director, Institute for the Preservation of Cultural Heritage, Yale University, will receive the Forbes Medal for her distinguished contributions to the field of conservation.

Rutherford John Gettens Merit Award

Anisha Gupta, PhD Student, University of Delaware, and **Anya Dani**, Objects Conservator, Stanford University Archaeology Collections, will both receive the Rutherford John Gettens Merit Award for their outstanding service to the association.

Honorary Membership

Kate Singley, Conservator in Private Practice, and **Eryl Wentworth**, former Executive Director of the American Institute for Conservation and the Foundation for Advancement in Conservation, will receive Honorary Membership for their outstanding contributions to the conservation profession over the course of their careers.

Sheldon & Caroline Keck Award

Ron Harvey, Conservator in Private Practice, and **Glenn Wharton**, Chair/Professor, Art History Department, UCLA/Getty Program in the Conservation of Cultural Heritage, will both receive the Sheldon & Caroline Keck Award for excellence in the education and training of conservation professionals.

President's Award

Margaret "Peggy" Holben Ellis and **Sarah Reidell** will receive the President's Award, given at the discretion of the AIC Board President to recognize exceptional performance in the conservation profession. Peggy Ellis was selected for her untiring, decades-long contributions to the conservation profession in multiple capacities, including her recent strong and conscientious leadership as AIC president during a difficult period. Sarah Reidell is recognized for her exceptional work to foster communications and timely research in AIC, including her work as lead developer of the association's COVID-19 pulse survey.

Publications Award

The publications *Mooring a Field: Paul N. Banks and the Education of Library and Archives Conservators* by **Ellen Cunningham-Kruppa** and *Museum Lighting: A Guide for Conservators and Curators* by **David Saunders** will be recognized with the Publication Award. The authors will accept the award for excellence in authoring a book on the field of conservation.

Ross Merrill Award for Outstanding Commitment to the Preservation and Care of Collections

The **Eastern State Penitentiary Historic Site** will receive the Ross Merrill Award for Outstanding Commitment to the Preservation and Care of Collections for the importance and priority they have given to conservation concerns and the commitment they have shown to the preservation and care of their cultural property.



	California Ballroom
8:30am	Welcome and Introductions
8:45am	(Opening Session) Object, Memory, Conservation and Restorative Justice; Rachel Rivenc
9:00am	(Opening Session) Green Tea Flowers Bloom In Autumn: A Reflection of a Korean American Architectural Conservator in the American Southwest; Alex Lim
9:15am	(Opening Session) Building A Firm [Data] Base: What the AIC COVID-19 Impact Survey Tells Us About the Conservation Field; Sarah Reidell
9:30am	(Opening Session) Disability Rights in Conservation; Hilary Kaplan
9:45am	Group Discussion and Q&A

	Santa Barbara	San Francisco/San Jose	San Gabriel	Beverly	San Diego
2:00pm	(Architecture) Evaluating the efficacy of cyclododecane in cross-sectional architectural paint analysis; Brooke Russell	(Book and Paper) Investigating the Effects of Rigid Polysaccharide Gels on Several Paper Sizings; Karissa Muratore	(Collection Care) Collections Management Practices in Conservation; Rebecca Kennedy	(Electronic Media) Expanding the Horizons: Building Collaborations to Care for Contemporary and Time-Based Media Collections; Shu-Wen Lin	(Objects) Repairing Tirs: Conservation approaches to Niki de Saint Phalle's Shooting Paintings; Joy Blosier
2:30pm	(Architecture) Limewash Lessons: Field Testing a Failure; Stephanie Hoagland	(Book and Paper) Where Tradition meets Technology: Utilizing Microfibrillated Cellulose as a Repair Material in Fan Conservation; Kathryn Boodle	(Collection Care) Evolving Strategies for Safeguarding Collections at the Library of Congress; Nancy Lev-Alexander	(Electronic Media) Right-sizing a time-based media conservation program at Glenstone; Samantha Owens	(Objects) Gravitational Investigation: The history and future of interventive treatment on an Eva Hesse sculpture; Stephanie Guidera
3:00pm	(Architecture) Open Discussion	(Book and Paper) Nanocellulose in Practice: Properties of Microfibrillated Cellulose and Cellulose Nanocrystals; Kathryn Boodle	(Collection Care) Lessons from the pandemic – the evolution of new solutions for collection care and management from inclusive collecting practice; Diane Gwilt, Jane Henderson	(Electronic Media) Beyond the archive: Preservation and access for web-based interactive data journalism; Josephine Jenks	(Objects) When Doing Nothing is Best for the Future: Analysis and Conservation of Louise Nevelson's Dawn's Image, Night; Kaela Nurmi
3:30pm	Break in the Exhibit Hall				
4:00pm	(Architecture) Saving Streamline Moderne: stabilization, repair and restoration of the 1939 Saban Building at the new Academy Museum of Motion Pictures, Los Angeles; John Fidler	(Book and Paper) Art on Paper Discussion Group - Treatment: Collaborative Conservation	(Collection Care) Collection Care Professional Education: Evolution and Future Directions panel presentation; moderators Priscilla Anderson, Patrick Ravines	(Electronic Media) Preserving Software-based Art at Tate: From Research to Best Practices; Tom Ensom	(Objects) Structural Stabilization of Beverly Pepper's Weathering Steel Sculpture; Christine Haynes
4:30pm	(Architecture) Moving Wonderland; Nina Roth Wells			(Electronic Media) An analysis of software-based artworks using Max/MSP through different conservation strategies; Tzu-Chuan Lin	(Objects) Preliminary Research on Plant Extracts and Wax as Corrosion Inhibition Coatings for Iron Alloy Outdoor Sculpture; Megan Creamer
5:00pm				(Electronic Media) Peer-to-Peer: Towards the Collective Conservation of Net Art; Anna Mladentseva	(Objects) Conservation Interventions to Stabilize a Matte Painted Acrylic and Polystyrene Architectural Model; Mary Wilcop
6:30pm	Opening Reception - Getty Center - Buses depart at 5:30pm				

This grid lists primarily paper presentations. See daily listings for non-session events.

	California Ballroom
10:00am	<i>Break in the Exhibit Hall</i>
10:40am	<i>(Opening Session)</i> Legitimizing the past: Conservation, expertise and the power of transformation; Caitlin O'Grady
10:55am	<i>(Opening Session)</i> On the use of culturally appropriate technical terminology; Narayan Khandekar
11:10am	<i>(Opening Session)</i> Cultural Heritage Preservation into the Twenty-First Century: Integrating Sustainability with Conservation Integrating Sustainability with Conservation; Sarah Nunberg, Sarah Sanchez, Sarah Sutton
11:25am	<i>(Opening Session)</i> Settling Between the Chairs. The Development of Conservation towards a Scientific Discipline as Reflected in the Establishment of a Formal Academic Training in Early 20th Century Vienna; Sigrid Eyb-Green
11:40am	<i>Group Discussion and Q&A</i>

Emerald Bay	Sacramento	Avalon	Hollywood Ballroom
<i>(Paintings)</i> Wax-resin Extraction Trials for Lined Paintings; Brad Epley	<i>(Photographic Materials)</i> Sustainable solution for the preservation of a collection of historical glass plate negatives in Myanmar: The use of dry cabinets and locally available materials; Bertrand Lavédrine	<i>(Research & Technical Studies)</i> Graphs, Jargon, and Science: The Creation of the Research and Technical Studies Specialty Group; Mary F Striegel	<i>(Textiles)</i> The Relics of General Washington: A Synthesis of Conservation and Mount Design for George Washington's Coat; Johanna Tower
<i>(Paintings)</i> An Approach to Treating the Ill Effects of an Early Wax-Resin Infusion: Franz Kline's Nijinsky, 1950; Sara Kornhauser	<i>(Photographic Materials)</i> Photo Conservation Surveys in Latin America: History, Progress & Evolution; Soledad Abarca	<i>(Research & Technical Studies)</i> Current international trends in the use of instrumental analysis and scientific equipment in conservation practice and research; Aida Menouer	<i>(Textiles)</i> Overcoming the Challenges of Mounting a 39 foot long Painted Textile with a Magnetic Mounting System; Gwen Spicer
<i>(Paintings)</i> Minimalism in context: the Courtauld Institute of Art and the Royal Museums Greenwich; Maureen Cross	<i>(Photographic Materials)</i> Collection-scale representation of the visual properties of black and white paper; Paul Messier	<i>(Research & Technical Studies)</i> Sharing Technical Art History: Past, Present, and Moving Forward; Morgan Wylder	<i>(Textiles)</i> Highlighting Marian Anderson in the Costume and Textiles Collection at the Philadelphia Museum of Art: The treatment and mounting of a velvet 1940's dress; Andrea Goldstein
<i>Break in the Exhibit Hall</i>			
<i>(Paintings)</i> One Room, a Pandora's Box of Complications: resolving the motley concerns of a set of murals painted by Elmer E. Garnsey; Courtney Books	<i>(Photographic Materials)</i> Reassembly of Deborah Bright's "Crow Agency" Panorama; Luisa Casella	<i>(Research & Technical Studies)</i> Optimizing Oddy! Streamlining the Implementation of the Metropolitan Museum of Art Oddy Testing Protocol in a Multi-User Work Environment: Tips and Troubleshooting; Julia Sybalsky	<i>(Textiles)</i> 100 years (almost!) of costume mounting at the McCord Museum 1921-2021; Caroline Bourgeois
<i>(Paintings)</i> Fiberboard as painting support, art material and medium for conservation. Historical, aesthetical and characteristic aspects of an engineered wood product in the arts; Ulrik Runeberg	<i>(Photographic Materials)</i> The photographs of Seydou Keita; Elsa Thyss	<i>(Research & Technical Studies)</i> Imaging Illuminated Manuscripts with Multi Light Reflectance and the use in Conservation. Past and Future; Lieve Watteeuw	<i>(Textiles)</i> Commemorating The Met's New Islamic Galleries Installation—Revisiting Textile Conservation Practices for the Culturally Diverse Collection; Janina Poskrobko
<i>(Paintings)</i> Structural Conservation of a 17th Century Strainer Using Carbon Fiber; Katie Smith	<i>(Photographic Materials)</i> Laura Gilpin's book "The Pueblos, A Camera Chronicle," An Archive Story; Ariadna Rodriguez	<i>(Research & Technical Studies)</i> In situ hyperspectral imaging of monumental oil paintings: practical approaches within an interdisciplinary context; Jan Dariusz Cutajar	<i>(Textiles)</i> A Comparative Study of the Impact of Beva 371 and Nano Vinyl Acetate Derivatives on Egyptian Coptic Textiles (Tapestry); Heba Saad
<i>Opening Reception - Getty Center - Buses depart at 5:30pm</i>			

Monday, May 16

Morning Session Listings (8:30am-12:00pm)

	Santa Barbara	San Francisco/San Jose	Beverly	San Gabriel	San Diego
8:30am		<i>(Book and Paper)</i> Book and Paper Library Archives Discussion Groups; Co-chairs: Consuela (Chela) Metzger, Lauren Telepak Speakers: Erin Hammeke, Duke University Libraries; Panelists: Jo Anne Martinez-Kilgore, Arizona State Library, Archives, and Public Records; Consuela (Chela) Metzger, UCLA Library	<i>Contemporary Art (CAN!)</i> : Guided by the Light: Rethinking Approaches to Assessment of Light-Based Artworks; Sasha Arden		<i>(Objects)</i> Glazed ceramics placed outdoors: conservation issues and lacuna integration techniques. An ecological choice for the future with a return to the origins?; Shirin Afra
9:00am	<i>(Architecture - Photogrammetry)</i> Decision-making and planning in the photogrammetric survey of wall paintings; Wendy Rose		<i>Contemporary Art (CAN!)</i> : An investigation and treatment of Eva Hesse's <i>Several</i> (1965); Austin Anderson	<i>(Collection Care)</i> Reconsidering the Enemy: Using UV-C Light for Mold Remediation; Tara O'Brien	<i>(Objects)</i> Restoration of the Memorial to Col. Robert Gould Shaw and the 54th Massachusetts Volunteer Infantry Regiment; Barbara Mangum
9:30am	<i>(Architecture - Photogrammetry)</i> The role of photogrammetry in the evaluation of the Lausanne Cathedral (Switzerland): from 3D survey to the documentation and analysis of the state of conservation of its stones; Chiara Stefani		<i>Contemporary Art (CAN!)</i> : Facsimile Future - past, present, projections and potential; Alison Norton	<i>(Collection Care)</i> "Valderi - valdera": testing and solutions for the phenomenon of the wandering of objects due to vibrations; William Wei	<i>(Objects)</i> Contested Care: Two problematic monuments at the Museum of Fine Arts, Boston; Pilar Brooks
10:00am	<i>Break in the Exhibit Hall</i>				
10:30am	<i>(Architecture - Photogrammetry)</i> Using Photogrammetry to Overcome Challenges of Documenting América Tropical by David Alfaro Siqueiros; Tom McClintock	<i>(Book and Paper)</i> Library and Archives Conservation and the Path to Professionalization; Ellen Cunningham-Kruppa	<i>Contemporary Art (CAN!)</i> : Conservation concerns regarding installations that incorporate living plants: a closer look at selected case studies; Erin Fitterer	<i>(Collection Care)</i> Connecting the Loop - Reinterpreting Collection Assessment; Fenella France	<i>(Objects)</i> Changing Approaches to Monumental Plaster Casts at Weir Farm National Historic Site; Naomi Kroll Hassebroek
11:00am	<i>(Architecture - Photogrammetry)</i> New ways of seeing and recording: A case study in using photogrammetry to advance wall painting conservation; Kiernan Graves	<i>(Book and Paper)</i> T.H. Saunders Sample Book: A Treasure Trove of 19th Century Papers; Rosaleen Hill	<i>Contemporary Art (CAN!)</i> : Study and restoration treatment of a collage by Giulio Turcato: from precision mild heat transfer using IMAT nanotechnology to novel sustainable methods and strategies for consolidation and reintegration; Maddalena Magnani	<i>(Collection Care)</i> Vital Signs: Condition Survey and Vulnerability Assessment for Built Heritage; Greg Maxwell	<i>(Objects)</i> A Lesson in Balance and Adaptation: The Conservation of Alexander Calder's <i>Man-Eater</i> with Pennants; Abigail Mack
11:30am	<i>(Architecture - Photogrammetry)</i> Photogrammetry of Diego Rivera's "Pan American Unity" Mural: producing high precision color and shape maps from 3D Data; Carla Schroer	<i>(Book and Paper)</i> Conservation and study of Simon Pokagon's birch bark books; Marieka Kaye	<i>Contemporary Art (CAN!)</i> : Fiat Lux: displaying and preserving Flux Light Kit; Rachel Rivenc	<i>(Collections Care)</i> STASH: Pocket Globes - Housing Solution; Werner Haun	<i>(Objects)</i> "Clove of Garlic Crushed and Boiled": Paul Manship's Patinas; Dorothy Cheng

Respirator fit testing appointments will be held in Beaudry A.

This grid lists primarily paper presentations. See daily listings for non-session events.

Emerald Bay	Sacramento	Avalon	Hollywood Ballroom	Beaudry B
<i>(Paintings)</i> Treatment of a water drip on Mark Rothko's Untitled (1957) in the Menil Collection; Anne Schmid		<i>(Research & Technical Studies)</i> Permeation of Acetic Acid, Formic Acid and Water through PET: Implications for Encapsulation; Patty McGuigan	<i>(Textiles)</i> Mixing Solutions: Combining Paper and Textile Approaches to Treat Iron-mordanted Printed Cotton; Kris Nossen	<i>(Wooden Artifacts)</i> A Limewood Lemon: Overhauling a 17th Century Grinling Gibbons Overmantel; Lisa Ackerman
<i>(Paintings)</i> Conservation of Mary Corse White Light Paintings; Linnaea Saunders		<i>(Research & Technical Studies)</i> Investigating preservation strategies for cellulose ester objects; Anna Lagana	<i>(Textiles)</i> A Sartorial Puzzle: Conserving a Worth & Bobergh Ensemble for Display; Kirstin Purtich	<i>(Wooden Artifacts)</i> Wood BONDS wood; Andreas Hochuli
<i>(Paintings)</i> Art at the boundaries: Conservation of a 1930s black silk velvet painting; Netanya Shephard Schiff		<i>(Research & Technical Studies)</i> Investigations of the binding medium of Mark Tobey paintings using pyrolysis-GC/MS; Vanessa Johnson	<i>(Textiles)</i> Reuse and Repurpose: Two case studies of Japanese scroll conservation incorporating a Western textile conservation technique; Tanya Uyeda	<i>(Wooden Artifacts)</i> Revelation of three kinds of traditional Chinese gilding technique applied on wooden relics of Qing Dynasty collected in the Forbidden City; Na Wang
<i>Break in the Exhibit Hall</i>				
<i>(Paintings)</i> White on Black: Surprising Technical Imaging Results of Suprematist Composition with Plane in Projection (1915) by Kazimir Malevich; Mariana Escamilla-Martínez	<i>(Sustainability)</i> It's Not Easy Being Green...but It's Worth It: Sustainability in Conservation's Greener Solvents Project; Karoline Sofie Hennum	<i>(Research & Technical Studies)</i> Accelerated aging of red pigments in bleach: Case study paintings of Cristobal Lozano; Rosanna Kuon	<i>(Textiles)</i> Collaborative Investigation into Wool Dyeing Practices of Chilkat Textiles: Culture, Chemistry, and Conservation; Dario Durastanti	<i>(Wooden Artifacts)</i> The bridge: from cultural heritage to culture of conservation; Shun-Jen Tsai
<i>(Paintings)</i> The perception of techniques used for retouching wall paintings in the Netherlands; William Wei	<i>(Sustainability)</i> Wearing Gloves and Sustainability - A Practical Approach Jessica Crann (ACR) and Wendy S-Woodiwis; Jessica Crann	<i>(Research & Technical Studies)</i> A Manuscript and its Materials: A cross-disciplinary analysis of the materials used in the making of the 14th-century Gaelic Manuscript, The Book of Ui Mhaire; Veronica Biolcati	<i>(Textiles)</i> The unknown microscopic world of "the peasants strike": A burlap embroidered by Violeta Parra; Yerko Quitral	<i>(Wooden Artifacts)</i> A survey of lacquerware in the collections of the Preservation Society of Newport County; Luli Zou
<i>(Paintings)</i> Projection Meets Perspective: Study on the Development of Chinese-European Painting Artworks in Imperial Court by Non-invasive Analysis; Yong Lei	<i>(Sustainability)</i> Rethinking museum performance indicators for sustainable development; Flavia Parisi	<i>(Research & Technical Studies)</i> Reviving Alexander Calder's Man-Eater with Pennants: a Technical Examination of the Original Paint Palette; Abed Haddad	<i>(Textiles)</i> Reversibly restoring color: The application of toned abaca and mulberry paper overlays to a discolored surrogate cloth; Kristal Hale	<i>(Wooden Artifacts)</i> TBA

	San Francisco/San Jose	San Diego	Emerald Bay
2:00pm	<i>(Automation, Conservation, Preservation)</i> Structured Conservation Data for the Next Information Age; Ryan Lieu	<i>(Interdisciplinary Research Methods to (Re-)Establish Object Histories and Provenance for Material Culture)</i> Collaboration and technical investigation to better understand Indigenous Northwest Coast cultural material; Megan Salas	<i>(Saying "Yes": Conservation Professionals as Liaisons, Facilitators, and Unifiers)</i> Touch decisions; Jane Henderson
2:30pm	<i>(Automation, Conservation, Preservation)</i> When AI Meets Literary Collections: Feasibility of AI Visual Technology on Identifying Paper Deterioration; Wan-Jen Lin	<i>(Interdisciplinary Research Methods to (Re-)Establish Object Histories and Provenance for Material Culture)</i> A Community Centered Approach to the Stewardship of Alfonso Ossorio's Feast and Famine; Abigail Duckor	<i>(Saying "Yes": Conservation Professionals as Liaisons, Facilitators, and Unifiers)</i> French conservation experts facing shrinking cities: The evolution of the role of the Architectes des bâtiments de France in city-centres; Alix de La Gaignonnière
3:00pm	<i>(Automation, Conservation, Preservation)</i> From blinking bulbs to advanced AI: the past, present and future of HVAC control; Christopher Cameron	<i>(Interdisciplinary Research Methods to (Re-)Establish Object Histories and Provenance for Material Culture)</i> The success of a team effort. Preservation initiatives at the AfricaMuseum; Siska Genbrugge	<i>(Saying "Yes": Conservation Professionals as Liaisons, Facilitators, and Unifiers)</i> Bears Ears Site Preservation Project: Responding to Visitor Impacts on Cliff Dwellings in Southeast Utah; Shanna Diederichs
3:30pm	<i>Break in the Exhibit Hall</i>		
4:00pm	<i>(Interdisciplinary Research Methods to (Re-)Establish Object Histories and Provenance for Material Culture)</i> Establishing context and continuity for the use of human remains in Tibetan ritual objects: A methodology; Ayesha Fuentes	<i>Automation, Conservation, Preservation)</i> Eyes only? Revealing or preserving secrets of Congolese art objects; Sofie Dierickx	<i>(Conserving Relationships: New Horizons for Collaboration and Communication)</i> Embracing Infinite Slippage; Libby Ireland
4:30pm	<i>(Interdisciplinary Research Methods to (Re-)Establish Object Histories and Provenance for Material Culture)</i> Conservation Initiative in African Art at the Virginia Museum of Fine Arts The Impact of Interdisciplinary Research + Collaboration on Collections of African Material Culture; Casey Mallinckrodt	<i>Automation, Conservation, Preservation)</i> Using data with humans: successes and failures of data storytelling in the realm of conservation; Mary Wilcop	<i>(Conserving Relationships: New Horizons for Collaboration and Communication)</i> Art conservators: caregivers and storytellers; Ximena Bernal
5:00pm	<i>(Interdisciplinary Research Methods to (Re-)Establish Object Histories and Provenance for Material Culture)</i> Uncovering provenance: An interdisciplinary approach; Landis Smith	<i>Automation, Conservation, Preservation)</i> Discussion	<i>(Conserving Relationships: New Horizons for Collaboration and Communication)</i> New Hall, New Paths: Hall Revisualization Leads to Renovated Practice; Stephanie Black
5:00pm	<i>(Reception)</i> Specialty Group Receptions - TSG Tour of FIDM Museum, Reception on Westin Pool Deck		
5:45pm	<i>(Reception)</i> Specialty Group Receptions - Westin Pool Desk		
6:00pm	<i>(Reception)</i> Specialty Group Receptions - BPG/PMG and ASG/WAG at the Japanese American National Museum		

This grid lists primarily paper presentations. See daily listings for non-session events.

Avalon	San Gabriel	Sacramento
<i>(Conserving Relationships: new horizons for collaboration and communication)</i> Save the past and inspire the future: a kingdomwide community research project aims to save memories on vanishing traditional Saudi male costumes by collecting information in a Museum database; Konstantinos Chatziantoniou	<i>(Preventive Conservation)</i> Decontextualisation: a form of dissociation or a new risk?; Christel Pesme	<i>(The Conservator as Agent of Change)</i> Chance? Choice? Change?; Jim Coddington
<i>(Conserving Relationships: new horizons for collaboration and communication)</i> Reflections on Authority in the Conservation of Indigenous Objects in Museums; Ellen Carlee	<i>(Preventive Conservation)</i> Fifty years of preventive conservation: From avoiding change to maximizing values delivered and retained; Robert Waller	<i>(The Conservator as Agent of Change)</i> Sociopolitical Flux & Conservation Interventions: Studying Fascist Monuments in Italy; Joannie Bottkol
<i>(Conserving Relationships: new horizons for collaboration and communication)</i> The human factor: How to recover the hidden craftsmanship of a Portuguese moldmaker; Élia Roldão	<i>(Preventive Conservation)</i> Social Disconnection: Is it the 11th Agent of Deterioration?; Thiago S. Puglieri	<i>(The Conservator as Agent of Change)</i> The ethics of care: Examining ethics from non-conservation resources to inform human-centered conservation; Nina Owczarek
<i>Break in the Exhibit Hall</i>		
<i>(Saying "Yes": Conservation Professionals as Liaisons, Facilitators, and Unifiers)</i> A Cross-Disciplinary Charrette: Exploring Conflicts & Proposing Solutions for Opening Sealed Sound Recordings; Joannie Bottkol	<i>(Preventive Conservation)</i> Lighting the Way: The Evolution of Preservation-Based Museum Lighting Policies and Practices Between 1978 and 2020; Steven Weintraub	<i>(History through the Lens of Treatments)</i> Rethinking Textile Repairs on an Iconic Aircraft: Conservation of the Wright Military Flyer; Elizabeth Beesley
<i>(Saying "Yes": Conservation Professionals as Liaisons, Facilitators, and Unifiers)</i> Inherent Vice: Conservation as a Catalyst for Artistic Collaboration; Anna Rose Keefe	<i>(Preventive Conservation)</i> Back to the Future - Managing Pests in a Changing World; Rachael Perkins Arenstein	<i>(History through the Lens of Treatments)</i> A future defined by risk: the tomb of Tutankhamen and its influence on the development of the field of conservation; Lori Wong
<i>(Saying "Yes": Conservation Professionals as Liaisons, Facilitators, and Unifiers)</i> Objects, Paper, Textiles, Outreach: Conservation capacity development at the Minnesota Historical Society; Megan Narvey	<i>(Preventive Conservation)</i> Standards, Science, and Sustainability - Four Decades of Environmental Management for Collections Preservation; Jeremy Linden	<i>(History through the Lens of Treatments)</i> Conservation treatment of Rembrandt's The Night Watch: the decision-making process; Petria Noble
<i>(Reception)</i> Specialty Group Receptions - TSG Tour of FIDM Museum, Reception on Westin Pool Deck		
<i>(Reception)</i> Specialty Group Receptions - Westin Pool Desk		
<i>(Reception)</i> Specialty Group Receptions - BPG/PMG and ASG/WAG at the Japanese American National Museum		

	Santa Barbara	San Francisco/San Jose	San Gabriel	San Diego
8:30am	AIC History Session - 50 Years in the Making - The Evolution of our Profession and thoughts about its future - San Francisco/San Jose			
10:30am	<i>Contemporary Art (CAN!)</i> : The Conservation of a "Walk-in Assemblage": Michael C. McMillen's The Central Meridian at LACMA; Jessica Chasen	<i>(Book and Paper)</i> Professional Identity in Library and Archives Conservation; moderators: Jen Hunt Johnson, Giselle Simón (Panel runs to 11:30am)	<i>(Collection Care)</i> Priority Risk Assessment and Matrices: Key strategic imperatives using a Model Level Continuum to bridge the gaps and securing our history; Tricia Lawrence Powell	<i>(Objects)</i> Magnetic holder with pressure adjustment - the new solution in conservation and displaying works of art and artefacts; Zuzanna Szozda
11:00am	<i>Contemporary Art (CAN!)</i> : Past, present and history of a work of art: the decision-making process in conjunction with the artist for a respectful intervention; Luciana Murcia	11:30 <i>(Book and Paper)</i> A Proven Case of Repainted Ming Dynasty Chinese Ancestor Portrait Painting; 范定甫 Ting-fu Fan 11:45 <i>(Book and Paper)</i> Can an old-school treatment ever catch up with the change? A hybrid method for treating and remounting a Ming dynasty Chinese silk scroll collected in the National Palace Museum, Taipei; Sun-Hsin Hung	<i>(Collection Care)</i> Disaster Risk Management in the Rafael Núñez House Museum: an integral project to mitigate the effects of climate change in the Colombian Caribbean coast; Ana Paula Gomez	<i>(Objects)</i> Replication of fine surface details through 3D scanning and printing: current capabilities and limitations; Robert Price
11:30am	<i>Contemporary Art (CAN!)</i> : Death in Conservation: Have we had an honest conversation?; Martha Singer		<i>(Collection Care)</i> Climate Risk Mapping for Texas Archives: Working Iteratively with Students for Disaster Preparedness; Sarah Norris	<i>(Objects)</i> Collaborative documentation to inform future reprinting: Acquiring additively manufactured objects at Tate and Science Museum, London; Libby Ireland
12-1:30pm	Lunch programming or time on your own			
1:30pm	<i>(Contemporary Art/Electronic Media Joint Session)</i> The Challenge of Preserving the Spirit of Protest: Documenting and Digitally Reconstructing a 2020 Washington, DC Black Lives Matter Memorial	<i>(Book and Paper)</i> BONG HITS 4 JESUS': Conserving a Controversy; Seth Irwin	<i>(Collection Care)</i> Getting to maybe: A case study in implementing Bizot Green Protocol as an outgoing loan standard; MaryJo Lelyveld	<i>(Objects/ADG)</i> Layers and Layers: An Overview of Treatment Approaches for Egyptian Cartonnage at the Penn Museum; Tessa de Alarcon
2:00pm	<i>(Contemporary Art/Electronic Media Joint Session)</i> Towards a conservation ethics for the age of the Anthropocene; Helia Marcal	<i>(Book and Paper)</i> The Chew Kee Store: Preserving the Legacy of the California Cantonese Gold Rush; Jennifer Parson	<i>(Collection Care)</i> Acoustic emission and collection monitoring at distance: reimagining connections between scientists and conservators; Michal Lukomski	<i>(Objects/ADG)</i> Sustainable Solutions: Water Based Consolidants for the Treatment of Low-Fired Ceramics; Céline Wachsmuth
2:30pm	<i>(Contemporary Art/Electronic Media Joint Session)</i> NFTs, capitalism, and the market: The increasingly important role of conservation in markets and decolonial practice; Amy Whitaker	<i>(Book and Paper)</i> Sewing, adhesion and grain direction in book conservation; Rita Udina	<i>(Collection Care)</i> Benchmarking method to set risk control priorities for light exposure and strategize microfading at collection level; Christel Pesme	<i>(Objects/ADG)</i> The effect of conservation agents on non-destructive dendrochronology; Ingrid Stelzner
3:00pm	<i>(Contemporary Art/Electronic Media Joint Session)</i> Panel and led Discussion	<i>(Book and Paper)</i> Chinoiserie/ Chinese Export: a Comparison of Conditions and Treatments of Two Wallcoverings in Comparable Oceanside Environments; Deborah LaCamera	<i>(Collection Care)</i> Working with Windows: A Case Study in Assessing Risk and Developing Solutions in Exhibition Spaces with Windows; Jacinta Johnson	<i>(Objects/ADG)</i> Going to pieces for Conservation: Experiences gained and lessons learned from ten years of disassembling USS Monitor composite artifacts; Will Hoffman
3:30pm		<i>(Book and Paper)</i> "Pressing Politics:" A Technical Study of German Expressionist and Mexican Prints from the Los Angeles County Museum of Art; Madison Brockman	<i>(Collection Care)</i> From condition to risk assessment. A documentation protocol for the preventive conservation of contemporary public-art collections; Marta Gómez Ubierna	<i>(Objects/ADG)</i> Building Back Better: A Collaborative Approach to Reconstructing an Egyptian Palace; Jessica Betz Abel
4:15pm	4:15pm - 6:15pm Closing Session: Leadership. Evolution. Communities. Join us in San Francisco/San Jose Room			

This grid lists primarily paper presentations. See daily listings for non-session events.

Emerald Bay	Sacramento	Avalon	Hollywood Ballroom
AIC History Session - 50 Years in the Making - The Evolution of our Profession and thoughts about its future - San Francisco/San Jose			
<i>(Paintings)</i> TIPS SESSION	<i>(Photographic Materials)</i> Dye Sublimation Prints on Aluminum - A Material Investigation of a New Process; Silvia Kolly Sacramento	<i>(Research & Technical Studies)</i> Application of laser-induced breakdown spectroscopy (LIBS) for micro-sampling-based elemental analysis of cultural heritage objects; Richard Hark 10:45 am <i>(Research & Technical Studies)</i> Pushing the Limits - The Portable Laser Ablation Micro-Sampling Technique and its Application in Cultural Heritage; Alice Knaf	<i>(Sustainability)</i> A hand in the past, a repair for the future? The reuse and recycling of materials in library and archive conservation; Victoria Stevens
<i>(Paintings)</i> Analytical study the unique icon of St. Joseph with the Child at Virgin Mary Church in Haret Zuwaila , Cairo, Egypt; Emil Henin	<i>(Photographic Materials)</i> Potential Methods for Documenting and Monitoring Silver Mirroring on Photographs; Bryanna Knotts	<i>(Research & Technical Studies)</i> Isotope and trace element analyses using portable laser ablation at the Field Museum: A progress report; Laure Dussubieux 11:45am <i>(Research & Technical Studies)</i> Minimally invasive, on-site sampling by portable laser ablation; Detlef Guenther	<i>(Sustainability)</i> Alternative for toxic chemical timber preservatives; Binumol Tom
<i>(Paintings)</i> Modern life in the museum. Nanoindentation study of soft and dripping oil paints in four artworks by Karel Appel and Asger Jorn; Ida Antonia Tank Bronken	<i>(Photographic Materials)</i> Negotiating the care of complex contemporary works on paper and photographs with artists and curators: how can we realise an artist's vision?; Emily Williams	<i>(Research & Technical Studies)</i> Lasers Panel Discussion and Q & A	<i>(Sustainability)</i> Reconciling and honouring intangible values in spaces of negative heritage. Identifying a sustainable conservation approach to fire-damaged New Cross and Grenfell; Talia Weiss
<i>Lunch programming or time on your own</i>			
<i>(Paintings)</i> A Step at a Time: Reconsidering the look of Charles Willson Peale's 1795 Staircase Group; Lucia Bay	<i>(Photographic Materials)</i> Evaluating the Potential for Freezing and Freeze Drying to Improve Water Emergency Outcomes for Inkjet Prints over Air Drying; Meredith Sharps Noyes	<i>(Research & Technical Studies and Wooden Artifacts)</i> Identification of mahogany and look-alike woods in 18th- and 19th-century furniture using laser-induced breakdown spectroscopy (LIBS) and pyrolysis gas chromatography mass spectrometry (Py-GC/MS); Richard Hark Avalon	
<i>(Paintings)</i> Unravelling the varnish layers on Rembrandt's Portrait of Marten Soolmans through interdisciplinary research; Petria Noble	<i>(Photographic Materials)</i> The impact of early photography and electrotyping media on the creation of images and contemporary art; Valentina Ljubić Tobisch	<i>(Research & Technical Studies and Wooden Artifacts)</i> Study of the mechanical behavior of a panel painting under the constraints of its cradle, in order to establish an equilibrium point of the system. Between interdisciplinarity and serendipity; Norman Verschueren	
<i>(Paintings)</i> Artist, Collector, Conservator: The legacy of Morton C. Bradley, Jr. at Indiana University; Julie Ribits		<i>(Research & Technical Studies and Wooden Artifacts)</i> Twins with separate lives: a pair of Southeast Asian side tables with different treatment histories rooted in different cultures?; Birte Koehler	
<i>(Paintings)</i> Dans les loges: Girodet's Coriolanus Taking Leave of his Family and the Grand Prix Contest; Gerrit Albertson		<i>(Research & Technical Studies and Wooden Artifacts)</i> Technical Study and Conservation of Korean Late Joseon Dynasty Lacquerware; Colleen O'Shea	
<i>(Paintings)</i> Technical examination of Card Players (1958) by Hale Woodruff; Anna Vesaluoma		<i>(Research & Technical Studies and Wooden Artifacts)</i> Microscopic Examination of Asian Lacquer Surfaces Prior to Treatment; Marianne Webb	
4:15pm - 6:15pm Closing Session: Leadership. Evolution. Communities. Join us in San Francisco/San Jose Room			

FRIDAY, MAY 13

📺 These talks are part of the live stream and will be recorded.

TOURS (\$ - Tickets at registration desk)

NOTE: Tours depart from the hotel lobby unless otherwise noted. Arrive 15 minutes before the start time; any buses leave at the time stated.

1:45pm - 7:00pm	Academy of Motion Pictures: Conservation Labs and Collections
3:00pm - 5:00pm	Historic Downtown Walking Tour
3:00pm - 7:00pm	Sunset Hike and Griffith Observatory Experience
7:00pm - 9:00pm	Modern Skyline Walking Tour

WORKSHOPS - MUST BE PRE-REGISTERED *TRANSPORTATION PROVIDED (DEPARTURE TIME NOTED)

7:45am - 5:00pm*	Gels for Photographs	Getty Center*
8:00am - 5:00pm*	Textile Cleaning: Stain Reduction	LACMA*
8:15am - 5:00pm*	Re-Usable and Modular Book Cradle System	Huntington Library*
9:00am - 5:00pm	Packing and Crating Basics: Traveling with Your Art and Objects	Silver Lake
1:00pm - 5:00pm	Getting the Most Out of XRF, Raman, Infrared Imaging	Santa Monica - B
2:00pm - 7:00pm	Seminar: Color, Fills, and Retouches: Essentials of Inpainting 📺	Avalon

SATURDAY, MAY 14

📺 These talks are part of the live stream and will be recorded.

TOURS (\$ - Tickets at registration desk)

NOTE: Tours depart from the hotel lobby unless otherwise noted. Arrive 15 minutes before the start time; the bus or tour leaves at the time stated.

8:15am - 12:45 pm	Gamble House: In-Depth Behind the Scenes Tour
9:00am - 3:00pm	The Getty Villa Museum: Conservation Labs and Collections
10:00am - 12:00pm	Art Deco Walking Tour
10:30am - 12:30pm	Historic Downtown Walking Tour
11:00am - 5:30pm	The Huntington: Galleries and Gardens
1:00pm - 3:00pm	Modern Skyline Walking Tour

WORKSHOPS - MUST BE PRE-REGISTERED *TRANSPORTATION PROVIDED (DEPARTURE TIME NOTED)

7:45am - 12:00pm*	Gels for Photographs	Getty Center*
8:00am - 5:00pm*	Textile Cleaning: Stain Reduction	LACMA*
8:15am - 5:00pm*	Re-Usable and Modular Book Cradle System	Huntington Library*
9:00am - 3:00pm	Seminar: Color, Fills and Retouches: Essentials of Inpainting 📺	Avalon
9:00am - 5:00pm	Introduction to Costume Mounting	Santa Monica - A
1:00pm - 6:00pm*	Repairing Transparency: Filling scratches and chips	Getty Center*

PRE-SESSIONS - INCLUDED WITH REGISTRATION, NO RSVP NEEDED

1:00pm - 3:00pm	Held In Trust Session 📺	Hollywood Ballroom
1:30pm - 4:30pm	Viz for the Conservation Whiz: A Data Tools Symposium 📺	Emerald Bay
4:30pm - 6:30pm	AIC Keynote and Awards Session 📺	Sacramento/San Francisco/San Jose

RECEPTIONS

6:30pm - 8:00pm	Exhibit Hall Reception	Pasadena Ballroom (Exhibit Hall)
7:30pm - 9:30pm	ECPN Happy Hour	Hollywood Ballroom
8:00pm - 10:00pm	UCLA Reunion	Beverly



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SUNDAY, MAY 15

General Sessions

These talks are part of the live stream and will be recorded.

Speaker Ready
Room is
Mt. Washington

OPENING GENERAL SESSION (see p. 60 for abstracts)

CALIFORNIA BALLROOM

8:45 am	Object, Memory, Conservation and Restorative Justice ; Rachel Rivenc
9:00 am	Green Tea Flowers Bloom in Autumn: A Reflection of a Korean American Architectural Conservator in The American Southwest ; Alex Lim
9:15 am	Building A Firm [Data] Base: What the AIC COVID-19 Impact Survey Tells Us About the Conservation Field ; Sarah Reidell
9:30 am	Disability Rights in Conservation ; Hilary Kaplan
9:45am	Group Discussion and Q&A
10:00am – 10:40am	Break in the Exhibit Hall Pasadena Ballroom (Exhibit Hall)
10:40am	Legitimizing the Past: Conservation, Expertise and The Power of Transformation ; Caitlin O'Grady
10:55am	On the Use of Culturally Appropriate Technical Terminology ; Narayan Khandekar
11:10am	Cultural Heritage Preservation into the 21st Century: Integrating Sustainability with Conservation Integrating Sustainability with Conservation ; Sarah Nunberg, Sarah Sanchez
11:25am	Settling Between the Chairs: The Development of Conservation Towards a Scientific Discipline as Reflected in The Establishment of a Formal Academic Training in Early 20th Century Vienna ; Sigrid Eyb-Green
11:40am	Group Discussion and Q&A

LUNCHEON PROGRAMING (\$29 - Tickets at registration desk)

12:00pm	Socratic Dialog - The Future of The Conservation Profession	Silver Lake
12:00pm	The Preservation and Conservation Issues of 19th Century Varnished Wall Maps: Lunch Panel Session	Beaudry B
12:00pm	Emerging Conservation Professionals Lunch: Info + Mythbusting	Santa Anita

Specialty Sessions

ARCHITECTURE (see p. 76 for abstracts)

SANTA BARBARA

2:00pm	Evaluating the Efficacy of Cyclododecane in Cross-sectional Architectural Paint Analysis ; Brooke Russell
2:30pm	Limewash Lessons: Field Testing a Failure ; Stephanie Hoagland
3:00pm	Open Discussion
3:30pm – 4:00pm	Break in the Exhibit Hall Pasadena Ballroom (Exhibit Hall)
4:00pm	Saving Streamline Moderne: Stabilization, Repair and Restoration of the 1939 Saban Building at the New Academy Museum of Motion Pictures, Los Angeles ; John Fidler
4:30pm	Moving Wonderland ; Nina Roth-Wells



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BOOK & PAPER (see p. 77 for abstracts)

SAN FRANCISCO/SAN JOSE

- 2:00pm – 2:30pm **Investigating the Effects of Rigid Polysaccharide Gels on Several Paper Sizings**; Karissa Muratore
- 2:30pm – 3:00pm **Where Tradition meets Technology: Utilizing Microfibrillated Cellulose as a Repair Material in Fan Conservation**; Kathryn Boodle
- 3:00pm – 3:30pm **Nanocellulose in Practice: Properties of Microfibrillated Cellulose and Cellulose Nanocrystals**; Rachel Mochon
- 3:30pm – 4:00pm **Break in the Exhibit Hall** Pasadena Ballroom (Exhibit Hall)
- 4:00pm – 5:30pm **Art on Paper Discussion Group - Treatment: Collaborative Conservation**







COLLECTION CARE (see p. 83 for abstracts)

SAN GABRIEL

- 2:00pm – 2:30pm **Collections Management Practices in Conservation**; Rebecca Kennedy
- 2:30pm – 3:00pm **Evolving Strategies for Safeguarding Collections at the Library of Congress**; Nancy Lev-Alexander
- 3:00pm – 3:30pm **Lessons from the Pandemic – The Evolution of New Solutions for Collection Care and Management from Inclusive Collecting Practice**; Diane Gwilt, Jane Henderson
- 3:30pm – 4:00pm **Break in the Exhibit Hall** Pasadena Ballroom (Exhibit Hall)
- 4:00pm – 5:30pm **Collection Care Professional Education: Evolution and Future Directions Panel**

ELECTRONIC MEDIA (see p. 94 for abstracts)

BEVERLY

- 2:00pm – 2:30pm **Expanding the Horizons: Building Collaborations to Care for Contemporary and Time-Based Media Collections** ; Jen-Jung Ku
- 2:30pm – 3:00pm **Right-Sizing a Time-Based Media Conservation Program at Glenstone** ; Samantha Owens
- 3:00pm – 3:30pm **Beyond the Archive: Preservation and Access for Web-Based Interactive Data Journalism** ; Josephine Jenks
- 3:30pm – 4:00pm **Break in the Exhibit Hall** Pasadena Ballroom (Exhibit Hall)
- 4:00pm – 4:30pm **Preserving Software-based Art at Tate: From Research to Best Practices** ; Tom Ensom
- 4:30pm – 5:00pm **An Analysis of Software-Based Artworks Using Max/MSP through Different Conservation Strategies** ; Tzu-Chuan Lin
- 5:00pm – 5:30pm **Peer-to-Peer: Towards the Collective Conservation of Net Art** ; Anna Mladentseva

OBJECTS (see p. 96 for abstracts)

SAN DIEGO

- 2:00pm – 2:30pm **Repairing *Tirs*: Conservation approaches to Niki de Saint Phalle's Shooting Paintings**; Joy Bloser
- 2:30pm – 3:00pm **Gravitational Investigation: The History and Future of Interventive Treatment on An Eva Hesse Sculpture**; Stephanie Guidera
- 3:00pm – 3:30pm **When Doing Nothing is Best for the Future: Analysis and Conservation of Louise Nevelson's *Dawn's Image, Night***; Kaela Nurmi
- 3:30pm – 4:00pm **Break in the Exhibit Hall** Pasadena Ballroom (Exhibit Hall)

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4:00pm – 4:30pm	Structural Stabilization of Beverly Pepper’s Weathering Steel Sculpture; Christine Haynes
4:30pm – 5:00pm	Preliminary Research on Plant Extracts and Wax as Corrosion Inhibition Coatings for Iron Alloy Outdoor Sculpture; Megan Creamer
5:00pm – 5:30pm	Conservation Interventions to Stabilize a Matte Painted Acrylic and Polystyrene Architectural Model; Mary Wilcop

PAINTINGS (see p. 102 for abstracts)

EMERALD BAY

2:00pm – 2:30pm	Wax-resin Extraction Trials for Lined Paintings; Brad Epley
2:30pm – 3:00pm	An Approach to Treating the Ill Effects of an Early Wax-Resin Infusion: Franz Kline’s <i>Nijinsky</i>, 1950; Sara Kornhauser
3:00pm – 3:30pm	Minimalism in Context: The Courtauld Institute of Art and the Royal Museums Greenwich; Maureen Cross
3:30pm – 4:00pm	Break in the Exhibit Hall Pasadena Ballroom (Exhibit Hall)
4:00pm – 4:30pm	One Room, a Pandora’s Box of Complications: Resolving the Motley Concerns of a Set of Murals Painted by Elmer E. Garnsey; Courtney Books
4:30pm – 5:00pm	Fiberboard as Painting Support, Art Material and Medium for Conservation: Historical, Aesthetical and Characteristic Aspects of an Engineered Wood Product in the Arts; Ulrik Runeberg
5:00pm – 5:30pm	Structural Conservation of a 17th Century Strainer Using Carbon Fiber; Katie Smith

PHOTOGRAPHIC MATERIALS (see p. 109 for abstracts)

SACRAMENTO

2:00pm – 2:30pm	Sustainable Solution for the Preservation of a Collection of Historical Glass Plate Negatives in Myanmar: The Use of Dry Cabinets and Locally Available Materials ■; Bertrand Lavédrine
2:30pm – 3:00pm	Photo Conservation Surveys in Latin America: History, Progress & Evolution ■; Soledad Abarca
3:00pm – 3:30pm	Collection-scale representation of the visual properties of black and white paper ■; Paul Messier
3:30pm – 4:00pm	Break in the Exhibit Hall Pasadena Ballroom (Exhibit Hall)
4:00pm – 4:30pm	Reassembly of Deborah Bright’s “Crow Agency” Panorama ■; Luisa Casella
4:30pm – 5:00pm	The Photographs of Seydou Keïta: Insights on a Photographer’s Practice in Mid-Twentieth Century Colonized West Africa ■; Elsa Thyss
5:00pm – 5:30pm	Laura Gilpin’s Book “The Pueblos, A Camera Chronicle,” An Archive Story ■; Ariadna Rodriguez

RESEARCH & TECHNICAL STUDIES (see p. 112 for abstracts)

AVALON

2:00pm – 2:30pm	Graphs, Jargon, and Science: The Creation of the Research and Technical Studies Specialty Group ■; Mary F Striegel
2:30pm – 3:00pm	Current International Trends in the Use of Instrumental Analysis and Scientific Equipment in Conservation Practice and Research ■; Aïda Menouer
3:00pm – 3:30pm	Sharing Technical Art History: Past, Present, and Moving Forward; Morgan Wylder
3:30pm – 4:00pm	Break in the Exhibit Hall Pasadena Ballroom (Exhibit Hall)

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4:00pm – 4:30pm	Optimizing Oddy! Streamlining the Implementation of the Metropolitan Museum of Art Oddy Testing Protocol in a Multi-User Work Environment: Tips and Troubleshooting; Julia Sybalsky
4:30pm – 5:00pm	Imaging Illuminated Manuscripts with Multi Light Reflectance and the Use in Conservation, Past and Future; Lieve Watteeuw
5:00pm – 5:30pm	In Situ Hyperspectral Imaging of Monumental Oil Paintings: Practical Approaches within an Interdisciplinary Context; Jan Dariusz Cutajar

TEXTILES (see p. 121 for abstracts)

HOLLYWOOD BALLROOM

2:00pm – 2:30pm	The Relics of General Washington: A Synthesis of Conservation and Mount Design for George Washington's Coat 📺; Johanna Tower
2:30pm – 3:00pm	Overcoming the Challenges of Mounting a 39-foot-long Painted Textile with a Magnetic Mounting System 📺; Gwen Spicer
3:00pm – 3:30pm	Highlighting Marian Anderson in the Costume and Textiles Collection at the Philadelphia Museum of Art: The Treatment and Mounting of a Velvet 1940s Dress 📺; Andrea Goldstein
3:30pm – 4:00pm	Break in the Exhibit Hall Pasadena Ballroom (Exhibit Hall)
4:00pm – 4:30pm	100 Years (Almost!) Of Costume Mounting at the McCord Museum 1921-2021 📺; Caroline Bourgeois
4:30pm – 5:00pm	Commemorating The Met's New Islamic Galleries Installation—Revisiting Textile Conservation Practices for the Culturally Diverse Collection 📺; Janina Poskrobko
5:00pm – 5:30pm	A Comparative Study of the Impact of Beva 371 and Nano Vinyl Acetate Derivatives on Egyptian Coptic Textiles (Tapestry) 📺; Heba Saad

OPENING RECEPTION

5:00pm – 5:30pm	Getty Center Conservation Lab Tours
5:30pm – 6:30pm	Pre-Reception Gallery Viewing
6:30pm – 9:30pm	Opening Reception at the Getty Center

MONDAY, MAY 16

Specialty Sessions

📺 These talks are part of the live stream and will be recorded.

ARCHITECTURE: PHOTOGRAMMETRY (see p. 77 for abstracts)

SANTA BARBARA

9:00am – 9:30am	Decision-Making and Planning in the Photogrammetric Survey of Wall Paintings; Wendy Rose
9:30am – 10:00am	The Role of Photogrammetry in the Evaluation of the Lausanne Cathedral (Switzerland): From 3D Survey to the Documentation and Analysis of the State of Conservation of Its Stones; Chiara Stefani
10:00am – 10:30am	Break in the Exhibit Hall Pasadena Ballroom (Exhibit Hall)
10:30am – 11:00am	Using Photogrammetry to Overcome Challenges of Documenting <i>América Tropical</i> by David Alfaro Siqueiros; Tom McClintock
11:00am – 11:30am	New Ways of Seeing and Recording: A Case Study in Using Photogrammetry to Advance Wall Painting Conservation; Kiernan Graves
11:30am – 12:00pm	Photogrammetry of Diego Rivera's "Pan American Unity" Mural: Producing High Precision Color and Shape Maps from 3D Data; Carla Schroer

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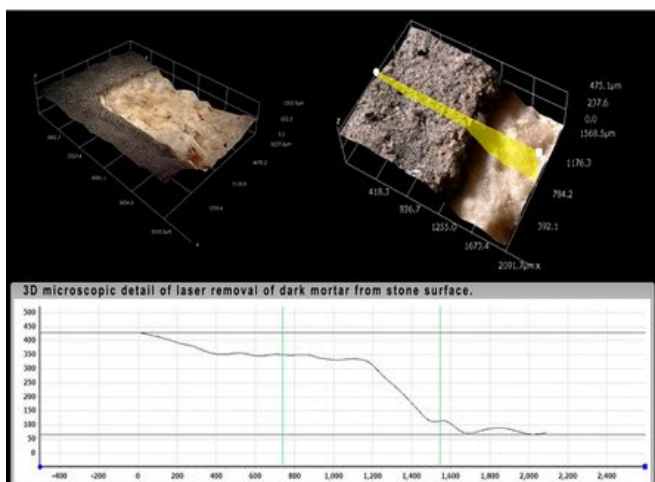
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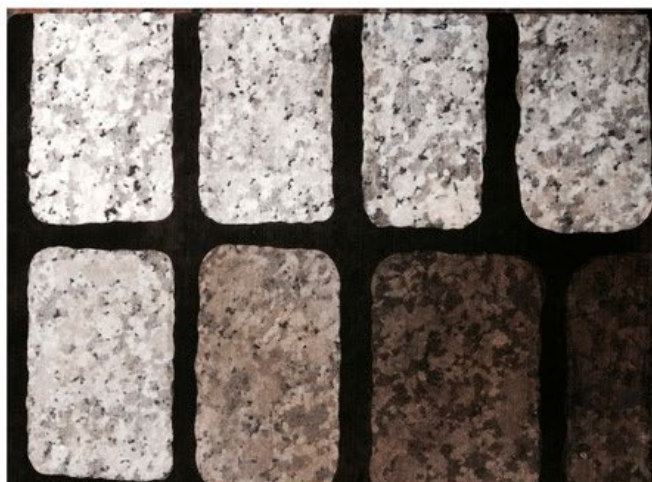
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BOOK & PAPER (see p. 80 for abstracts)

SAN FRANCISCO/SAN JOSE

- 8:30am – 10:00am **Book and Paper Library Archives Discussion Groups**
- 10:00am – 10:30am **Break in the Exhibit Hall** **Pasadena Ballroom (Exhibit Hall)**
- 10:30am – 11:00am **Library and Archives Conservation and the Path to Professionalization** ■; Ellen Cunningham-Kruppa
- 11:00am – 11:30am **T.H. Saunders Sample Book: A Treasure Trove of 19th Century Papers** ■; Rosaleen Hill
- 11:30am – 12:00pm **Book and Paper: Conservation and Study of Simon Pokagon's Birch Bark Books;** Marieka Kaye

COLLECTION CARE (see p. 85 for abstracts)

SAN GABRIEL

- 9:00am – 9:30am **Reconsidering the Enemy: Using UV-C Light for Mold Remediation;** Tara O'Brien
- 9:30am – 10:00am **"Valderi – Valdera": Testing and Solutions for the Phenomenon of the Wandering of Objects Due to Vibrations;** William Wei
- 10:00am – 10:30am **Break in the Exhibit Hall** **Pasadena Ballroom (Exhibit Hall)**
- 10:30am – 11:00am **Connecting the Loop – Reinterpreting Collection Assessment;** Fenella France
- 11:00am – 11:30am **Vital Signs: Condition Survey and Vulnerability Assessment for Built Heritage;** Greg Maxwell
- 11:30am – 12:00pm **STASH: Pocket Globes – Housing Solution;** Werner Haun

CONTEMPORARY ART (CAN!) (see p. 92 for abstracts)

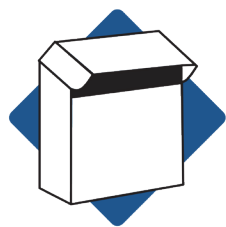
BEVERLY

- 8:30am – 9:00am **Guided by the Light: Rethinking Approaches to Assessment of Light-Based Artworks** ■; Sasha Arden
- 9:00am – 9:30am **An Investigation and Treatment of Eva Hesse's *Several* (1965)** ■; Austin Anderson
- 9:30am – 10:00am **Facsimile Future - Past, Present, Projections and Potential** ■; Alison Norton
- 10:00am – 10:30am **Break in the Exhibit Hall** **Pasadena Ballroom (Exhibit Hall)**
- 10:30am – 11:00am **Conservation Concerns Regarding Installations That Incorporate Living Plants: A Closer Look at Selected Case Studies** ■; Erin Fitterer
- 11:00am – 11:30am **Study and Restoration Treatment of a Collage by Giulio Turcato: From Precision Mild Heat Transfer Using IMAT Nanotechnology to Novel Sustainable Methods and Strategies for Consolidation and Reintegration** ■; Maddalena Magnani
- 11:30am – 12:00pm **Fiat Lux: Displaying and Preserving *Flux Light Kit*** ■; Rachel Rivenc

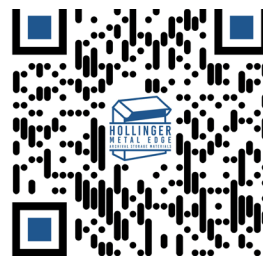
OBJECTS (see p. 97 for abstracts)

SAN DIEGO

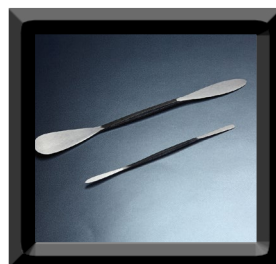
- 8:30am – 9:00am **Glazed Ceramics Placed Outdoors: Conservation Issues and Lacuna Integration Techniques: An Ecological Choice for the Future with a Return to the Origins?** ■; Shirin Afra, Chiara Fornari
- 9:00am – 9:30am **Restoration of the Memorial to Col. Robert Gould Shaw and the 54th Massachusetts Volunteer Infantry Regiment** ■; Barbara Mangu
- 9:30am – 10:00am **Contested Care: Two Problematic Monuments at the Museum of Fine Arts, Boston** ■; Pilar Brooks
- 10:00am – 10:30am **Break in the Exhibit Hall** **Pasadena Ballroom (Exhibit Hall)**



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- 10:30am – 11:00am **Changing Approaches to Monumental Plaster Casts at Weir Farm National Historic Site** ; Naomi Kroll Hassebroek
- 11:00am – 11:30am **A Lesson in Balance and Adaptation: The Conservation of Alexander Calder's Man-Eater with Pennants** ; Abigail Mack
- 11:30am – 12:00pm **"Clove of Garlic Crushed and Boiled": Paul Manship's Patinas** ; Dorothy Cheng

PAINTINGS (see p. 104 for abstracts)

EMERALD BAY

- 8:30am – 9:00am **Treatment of a Water Drip on Mark Rothko's *Untitled* (1957) in the Menil Collection** ; Anne Schmid
- 9:00am – 9:30am **Conservation of Mary Corse White Light Paintings** ; Linnaea Saunders
- 9:30am – 10:00am **Art at the Boundaries: Conservation of a 1930S Black Silk Velvet Painting** ; Netanya Shephard Schiff
- 10:00am – 10:30am **Break in the Exhibit Hall** Pasadena Ballroom (Exhibit Hall)
- 10:30am – 11:00am **White on Black: Surprising Technical Imaging Results of Suprematist Composition with *Plane in Projection* (1915) by Kazimir Malevich** ; Mariana Escamilla-Martínez
- 11:00am – 11:30am **The Perception of Techniques Used for Retouching Wall Paintings in the Netherlands** ; William Wei
- 11:30am – 12:00pm **Paintings - TIPS SESSION**

RESEARCH & TECHNICAL STUDIES (see p. 114 for abstracts)

AVALON

- 8:30am – 9:00am **Permeation of Acetic Acid, Formic Acid and Water through PET: Implications for Encapsulation**; Patty McGuiggan
- 9:00am – 9:30am **Investigating Preservation Strategies for Cellulose Ester Objects**; Anna Lagana
- 9:30am – 10:00am **Investigations of the Binding Medium of Mark Tobey Paintings Using Pyrolysis-GC/MS**; Vanessa Johnson
- 10:00am – 10:30am **Break in the Exhibit Hall** Pasadena Ballroom (Exhibit Hall)
- 10:30am – 11:00am **Accelerated Aging of Red Pigments in Bleach: Case Study Paintings of Cristobal Lozano**; Rosanna Kuon
- 11:00am – 11:30am **A Manuscript and its Materials: A Cross-Disciplinary Analysis of the Materials Used in the Making of the 14th-Century Gaelic Manuscript, The Book of Uí Mhaíne**; Veronica Biolcati
- 11:30am – 12:00pm **Reviving Alexander Calder's *Man-Eater with Pennants*: A Technical Examination of the Original Paint Palette**; Abed Haddad

SUSTAINABILITY (see p. 119 for abstracts)

SACRAMENTO

- 10:30am – 11:00am **It's Not Easy Being Green... but It's Worth It: Sustainability in Conservation's Greener Solvents Project**; Karoline Sofie Hennum
- 11:00am – 11:30am **Wearing Gloves and Sustainability - A Practical Approach**; Jessica Crann and Wendy Woodiwis
- 11:30am – 12:00pm **Rethinking Museum Performance Indicators for Sustainable Development**; Flavia Parisi



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TEXTILES (see p. 123 for abstracts)

HOLLYWOOD BALLROOM

8:30am – 9:00am	Mixing Solutions: Combining Paper and Textile Approaches to Treat Iron-mordanted Printed Cotton; Kris Cnossen
9:00am – 9:30am	A Sartorial Puzzle: Conserving a Worth & Bobergh Ensemble for Display; Kirstin Purtich
9:30am – 10:00am	Reuse and Repurpose: Two Case Studies of Japanese Scroll Conservation Incorporating a Western Textile Conservation Technique; Tanya Uyeda
10:00am – 10:30am	Break in the Exhibit Hall Pasadena Ballroom (Exhibit Hall)
10:30am – 11:00am	Collaborative Investigation into Wool Dyeing Practices of Chilkat Textiles: Culture, Chemistry, and Conservation; Dario Durastanti
11:00am – 11:30am	The Unknown Microscopic World of “The Peasants Strike”: A Burlap Embroidered by Violeta Parra; Yerko Quitral
11:30am – 12:00pm	Reversibly Restoring Color: The Application of Toned Abaca and Mulberry Paper Overlays to a Discolored Surrogate Cloth; Kristal Hale

WOODEN ARTIFACTS (see p. 125 for abstracts)

BEAUDRY B

8:30am – 9:00am	A Limewood Lemon: Overhauling a 17th Century Grinling Gibbons Overmantel 🇩🇪; Lisa Ackerman
9:00am – 9:30am	Wood BONDS Wood 🇩🇪; Andreas Hochuli
9:30am – 10:00am	Revelation of Three Kinds of Traditional Chinese Gilding Technique Applied on Wooden Relics of Qing Dynasty Collected in the Forbidden City 🇩🇪; Na Wang
10:00am – 10:30am	Break in the Exhibit Hall Pasadena Ballroom (Exhibit Hall)
10:30am – 11:00am	The Bridge: From Cultural Heritage to Culture of Conservation 🇩🇪; Shun-Jen Tsai
11:00am – 11:30am	A Survey of Lacquerware in the Collections of the Preservation Society of Newport County 🇩🇪; Luli Zou
11:30am – 12:00am	TBA

MIDDAY SESSIONS

12:00pm – 1:30pm	Mistakes Luncheon (\$29)	San Francisco/San Jose
12:00pm – 1:30pm	Contemporary Art Network (CAN!) Speed Mentoring	Westin Pool Deck
12:00pm – 1:30pm	APOYOnline Meeting (light refreshments provided)	Silver Lake

Concurrent General Sessions

THE CONSERVATOR AS AGENT OF CHANGE (see p. 71 for abstracts)

SACRAMENTO

2:00pm – 2:30pm	Chance? Choice? Change?; Jim Coddington
2:30pm – 3:00pm	Sociopolitical Flux & Conservation Interventions: Studying Fascist Monuments in Italy; Joannie Bottkol
3:00pm – 3:30pm	The Ethics of Care: Examining Ethics from Non-conservation Resources to Inform Human-Centered Conservation; Nina Owczarek



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HISTORY THROUGH THE LENS OF TREATMENTS (see p. 72 for abstracts)

SACRAMENTO

- 4:00pm – 4:30pm **Rethinking Textile Repairs on an Iconic Aircraft: Conservation of the Wright Military Flyer;** Elizabeth Beesley
- 4:30pm – 5:00pm **A Future Defined by Risk: The Tomb of Tutankhamen and Its Influence on the Development of the Field of Conservation;** Lori Wong
- 5:00pm – 5:30pm **Conservation Treatment of Rembrandt's *The Night Watch*: The Decision-making Process;** Petria Noble

INTERDISCIPLINARY RESEARCH METHODS TO (RE-)ESTABLISH OBJECT HISTORIES AND PROVENANCE FOR MATERIAL CULTURE (see p. 65 for abstracts)

SAN DIEGO

- 2:00pm – 2:30pm **Collaboration and Technical Investigation to Better Understand Indigenous Northwest Coast Cultural Material;** Megan Salas
- 2:30pm – 3:00pm **A Community Centered Approach to the Stewardship of Alfonso Ossorio's *Feast and Famine*;** Abigail Duckor
- 3:00pm – 3:30pm **The Success of a Team Effort: Preservation Initiatives at the AfricaMuseum;** Siska Genbrugge

SAN FRANCISCO/SAN JOSE

- 4:00pm – 4:30pm **Establishing Context and Continuity for the Use of Human Remains in Tibetan Ritual Objects: A Methodology;** Ayesha Fuentes
- 4:30pm – 5:00pm **Conservation Initiative in African Art at the Virginia Museum of Fine Arts: The Impact of Interdisciplinary Research + Collaboration on Collections of African Material Culture;** Casey Mallinckrodt
- 5:00pm – 5:30pm **Uncovering Provenance: An Interdisciplinary Approach;** Landis Smith

AUTOMATION, CONSERVATION, PRESERVATION (see p. 64 for abstracts)

SAN FRANCISCO/SAN JOSE

- 2:00pm – 2:30pm **Structured Conservation Data for the Next Information Age;** Ryan Lieu
- 2:30pm – 3:00pm **When AI Meets Literary Collections: Feasibility of AI Visual Technology on Identifying Paper Deterioration;** Wan-Jen Lin
- 3:00pm – 3:30pm **From Blinking Bulbs to Advanced AI: The Past, Present and Future of HVAC Control;** Christopher Cameron

SAN DIEGO

- 4:00pm – 4:30pm **Eyes Only? Revealing or Preserving Secrets of Congolese Art Objects;** Sofie Dierickx
- 4:30pm – 5:00pm **Using Data with Humans: Successes and Failures of Data Storytelling in the Realm of Conservation;** Mary Wilcop

SAYING "YES": CONSERVATION PROFESSIONALS AS LIAISONS, FACILITATORS, AND UNIFIERS (see p. 67 for abstracts)

AVALON

- 2:00pm – 2:30pm **Touch Decisions;** Jane Henderson
- 2:30pm – 3:00pm **French Conservation Experts Facing Shrinking Cities: The Evolution of the Role of the Architectes des bâtiments de France in City-centres;** Alix de La Gaignonnière
- 3:00pm – 3:30pm **Bears Ears Site Preservation Project: Responding to Visitor Impacts on Cliff Dwellings in Southeast Utah;** Shanna Diederichs

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EMERALD BAY

- 4:00pm – 4:30pm **A Cross-Disciplinary Charrette: Exploring Conflicts & Proposing Solutions for Opening Sealed Sound Recordings;** Joannie Bottkol
- 4:30pm – 5:00pm **Inherent Vice: Conservation as a Catalyst for Artistic Collaboration;** Anna Rose Keefe
- 5:00pm – 5:30pm **Objects, Paper, Textiles, Outreach: Conservation Capacity Development at the Minnesota Historical Society;** Megan Narvey

CONSERVING RELATIONSHIPS: NEW HORIZONS FOR COLLABORATION AND COMMUNICATION (see p. 69 for abstracts)

EMERALD BAY

- 2:00pm – 2:30pm **Save the Past and Inspire the Future: A Kingdom-Wide Community Research Project Aims to Save Memories on Vanishing Traditional Saudi Male Costumes by Collecting Information in a Museum Database;** Konstantinos Chatziantoniou
- 2:30pm – 3:00pm **Reflections on Authority in the Conservation of Indigenous Objects in Museums;** Ellen Carrlee
- 3:00pm – 3:30pm **The Human Factor: How to Recover the Hidden Craftsmanship of a Portuguese Moldmaker;** Élia Roldão

AVALON

- 4:00pm – 4:30pm **Embracing Infinite Slippage;** Libby Ireland
- 4:30pm – 5:00pm **Art Conservators: Caregivers and Storytellers;** Ximena Bernal
- 5:00pm – 5:30pm **New Hall, New Paths: Hall Revisualization Leads to Renovated Practice;** Stephanie Black

PREVENTIVE CONSERVATION, MONITORING, AND ACCESS (see p. 73 for abstracts)

SAN GABRIEL

- 2:00pm – 2:30pm **Decontextualisation: A Form of Dissociation or a New Risk?;** Christel Pesme
- 2:30pm – 3:00pm **Fifty Years of Preventive Conservation: From Avoiding Change to Maximizing Values Delivered and Retained;** Robert Waller
- 3:00pm – 3:30pm **Social Disconnection: Is it the 11th Agent of Deterioration?;** Thiago S. Puglieri
- 4:00pm – 4:30pm **Lighting the Way: The Evolution of Preservation-Based Museum Lighting Policies and Practices Between 1978 and 2020;** Steven Weintraub
- 4:30pm – 4:00pm **Back to the Future – Managing Pests in a Changing World;** Rachael Perkins Arenstein
- 5:00pm – 5:30pm **Standards, Science, and Sustainability – Four Decades of Environmental Management for Collections Preservation;** Jeremy Linden

TUESDAY, MAY 17

General Session

AIC HISTORY SESSION (see p. 75 for abstracts)

SAN FRANCISCO/SAN JOSE

- 8:15am - 10:15am **50 Years in the Making: The Evolution of Our Profession and Thoughts about Its Future;** Moderators: Rebecca Rushfield and Joyce Hill Stoner

MIDDAY EVENTS (see p. 62 for abstracts)

- 12:00pm – 1:30pm BPG/PMG Wiki Discussion Session Luncheon (reserve a spot with a free ticket) **Beverly**
- 12:00pm – 1:30pm AIC's Strategic Plan: Help us Plan for the Future (Free session with optional \$29 lunch) **Beaudry B**
- 12:00pm – 1:30pm CIPP Lunch Program (\$0 for CIPP members) **Santa Anita**
- 12:00pm – 1:30pm CCN Idea Fair **California Foyer**
- 12:00pm – 1:30pm ADG - Business Meeting **Palos Verdes**

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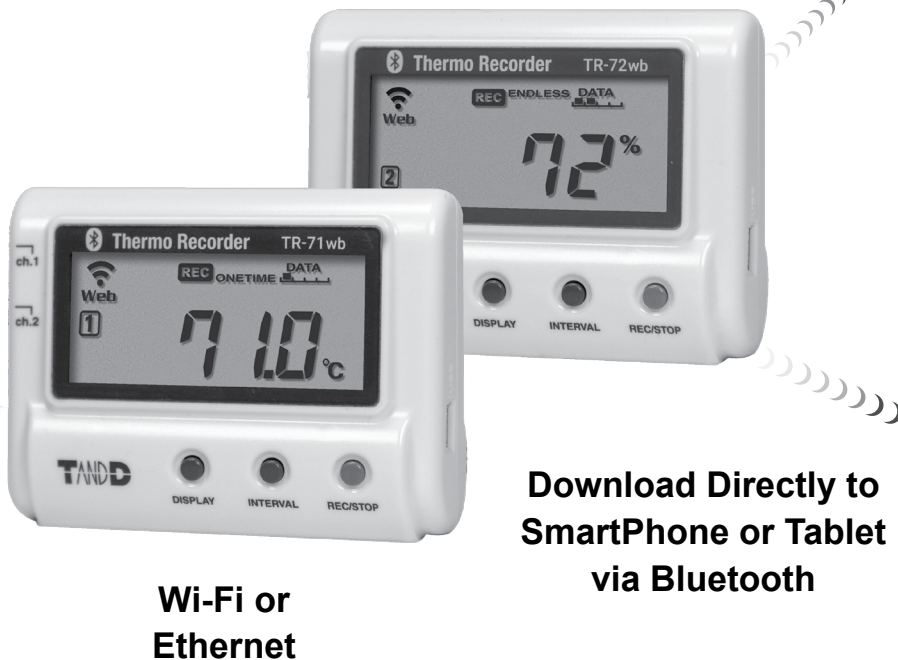
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Specialty Sessions

BOOK AND PAPER: (see p. 81 for abstracts)

SAN FRANCISCO/SAN JOSE

- 10:30am – 11:30am **Professional Identity in Library & Archives Conservation** ■; Jen Hunt Johnson, Giselle Simón
- 11:30am – 11:45am **A Proven Case of Repainted Ming Dynasty Chinese Ancestor Portrait Painting** ■; Ting-fu Fan
- 11:45am – 12:00pm **Can an Old-School Treatment Ever Catch Up with the Change? A Hybrid Method for Treating and Remounting a Ming Dynasty Chinese Silk Scroll Collected in the National Palace Museum, Taipei** ■; Sun-Hsin Hung
- 12:00pm – 1:30pm **BPG/PMG Joint Wiki & Lunch Session**; Diane E. Knauf and Michelle C. Smith
- 1:30pm – 2:00pm **BONG HiTS 4 JESUS: Conserving a Controversy** ■; Seth Irwin
- 2:00pm – 2:30pm **The Chew Kee Store: Preserving the Legacy of the California Cantonese Gold Rush** ■; Jennifer Parson
- 2:30pm – 3:00pm **Sewing, Adhesion and Grain Direction in Book Conservation** ■; Rita Udina
- 3:00pm – 3:30pm **Chinoiserie/Chinese Export: A Comparison of Conditions and Treatments of Two Wallcoverings in Comparable Oceanside Environments** ■; Deborah LaCamera
- 3:30pm – 4:00pm **“Pressing Politics:” A Technical Study of German Expressionist and Mexican Prints from the Los Angeles County Museum of Art** ■; Madison Brockman

COLLECTION CARE (see p. 87 for abstracts)

SAN GABRIEL

- 10:30am – 11:00am **Priority Risk Assessment and Matrices: Key Strategic Imperatives Using a Model Level Continuum to Bridge the Gaps and Securing Our History** ■; Tricia Lawrence Powell
- 11:00am – 11:30am **Disaster Risk Management in the Rafael Núñez House Museum: An Integral Project to Mitigate the Effects of Climate Change in the Colombian Caribbean Coast** ■; Ana Paula Gomez
- 11:30am – 12:00pm **Climate Risk Mapping for Texas Archives: Working Iteratively with Students for Disaster Preparedness** ■; Sarah Norris
- 1:30pm – 2:00pm **Getting to Maybe: A Case Study in Implementing Bizot Green Protocol as an Outgoing Loan Standard** ■; MaryJo Lelyveld
- 2:00pm – 2:30pm **Acoustic Emission and Collection Monitoring at Distance: Reimagining Connections between Scientists and Conservators** ■; Michał Łukowski
- 2:30pm – 3:00pm **Benchmarking Method to Set Risk Control Priorities for Light Exposure and Strategize Microfading at Collection Level** ■; Christel Pesme
- 3:00pm – 3:30pm **Working with Windows: A Case Study in Assessing Risk and Developing Solutions in Exhibition Spaces with Windows** ■; Jacinta Johnson
- 3:30pm – 4:00pm **From Condition to Risk Assessment: A Documentation Protocol for the Preventive Conservation of Contemporary Public-Art Collections** ■; Marta Gómez Ubierna

CONTEMPORARY ART (CAN!) (see p. 92 for abstracts)

SANTA BARBARA

- 10:30am – 11:00am **The Conservation of a “Walk-in Assemblage”: Michael C. McMillen’s *The Central Meridian* at LACMA**; Jessica Chasen
- 11:00am – 11:30am **Past, Present and History of a Work of Art: The Decision-Making Process in Conjunction with the Artist for a Respectful Intervention**; Luciana Murcia
- 11:30am – 12:00pm **Death in Conservation: Have We Had an Honest Conversation?**; Martha Singer



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CONTEMPORARY ART / ELECTRONIC MEDIA JOINT SESSION (see p. 93 for abstracts)

SANTA BARBARA

- 1:30pm – 2:00pm **The Challenge of Preserving the Spirit of Protest: Documenting and Digitally Reconstructing a 2020 Washington, DC, Black Lives Matter Memorial;** Anonymous
- 2:00pm – 2:30pm **Towards a Conservation Ethics for the Age of the Anthropocene;** Helia Marcal
- 2:30pm – 3:00pm **NFTs, Capitalism, and the Market: The Increasingly Important Role of Conservation in Markets and Decolonial Practice;** Amy Whitaker
- 3:00pm – 3:30pm **Panel and led Discussion**





OBJECTS (see p. 99 for abstracts)

SAN DIEGO

- 10:30am – 11:00am **Magnetic Holder with Pressure Adjustment: The New Solution in Conservation and Displaying Works of Art and Artefacts;** Zuzanna Szozda
- 11:00am – 11:30am **Collaborative Documentation to Inform Future Reprinting: Acquiring Additively Manufactured Objects at Tate and Science Museum, London;** Libby Ireland
- 11:30am – 12:00pm **Replication of Fine Surface Details through 3D Scanning and Printing: Current Capabilities and Limitations;** Robert Price

OBJECTS / ARCHAEOLOGICAL DISCUSSION GROUP JOINT SESSION (see p. 100 for abstracts)

SAN DIEGO

- 1:30pm – 2:00pm **Layers and Layers: An Overview of Treatment Approaches for Egyptian Cartonnage at the Penn Museum** ; Tessa de Alarcon
- 2:00pm – 2:30pm **Water Based Consolidants for the Treatment of Low-Fired Ceramics** ; Céline Wachsmuth
- 2:30pm – 3:00pm **The Effect of Conservation Agents on Non-destructive Dendrochronology;** Ingrid Stelzner
- 3:00pm – 3:30pm **Going to pieces for Conservation: Experiences Gained and Lessons Learned from Ten Years of Disassembling USS *Monitor* Composite Artifacts** ; Will Hoffman
- 3:30pm – 4:00pm **Building Back Better: A Collaborative Approach to Reconstructing an Egyptian Palace** ; Jessica Betz Abel

PAINTINGS (see p. 106 for abstracts)

EMERALD BAY

- 10:30am – 11:00am **Paintings Tips Session**
- 11:00am – 11:30am **Analytical Study of the Unique Icon of St. Joseph with the Child at Virgin Mary Church in Haret Zuwaila, Cairo, Egypt;** Emil Henin
- 11:30am – 12:00pm **Modern Life in the Museum: Nanoindentation Study of Soft and Dripping Oil Paints in Four Artworks by Karel Appel and Asger Jorn;** Ida Antonia Tank Bronken
- 1:30pm – 2:00pm **A Step at a Time: Reconsidering the Look of Charles Willson Peale's 1795 Staircase Group;** Lucia Bay
- 2:00pm – 2:30pm **Unravelling the Varnish Layers on Rembrandt's *Portrait of Marten Soolmans* through Interdisciplinary Research;** Petria Noble
- 2:30pm – 3:00pm **Dans les loges: Girodet's *Coriolanus Taking Leave of his Family* and the Grand Prix Contest;** Gerrit Albertson
- 3:00pm – 3:30pm **Technical Examination of *Card Players* (1958) by Hale Woodruff;** Anna Vesaluoma

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PHOTOGRAPHIC MATERIALS (see p. 110 for abstracts)

SACRAMENTO

10:30am – 11:00am	Dye Sublimation Prints on Aluminum: A Material Investigation of a New Process; Silvia Kolly
11:00am – 11:30am	Potential Methods for Documenting and Monitoring Silver Mirroring on Photographs; Bryanna Knotts
11:30am – 12:00pm	Negotiating the Care of Complex Contemporary Works on Paper and Photographs with Artists and Curators: How Can We Realise an Artist's Vision?; Emily Williams
12:00pm – 1:30pm	BPG/PMG Joint Lunch & Wiki Session; Diane E. Knauf and Michelle C. Smith
1:30pm – 2:00pm	Evaluating the Potential for Freezing and Freeze Drying to Improve Water Emergency Outcomes for Inkjet Prints over Air Drying; Meredith Sharps Noyes
2:00pm – 2:30pm	The Impact of Early Photography and Electrotyping Media on the Creation of Images and Contemporary Art; Valentina Ljubić Tobisch, Wolfgang Kautek



RESEARCH & TECHNICAL STUDIES (see p. 116 for abstracts)

AVALON

10:30am – 10:45am	Application of Laser-Induced Breakdown Spectroscopy (LIBS) For Micro-Sampling-Based Elemental Analysis of Cultural Heritage Objects  ; Richard Hark
10:45am – 11:00am	Pushing the Limits – The Portable Laser Ablation Micro-Sampling Technique and its Application in Cultural Heritage  ; Alice Knaf
11:00am – 11:15am	Isotope and Trace Element Analyses Using Portable Laser Ablation at the Field Museum: A Progress Report  ; Laure Dussubieux
11:15am – 11:30am	Minimally Invasive, On-Site Sampling by Portable Laser Ablation  ; Detlef Guenther
11:30am – 11:45am	Lasers Panel Discussion and Q & A

RESEARCH & TECHNICAL STUDIES / WOODEN ARTIFACTS JOINT SESSION (see p. 117 for abstracts)

AVALON

1:30pm – 2:00pm	Identification of Mahogany and Look-Alike Woods in 18th- and 19th-century Furniture Using Laser-Induced Breakdown Spectroscopy (LIBS) and Pyrolysis Gas Chromatography Mass Spectrometry (Py-GC/MS); Richard Hark
2:00pm – 2:30pm	Study of the Mechanical Behavior of a Panel Painting under the Constraints of Its Cradle, in Order to Establish an Equilibrium Point of the System: Between Interdisciplinarity and Serendipity  ; Norman Verschueren
2:30pm – 3:00pm	Twins with Separate Lives: A Pair of Southeast Asian Side Tables with Different Treatment Histories Rooted in Different Cultures?  ; Birte Koehler Avalon
3:00pm – 3:30pm	Technical Study and Conservation of Korean Late Joseon Dynasty Lacquerware  ; Colleen O'Shea
3:30pm – 4:00pm	Microscopic Examination of Asian Lacquer Surfaces Prior to Treatment  ; Marianne Webb

SUSTAINABILITY (see p. 120 for abstracts)

HOLLYWOOD BALLROOM

- 10:30am – 11:00am **A Hand in the Past, a Repair for the Future? The Reuse and Recycling of Materials in Library and Archive Conservation** 📺; Victoria Stevens
- 11:00am – 11:30am **Alternative for Toxic Chemical Timber Preservatives** 📺; Binumol Tom
- 11:30am – 12:00pm **Reconciling and Honouring Intangible Values in Spaces of Negative Heritage: Identifying a Sustainable Conservation Approach to Fire-Damaged New Cross and Grenfell** 📺; Talia Weiss

General Sessions

CLOSING GENERAL SESSION (see p. 75 for abstract)

SAN FRANCISCO/SAN JOSE

- 4:15pm – 6:15pm **Leadership. Evolution. Communities.** 📺

WEDNESDAY, MAY 18

TOURS

- 8:30am – 1:00pm **The Huntington: Conservation Labs, Collections, and Gardens** \$39

SEMINARS

- 8:30am **Life After Conservation** \$29 Silver Lake

WORKSHOPS

- 9:00am **Rigging Basics for Conservation Professionals, a 3-day workshop** \$499 LACMA off-site storage facility

Don't forget to stop by the Annual Meeting Literature Showcase and Publications Stand!

Located near the registration booth, you can find informational flyers and vendor handouts as well as purchase these items onsite (while they are in stock):

- *Preventive Conservation: Collection Storage* (very limited quantities)
- *Field Guide to Emergency Response*
- Emergency Response and Salvage Wheel (available in English and Spanish)
- *Platinum and Palladium Photographs: Technical History, Connoisseurship, and Preservation* (very limited quantities)
- Friends of Conservation: Find swag that supports FAIC

May 23–27 Virtual Events

MAY 23–27 VIRTUAL-ONLY EVENTS

Join us on the AIC Learning Platform to attend all business meetings

MONDAY, MAY 23

8:00am PT / 11:00am ET **RATS Business Meeting**
9:00am PT / 12:00pm ET **CIPP Business Meeting**

TUESDAY, MAY 24

9:00am PT / 12:00pm ET **PMG Business Meeting**
9:00am PT / 12:00pm ET **TSG Business Meeting**
1:00pm PT / 4:00pm ET **OSG Business Meeting**
10:00am PT / 1:00pm ET **CAN! Business Meeting**

WEDNESDAY, MAY 25

10:00am PT / 1:00pm ET **AIC Member Business Meeting**

THURSDAY, MAY 26

10:00am PT / 1:00pm ET **PSG Business Meeting**
10:00am PT / 1:00pm ET **BPG Business Meeting**
11:00am PT / 2:00pm ET **EMG Business Meeting**
1:30pm PT / 4:30pm ET **ASG Business Meeting**

FRIDAY, MAY 27

10:00am PT / 1:00pm ET **WAG Business Meeting**

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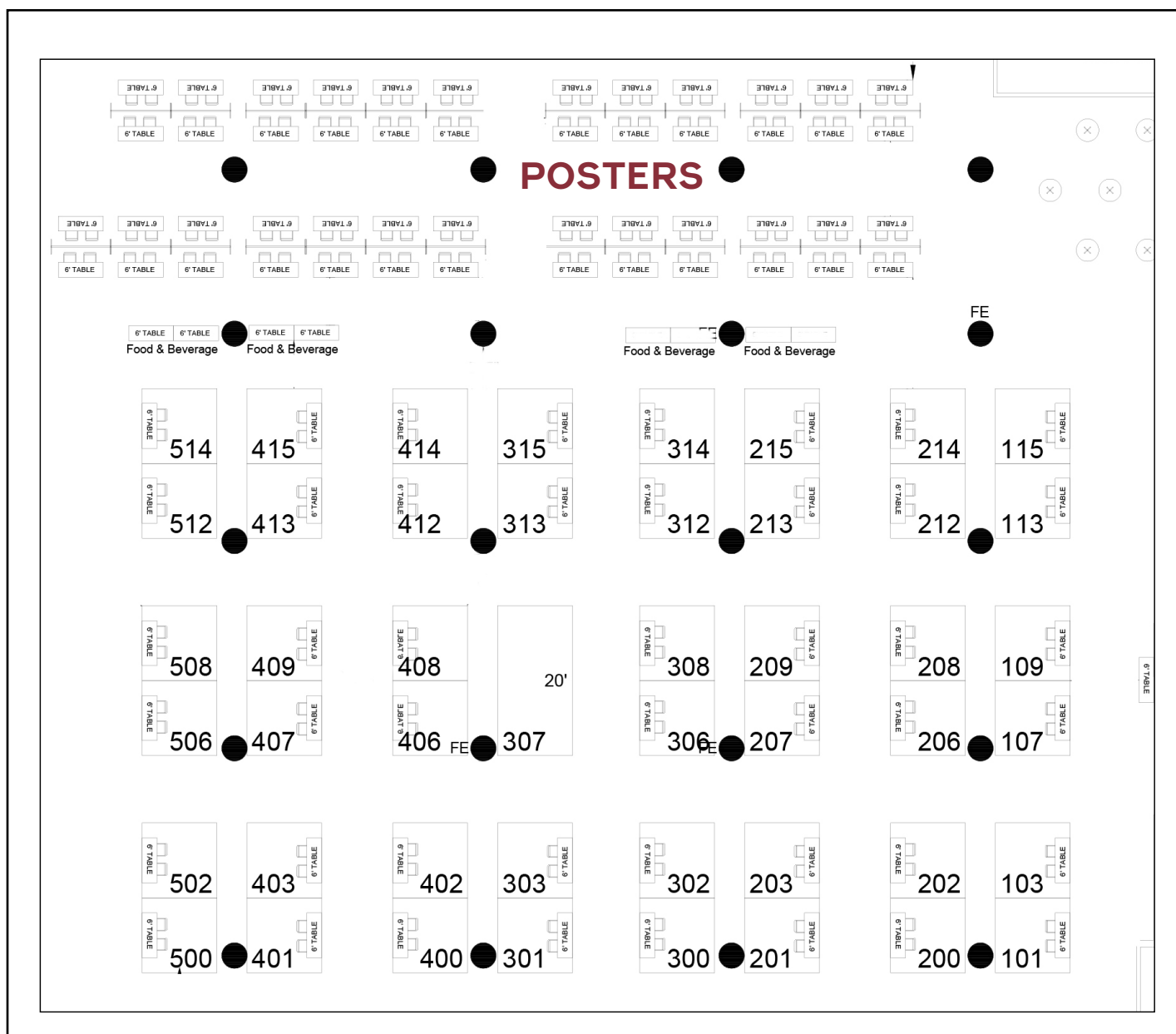
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- Worried that your gloves won't protect against the solvents you use? See our *Glove Selection Chart*
- Concerned about chemicals or safety equipment in your studio? *Come talk to us!*

Exhibitor Map



AIC's Exhibit Hall will be open Saturday night through Monday, May 14-16. Join us Saturday 6:30pm-8:30pm, and Sunday and Monday from 10:00am-5:30pm. The Exhibit Hall is located in the Pasadena Ballroom.

Visit posters and enjoy refreshments while you peruse our vendors' offerings during session breaks on Sunday and Monday 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 Saturday, 6:30 to 8:30pm!

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Sunday & Monday, May 15-16, 10:00am-5:30pm

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* These exhibitors were unable to attend.

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Exhibitor Profiles

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AIC NETWORK: HEALTH AND SAFETY

Booth # 400

Website: www.culturalheritage.org/healthandsafety

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AIC & FAIC: INFORMATION

Booth # 508

Website: www.culturalheritage.org

Visit the AIC and FAIC Booth to learn more about our programs, discuss membership, and share thoughts about member engagement.

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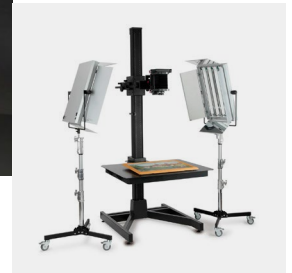
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Read the poster abstracts on pages 124-134 to familiarize yourself with the topics, then meet the poster authors to discuss their research at their posters on **Monday, May 16, during the 3:30pm break.** Posters will be on view whenever the Exhibit Hall is open.

- 1** **Assessing the Damage: Strategies for Approaching the Conservation of Fire-Damaged Stained Glass**
Alexandra Wysopal
- 2** **Getting Back to Basics: Low-Tech Consolidant Testing on a Tight Schedule**
Aliza Taft
- 3** **The Fault in Our Ions: A Preliminary Investigation into the Use of Bipolar Ionization for Museum Spaces**
Austin Anderson
- 4** **Now You See It...**
Barbara Rhodes
- 5** **Virtue of Text: The Tangible and Intangible of Tibetan Manuscripts**
Basia Nosek, Mary Haude, Julie Biggs, Yasmeen Khan
- 6** **Monument and Social Space: Conservation Experiences in Monumental Urban Spaces of Historic Center of Lima**
Boris Marquez
- 7** **Exploring the Past: An Ongoing Research Project about the Development of Conservation in Austria**
Catherine Bouvier, Magdalena Schindler, Sigrid Eyb-Green, Wolfgang Baatz
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- 8** **From Empirical Practice to Interdisciplinary Task: The Evolution of the Cultural Heritage Conservation**
Damasia Gallegos, Romina Gatti, Dolores González Pondal, Mariana Bini, Ana Morales, Fernando Marte
- 9** **Planning for Future Storage of Architectural Materials, Tips from Rehousing Richard Neutra's Collection**
Devin Mattlin
- 10** **The Dutch Method Unfolded: A Masterclass to Revisit the Wax-Resin Lining Method and Facilitate the Future Conservation of Wax-Resin Lined Paintings**
Emilie Froment
- 11** **Creating Simulated, Graphitized Archaeological Cast Iron Samples for Testing Conservation Treatments**
Erik Farrell
- 12** **Portable Protocols: Safe Conservation in Temporary Labs**
Liatte Dotan, Fran Ritchie
- 13** **Mist Consolidation: Future Treatment Potential for Deteriorated Iron-Dyed Yarns**
Heather Hodge
- 14** **Recovering the Missing Aura: A Conservation Study on the Feasibility of Fire-Damaged Manuscript Books Rebinding and the Strength of Paper Changing**
Hsuan-Yu Chen
- 15** **More than a Burnt Stick: A Visual Glossary of Charcoal Products**
Dominic Clay, Jan Burandt
- 16** **Accessibility in the F/AIC: Our Membership, Our Strengths, Our Challenges**
Sally Gunhee Kim, Ronel Namde, Jennifer Teper
- 17** **No Longer Original: The Conservation Challenges of Raymond Loewy's Personal 1963 Studebaker Avanti in LACMA's Collection**
Jerry Smith, Laura Maccarelli, John Hirx, Bobbye Tigerman
- 18** **Preliminary Research into Curricula in Sustainability for Cultural Heritage Conservation**
Justine Wuebold, Glenn Wharton, Ellen Pearlstein, William Shelley
- 19** **Rehousing Pothe Format Books from the Harvard-Yenching Library: Considering Materiality and Spirituality**
Katherine Beaty, Rachel Bissonnette, Kathryn Kenney
- 20** **Brain Tanned Leather for Bookbinding: History, Use, and Identification**
Katherine Kelly, Lydia Aikenhead, Dan Paterson, Frank Trujillo
- 21** **FORMETAL: Aluminum Mesh for Mount-Making and Supports**
Katherine McFarlin, Kei Takahashi
- 22** **Iron Stain Reduction on Painted Surfaces: Treatment of a Korean War Era Missile**
Kathryn Brugioni Gabrielli, Lauren Horelick
- 23** **Leather Use in Treatment: A Comparison of European and U.S. Trends**
Katharine Wagner, Holly Herro, William Minter, Kristi Wright
- 24** **COVID-19 Cleaning Programme of the Parliamentary Historic Working Collection**
Loredana Mannina
- 25** **History of Ethical Documents and Charters**
Madeline Hagerman
- 26** **Theresienstadt Toys: Creating Custom Housing for Concentration Camp Items**
Maren Rozumalsk



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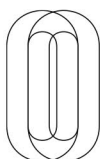
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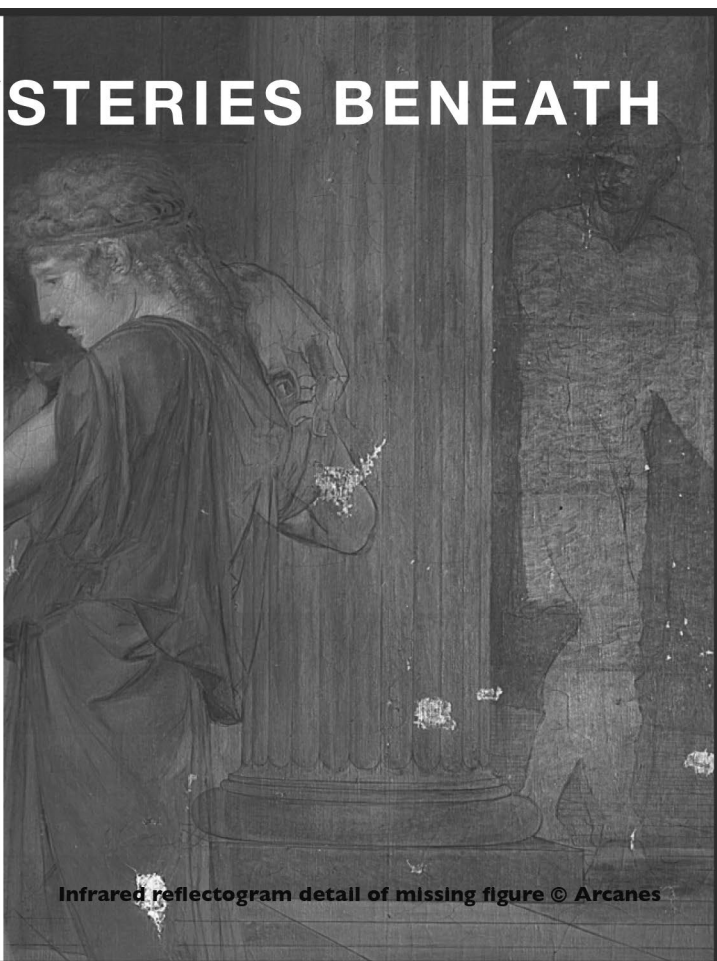
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POSTERS

Meet the poster authors to discuss their research at their posters on **Monday, May 16, during the 3:30pm break**. Posters will be on view whenever the Exhibit Hall is open.

- | | |
|--|---|
| <p>27 Ethical Considerations for Judaica in Collections
<i>Margalit Schindler</i></p> <p>28 Challenges in Radiocarbon Dating Leather
<i>Margaret Davis, Sara Lincoln, Brendan Culleton</i></p> <p>29 Consequences and Perspectives of Brazilian Conservation Associations in COVID-19 context
<i>Mariana Wertheimer</i></p> <p>30 Project for Personal Training of Services and Historical Conservation for Historical and Heritage Buildings Online Educational Platform
<i>Mariapia Tamborini, Giselle Canosa</i></p> <p>31 Flags and Pigments: The Conservation Treatment and Analysis of Two Flags from Costa Rica, 1921
<i>Mariela Aguero Barrantes, Carlos Pacheco, Mavis Montero, Roberto Urcuyo, Juan Morice</i></p> <p>32 Non-invasive Technical Analysis of Illuminated Manuscript Leaves from the W.D. Jordan Rare Book and Special Collections, Queen's University: A Collaborative Project
<i>Marissa Bartz, Gabriela Rosas, Grace McClean, Jerome Paquet</i></p> <p>33 Feather Fills and Recoloring of Faded Parrot Taxidermy
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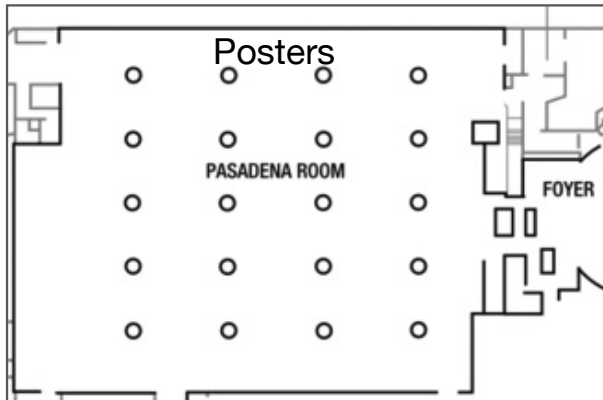
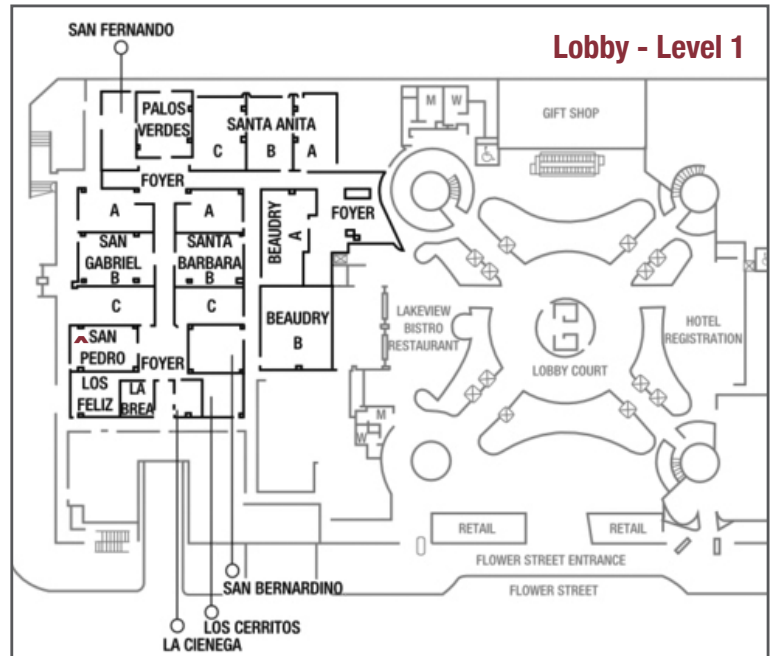


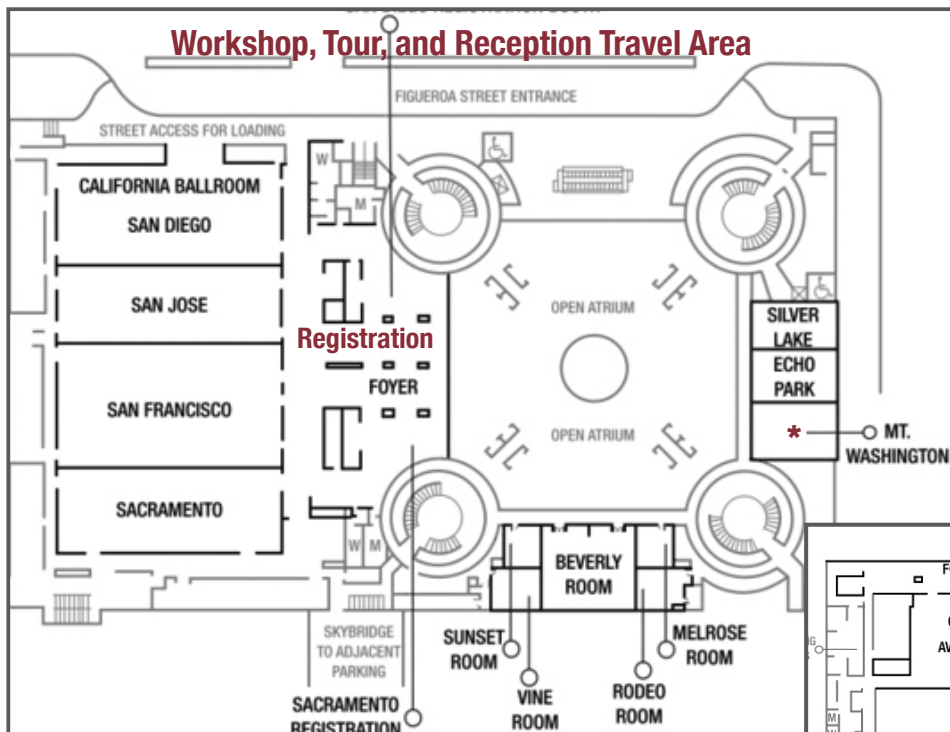
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Architecture, CAN!, Collection Care, Electronic Media, Wooden Artifacts Sessions

Lobby Level Rooms

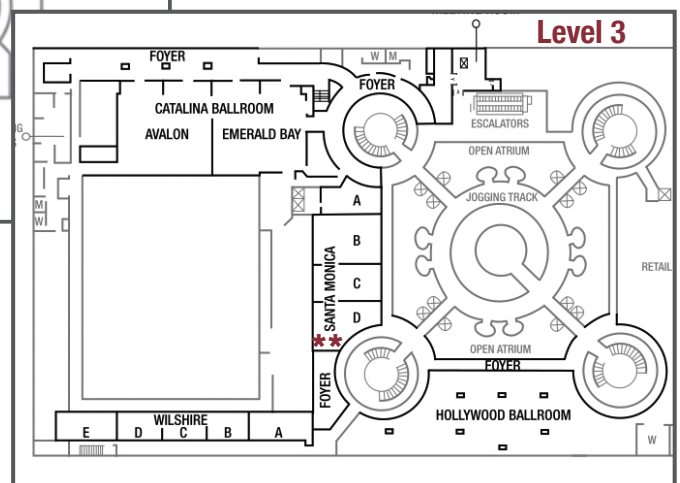
- ^ Quiet Room: San Pedro
- * Speaker Ready Room - Mt. Washington
- ** Nursing Mothers Room - Santa Monica - D

RATS, Paintings, Sustainability, Textiles Sessions

Level 3 Rooms

General Sessions, Book & Paper, Paintings, Photographic Materials, Objects Sessions

Level 2



Level 3

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Opening General Sessions

On the Use of Culturally Appropriate Technical Terminology

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Since the Grand Tours of British aristocrats of the 17th century, Italian has been the language of refinement, especially in connection to fine art. The social standing and influence of those tourists ensured that their preferences became the accepted norm. With the growth of the British Empire, these preferences became accepted without question, even as colonies broke away and gained independence. Technical art history has its origins with Edward Waldo Forbes at Harvard University's Fogg Art Museum in the early 20th century, which held onto those accepted norms. Consequently, Italian terms are used in English language technical art history papers no matter the origin of the art. These are terms such as gesso, imprimatur, sgraffito, chiaroscuro, pentimento, terracotta, stucco, fresco, intaglio etc. which carry with them an implied and specific meaning. A move towards a diversified and inclusive language is needed. There is a growing awareness that conservation and technical art history are not neutral. However, we have long used the observations of anthropologists and ethnologists working through the filter of their own cultural assumptions. Additionally, the use of Western scientific terminology comes with its own biased values. To use the word gapan to describe a white siliceous clay indicates a material from an Australian Aboriginal culture, and with that a respect for the artist's own language rather than overlaying weighted synonyms such as kaolin, china clay, pipe clay or Devonshire clay. Yet, the use of the word gapan is rare, even though it is in the title of works by acclaimed artist Nyapanyapa Yunupingu who uses this pigment extensively. When describing an Indian painting the term gaugoli must be more appropriate than Indian yellow; when describing a Spanish painting the term yeso must be more appropriate than gesso. The dyes from Kuchinashi and beni, rather than gardenia and safflower, combine to produce outan 黄丹, a deep yellow, which is the designated colour for the robes of a Japanese crown prince.

Cultures develop specific languages to describe their art making materials and methods, and the insertion of foreign terms can lead to assumptions or misinterpretations, losing subtle meanings in translation. We are dealing with cultural objects and the use of culturally appropriate terms is encouraged. This paper calls for workers and authors in the field to be thoughtful when studying art; staying cognizant that the words used to describe the materials chosen by artists carry meaning that is reflective of their culture. Changes can come about through teaching and the mentoring of emerging conservators and curators. Written guidelines have been created in the Harvard Art Museums giving an expanded and inclusive vocabulary now used by curators, conservators and editors resulting in changes in cataloguing practice and publications. The guidelines are easily updated as needed ensuring that the change evolves and is long lasting. It is to be anticipated that a richer and more nuanced vocabulary for technical art history will arise.

Cultural Heritage Preservation into the Twenty-First Century: Integrating Sustainability with Conservation

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Future growth for all professionals will depend on incorporating sustainable practices, considering the environmental impact of our work, and confronting new obstacles and choices. Any realistic future we imagine will include global climate change, one of the greatest challenges of the twenty-first century. For preservationists, behaving responsibly in this new future will necessitate realizing the cost of our work to the environment resulting from creating, preserving, exhibiting and

storing cultural heritage. Many aspects of cultural heritage preservation depend upon materials and actions that deplete natural resources or use harmful materials, such as petroleum-based solvents in treatment, but it is difficult to know how to make greener choices. Empowering cultural heritage professionals to explore impacts of the materials we choose and the actions we carry out without compromising the quality and core mission of our work is key to lessening the environmental impact resulting from cultural heritage preservation. This presentation will introduce tools for quantifying sustainability, notably life cycle assessment (LCA), as it relates to examining materials and practices in our field. We will discuss the four Ps (people, planet, profit, program) of sustainability, the relationship to cultural heritage creation and preservation, the important role cultural heritage plays in environmental stewardship, and the foundation laid by the 17 Sustainable Development Goals (SDG) outlined by the United Nations and further implemented by ICCROM.

Through explanation and demonstration of FAIC's Sustainability Tools in Cultural Heritage (STiCH) site, we will give examples of how to incorporate LCA results into our daily decisions, empowering individuals to take action towards reducing the carbon footprint by the cultural heritage field. The National Endowment for Humanities (NEH) has funded The Foundation for Advancement In Conservation (FAIC) for the past four years to create STiCH, a suite of science-based tools based on LCA. STiCH is comprised of a carbon calculator, library of case studies, and information sheets. It enables historic preservationists to make educated choices that lower their environmental impact by easily incorporating sustainable practices into their various activities ranging from treatment to storage and exhibition materials. Due to the urgency of climate change, this topic is relevant to all conservators and historic preservationists regardless of the amounts of solvents, materials, or energy they use. Individuals' impacts all add up. The principal investigators (PIs) of STiCH are the leading experts in sustainable practices related to cultural heritage. This presentation by STiCH PIs fulfills an essential role at the general session by opening a discussion about managing cultural heritage in a future with climate change, while providing solutions for preservationists to carry out their work in an environmentally responsible way.

Green Tea Flowers Bloom In Autumn: A Reflection of a Korean American Architectural Conservator in the American Southwest

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¹Self, Nogales, AZ, US

As a Korean immigrant conservator, my time in the Southwest has been an eye-opening journey. This presentation is not about what I do for my current employer. It is about my personal time, and is entirely subjective in nature. I have a lingering sense that my story might be more common than most people perceive it to be intuitively. What has been lacking is putting the conservators under the spotlight and listening to them for who they are - as humans - before critiquing their works and their choice media for their work. Instead, I will reflect on a few threads in my experience that took place far away from my home culture, hoping they will resonate with other conservators and allied professionals. I want to see if my narrative is indeed reasonably common-place and therefore accessible. Conservation is meant to help those who relate to all forms of cultural heritage and find meaning in them, to help them to empower themselves and to express that empowerment in different forms, sometimes as art. It becomes a cycle and a flow. I believe sustainability and permanency of cultural heritage derives from the succession of relating and connecting, and not solely from the extent to which a decay is slowed down physically.

I struggle to find a place in the U.S. that connects me to the landscape and culture of Korea. So, instead, I carry it on my own and create it anew in my mind, appropriate for my context. To do this, I myself need to understand and to feel the aesthetics of Korean art and the traditional Korean worldview. I used to think that being a conservator and handling Korean artworks in a lab would help me get a fleeting opportunity to savor this mythical Koreanness. It turned out to be just that, an ephemeral privilege. Conservators' first-hand experience is quite often not truly accessible to most others, protected behind glass frames and security cameras. Making the connection is already hard; that tangible extra separation at the last one foot of distance feels permanently insurmountable, and that separation is something even a long distance flight cannot shorten. So where should I seek solutions? In this presentation, I will share my background as an architectural

GENERAL SESSIONS: OPENING

conservator and my experience in the arid Southwest. I suggest we encourage each other to take a leap of faith in letting go of the obsession for the materials we all strive to preserve. Instead, I would like to nudge each other toward setting our eyes on people and have them lead the way so that they can show us how the connections to their cultures are sustained within their elements and in their own ways. They need not come from your home culture. The tangibles in museums, your hometown, or even your home culture will approach in your minds differently once the emphasis is shifted to people. You will find a renewed purpose, as I am finding out myself in the American Southwest.

Settling Between the Chairs: The Development of Conservation towards a Scientific Discipline as Reflected in the Establishment of a Formal Academic Training in Early 20th Century Vienna

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It is often stated that conservation is rooted in artisan and artistic traditions and has evolved towards a scientific discipline at the intersection of science and humanities. In our research project History of Conservation in Austria: Tacit Knowledge and Disciplinary Professionalization, we took a closer look at these developments, exemplarily studying the establishment of a formal academic training in conservation at the Academy of Fine Arts in Vienna, whose first beginnings go back to the early 20th century. In doing so, we understood the concept of “scientific discipline” as constantly interacting forces of epistemic endeavours and cultural practices, fabricated and handed down by a scientific community which itself is constituted by a network of individual participants and institutional as well as social contexts. Adopting a mixed-methods approach of guided expert interviews, archive research and discourse analysis, we approached some of the fundamental questions of how we became what we are as a knowledge community: Who was permitted into the field, which selection mechanisms were applied, and how were students socialized into the community? Which behavioural patterns were encouraged, which were deemed inappropriate, and what was considered “good”, respectively “bad” conservation practice? How was conservation taught, where did controversies arise, and how were hierarchies demonstrated? In which way have other scientific disciplines shaped conservation and how were borders drawn? Where do our attitudes, activities and cognitive styles come from? And, finally, what do all these observations tell us about the self-perception of the scientific community, its implicit norms and core values and its place in society? In this contribution, we take a close look at ourselves and reflect on seemingly self-evident facts, because we strongly believe that this determination of position may help us to more consciously continue our way into the future.

Object, Memory, Conservation and Restorative Justice

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Things are neither inert, as demonstrated by anthropologist Ian Hodder[1], nor isolated. Instead, humans and things are deeply entangled through systems of knowledge, exchange, production and consumption. In addition, the entanglement is also emotional. Objects have symbolic power and therefore emotional charge. Insofar as the individual psyche can be a model for the collective one, thinking of the objects we each carry with us throughout life can be a helpful way to understand how objects can acquire emotional significance beyond their original function, through memory and association. We are fond of objects that remind us of people we loved, or past circumstances that we view positively. Objects that remind us of bad circumstances, unpleasant events, or people who have harmed us, have negative associations. Keeping the former provides feelings of joy or comfort. On the other hand, a process aiming at either disposing of the object with bad associations, or voiding it of its power, can become a cathartic and healing one. This in part equates to say that what societies keep or do not keep, as well as how they keep it, is critical in defining how we deal with our past and

therefore how we define both present and future. Conservators have recently been keenly aware of this fact. But dealing with objects and how they shape memory can also help heal collective wounds. I would like to argue that the emotional power of material objects could be more systematically harnessed by turning to the principles of Restorative Justice. While Hodder underlines the entanglement between things and humans, Restorative Justice is also profoundly relational and emphasizes the interconnectedness between humans. Fania Davis explains that Restorative Justice is a “proactive relational strategy to create a culture of connectivity”[2]. This approach underpins many truth and reconciliation efforts, in which reconciliation does not equate forgiveness. It promotes restitution and reconciliation over vengeance or punishment, and takes into account the overall needs and responsibilities of the entire communities. Restorative Justice would be a useful lens through which to consider decision making in conservation. Preservation, approached with critical reflexivity and mindful intention, has the potential to become a healing mechanism.

[1] Hodder, Ian. 2012. *Entangled: an archaeology of the relationships between humans and things*. Malden, MA: Wiley-Blackwell.

[2] Davis, Fania. 2019. *The little book of race and restorative justice: black lives, healing, and US social transformation*.

Disability Rights in Conservation

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This talk intends to clarify legislative efforts to secure an equal playing field for people with disabilities. Such people may be colleagues, visitors, or prospective students interested in entering the field. Often, conservators may think that conservation specifies “treatment.” Treatment is only one aspect of the job. Consider preservation surveys, environmental assessments, or re-housings. Despite limitations, not only do people with disabilities excel at their jobs, they are also capable of making meaningful contributions to the conservation field. As talented and productive members of any workforce, people with disabilities may be reluctant to reveal their status. Consequently, you may not immediately recognize your colleagues as being members of this group. Remember, we are all just moments away from becoming a person with a disability, and membership is open to all at any time. The Rehabilitation Act of 1973 was the first major effort to attain parity for persons with disabilities. Its focus was the US federal workforce. Section 501 focuses on persons with targeted disabilities who require Personal Assistance Service(s) (PAS) while working on-site. Section 504 prohibits discrimination against persons with disabilities and provides for reasonable accommodations. Section 508 requires federal agencies and those receiving monies from the federal government make electronic communications and information technology accessible to all. Think about the source of your grants. Private conservators seeking contract work within the federal government also need to observe all the specifications outlined in a federal contract. In practical terms, needs are addressed through success criteria and best practices to enable accessibility for all. Assistive technology may present information in altered but accessible formats. For example, people who are deaf or have limited hearing may rely on captioning or sign language. Those who are blind or have limited vision may use screen readers. Not everyone is able to manipulate a mouse; keyboards can also serve as assistive technology. Those with cognitive, language or learning issues may need information presented simply, in plain language and allowed additional time. Why is knowledge of the laws important for those in conservation? Knowing the laws provides legal protection, develops self-advocacy skills, reduces stress, increases comfort levels, and provides freedom to examine benefits. It is also the right thing to do. We will include examples in which people with disabilities working in conservation are being easily accommodated. Imagine someone with epilepsy who has a service dog to alert her before a seizure. She can immediately stop what she is doing, sit down, and safely get through the episode. The service dog accommodation assures her owner's safety as well as that of the project. An accommodation may be needed should an accident leave a conservator with limited mobility in his legs. He is unable to stand at a tall bench, but can still do the job from a seated position at a lower bench. Can you visualize any situations where you have worked with someone in conservation that has a disability or who developed disability later in their career?

Building A Firm [Data] Base: What the AIC COVID-19 Impact Survey Tells Us About the Conservation Field

Sarah Reidell¹

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What do we as conservation professionals really know about ourselves? This presentation will highlight results from the 2020 AIC COVID-19 Impact survey that tell us who we are, where we work, our cross specializations, our geographic distributions, and more. The survey was distributed as four pulse questionnaires in 2020 to AIC members throughout the first six months of the catastrophic COVID-19 pandemic, asking questions in three basic areas: How are you doing at home? How are you doing at work? And what can AIC do for you now? The pulses tracked the ebb and flow of personal and professional concerns including institutional closures, furloughs, work from home demands, economic instability, wellness concerns, and other topics. The statistically and administratively meaningful data is ripe for continued analysis. The survey series also underscored major data voids that undermine our ability to know our community and advocate for its continued health, development, and vibrancy. Comparative analysis of key facets of the data will share current and future insights into the AIC membership, forming a firm foundational base for future data collection, organizational priorities, and guidance.

Legitimizing the Past: Conservation, expertise and the power of transformation

Caitlin O'Grady¹

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The power of conservation to legitimize claims about the past through preservation is an important facet of the discipline in the twenty-first century. The process of transforming cultural heritage into accepted narratives has been an integral part of conservation practice with its origins in the development of nationalism as a political and ideological tool in the late 19th and early 20th centuries. Efforts to acknowledge, re-examine, and critically understand the pervasive and continued impact of colonialism and marginalisation of the "other" in favour of Western ideologies is a crucial part of ongoing and necessary discussions by the profession. Further, the process of decolonizing how cultural heritage is used by institutions and experts requires significant reassessment of the impact of conservation practice, as well as related curricula and pedagogy on how we understand the past. Whether used to construct and substantiate understandings of history, identity, and nationhood, the practice of conservation requires more than neutrality and scientific impartiality. Unpacking the ways in which conservation can and has been used as a political tool requires review of hierarchical choices made by experts and institutions during the practice of conservation in various settings (museums, universities, and archaeological sites, etc.) in the past and the present. The critical relationships between experts have profound impact on the evolution of the mechanisms by which conservation expertise, knowledge, and terminology is codified and used to authenticate accepted histories by other experts. Further, the importance of disciplinary authority in negotiating preservation and substantiating these narratives requires more synthetic discussion by the profession. This paper investigates the social construction of conservation expertise, as well as the identity of associated actors engaged in preservation. It highlights the use of conservation as a tool to develop concepts of nationalism and identity. Case studies will examine how conservators and other actors (artists, archaeologists, and scientists, etc.) apply and use conservation to legitimize claims to authority about the past in museums, universities and archaeological sites through exhibition, publication, and training. Investigation and critical assessment of published and unpublished documents allows one to reconstruct the subtle, and not so subtle, power struggles between experts, technicians, and native stakeholders, as they investigate and construct narratives of the past. Finally, this process of negotiation along disciplinary lines has resulted in a hierarchical system of expertise that continues to have ramifications for contemporary conservation practice, professionalization, and decolonization of the field.

Luncheon/Midday Sessions

Socratic Dialog: The future of the conservation profession

While celebrating the 50th anniversary of the incorporation of the AIC, its members are being asked to look into their crystal balls and imagine what the future of the conservation and the AIC will be in the next 50 years. One of the AIC's main efforts over the years has been and continues to be raising professional and public awareness of conservation, and improving the status of the conservation profession in the cultural heritage field, with the ultimate goal of having it become an officially recognized profession. These objectives have been the motivation behind past efforts to develop a certification system, and current efforts to develop a new membership designation system. However, efforts to develop certification and/or membership designation systems have always been met with controversy, not only for the AIC, but for other national and international conservation organizations as well. Emotions often run high as issues such as qualifications for training and experience, certification procedures and membership designations are discussed and debated. Given the enormous difficulties experienced by certification and membership designation initiatives, the question arises as to what triggers so many different and conflicting opinions, and in many cases, resistance? In the continuing series of such dialogues at AIC annual meetings, a Socratic dialogue is thus proposed for the 2022 meeting in Los Angeles for members to reflect on what they want to achieve for themselves with some type of certification and/or with a particular membership designation. What does it mean to them to raise the status of the conservation profession? A Socratic dialogue is a structured form of dialogue in which all participants actively contribute. The purpose of the dialogue is not to find a solution to the controversies surrounding membership designation or certification. The Socratic method provides a safe, open environment for participants to investigate what the essence is behind their own points of view as well as those of others about what their status is in the cultural heritage field is and what they would like it to be.

ECPN Informational Session and Myth-busting Specialty Group Panel

Much of the focus of ECPN programming and initiatives since April 2020 has been about outreach. While we were all quarantining and had limited access to our workspaces and our colleagues, we made so much more of an effort to connect and engage with each other virtually. Now that we have this chance to interact with one another in person, the ECPN would like to give members of each specialty group an opportunity to do some in-person outreach to their fellow conservators. Working directly with colleagues in different specialties in person is often a luxury (one that ends after grad school). Collaborative work allows for incredible opportunities to learn about and experiment with methods and materials that may be foreign to one's own practice. Please join ECPN Officers for an initial lunch-time informational session detailing information about the Network structure and the year's initiatives. This will be followed by a panel of emerged and emerging professionals from each of the AIC Specialty Groups as they present about their groups and some of the things they most wish their colleagues knew about them. Do you know what a day in the life of an architectural conservator looks like? How about a conservator in private practice or one who works with electronic media? Let's gather 'round and bust some specialty-related myths!

The Preservation and Conservation Issues of 19th Century Varnished Wall Maps: Panel

Seth Irwin¹, Panelists: Yasmeen Khan², Michael Lee³, Jessica Silverman⁴, Karen Zukor⁵, Thomas Edmondson⁶, Aisha Wahab⁷

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LUNCH/MIDDAY SESSIONS

Varnished wall maps present a complicated challenge for paper conservators. They are found in virtually every archive and library collection in the United States, as well as in the private sector. They are usually fabric backed, have had or still have wooden rods attached at the top and bottom, and are composed of several sections of paper adhered together. Many are very large and are usually around 5ft x 6 ft. The cloth backings, originally used to provide support overall, can be quite dirty and deteriorated, no longer providing that necessary support. These maps are usually printed in black ink with hand-coloring and outlined areas. Because of their size and general usage, they were frequently varnished, and that coating can darken or yellow over time, obscuring important information. Water staining is also very common from being hung in open public areas such as schools and court houses. Additionally, these maps present difficult storage problems, particularly in institutional collections, as they are larger than most flat file cabinets. Most have incredibly important historical value, often showing counties, towns, and businesses. Many were produced in small batches and those that remain are often the only copy left in existence. Not only is there little consensus throughout the field in how to approach these maps, but there are deep ethical dilemmas in addressing such issues as color loss, loss compensation, lining material, and especially varnish removal. Various and differing procedures have been employed by conservators in each phase of treatment. Often the biggest question is whether they should be treated at all. Often even the act of unrolling them causes pieces to fall off. Due to the extensive labour involved and sheer quantity held in collections, many institutions have simply 'given up' even attempting to treat them, resorting to leaving them rolled up. There are also significant differences between how these maps are approached in public and private collections. To address the many issues related to these maps, a two-hour lunchtime session will explore all these issues. The session will be formatted as a panel discussion comprised of six participants representing the variety of treatments in the U.S and the different areas of the field. The panel will consist of two paper conservators in private practice, two regional conservation labs, and two conservators from large collecting institutions. Each panelist will give a fifteen-minute presentation on different issues, ranging from varnish removal to storage. Representing the private sector will be conservators Karen Zukor and Tom Edmondson. Representing the regional centers will be Michael Lee, from NEDCC; and Jessica Silverman from CCAHA. Representing collecting institutions will be Yasmeen Khan from Library of Congress and Aisha Wahab from Stanford Libraries and the Rumsey Map Center. It is the hope that with representation from such a diverse panel, that the information presented will be applicable to all BPG members in attendance. The aim is to offer to the conservation community more insight and direction on methods and options for approaching these important but difficult objects.

A Failure Shared is Not a Failure, Learning From Our Mistakes

The 5th Annual Mistakes event, formally titled "A Failure Shared is Not a Failure, Learning From Our Mistakes" invites professionals from all conservation disciplines to join together over lunch to hear speakers share stories of mistakes, mishaps, accidents, and failures. This session aims to promote a healthier professional culture and cultivate understanding of why it's important to talk about and learn from mistakes.

CAN! Speed Mentoring

Inspired by and modelled after speed-dating, this session creates the chance to have short (10 mins) sessions of one-on-one time with recognized professionals in the field, without all the normal distractions associated with conferences. Your session is an opportunity to ask your mentor anything you want! You can talk about them, about you, about the field in general, or about anything else. You will have a one-on-one conversation, so nobody will interrupt you, and our impressive group of mentors are eager to listen, discuss and advise. At the end of your session, you will leave the mentor and have an opportunity to meet the other mentees, or ask questions to the organizers from CAN! and INCCA. If you are interested in reserving your time with any of the following mentors, please send an email to Jen Munch – can.ecpn.liaison@gmail.com. You may give a first and a second preference in case your first choice is already booked. Requests will be dealt with on a first-come first-served basis. Speed Mentors - 2022 AIC Annual Meeting J. Luca Ackerman is a photograph conservator in private practice, New York Joy Bloser is an assistant objects conservator at the Menil Collection, Houston Maureen Cross is a senior lecturer in the conservation dept of the Courtauld Institute of Art,

London Ben Fino-Radin is an art conservator, entrepreneur, and founder of Small Data Industries, New York Anna Lagana is a senior research specialist at the Getty Conservation Institute, Los Angeles Abigail Mack is a conservator in private practice, co-owner of Monumenta Art Conservation & Finishing, LLC, Hudson Valley, NY Ariana Makau is president and principal conservator of Nzilani Glass Conservation, San Francisco César Porras is a painting conservator in private practice in Bogotá, Colombia Rachel Rivenc is head of conservation and preservation at the Getty Research Institute, Los Angeles Luiz Souza is professor of conservation science at the Federal University of Minas Gerais in Belo Horizonte, Brazil

BPG/PMG Wiki Discussion Session

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

As in past years, feedback on changes to the wiki will be welcome. A discussion with the audience on selected BPG Wiki topics will follow and give direction on how to proceed with future updates. We invite conservators from all stages of their careers to attend this session and partake in the lively discussion that will add to the continued effort to build this collaborative knowledge base.

We want to thank the BPG Program Committee for including this session in the schedule. The feedback that we receive during these sessions is invaluable in planning for the future of the BPG Wiki and maintaining an engaged and active membership.

AIC's Strategic Plan: Help us Plan for the Future

Join AIC President Suzanne Davis for an interactive discussion on AIC's upcoming strategic planning process. Help us determine what to focus on next, and how we should go about it. Your experiences and suggestions will inspire and guide AIC's future.

About AIC's Strategic Plan: Our strategic plan is an action plan that arises from AIC's mission, vision, and values. Our plans usually extend for three years and define several strategic priorities or directions for the organization over that time period. These strategic directions sharpen AIC's focus and guide its major investments of resources. Our strategic priorities are not a comprehensive inventory of all the diverse, ongoing work that the organization undertakes. Instead, they are specific areas of concentrated, shared emphasis.

About These Conversations: This planning initiative began in November of 2021 with our Internal Advisory Group (IAG, AIC's member leadership group). IAG members offered feedback on key questions in two online surveys as well as during a discussion at our annual November meeting. Suzanne Davis, other AIC board members, and key staff collated the information gathered during this phase and used it as a starting point to identify and continue discussion with additional important member groups. To date, we have spoken with the boards of the Collections Care Network, the Conservators in Private Practice Specialty Group, the Emerging Conservation Professionals Network, the Equity and Inclusion Committee, the Education and Training Committee, and the Foundation for Advancement in Conservation, with additional upcoming meetings scheduled. To launch these broader member conversations, we'll provide an overview of what we've learned so far and then pose a series of questions to help shape the discussion. Please join us and add your voice to planning AIC's future.

Concurrent General Sessions

Track 1: Automation, Conservation, Preservation: Facing the Opportunities and Risks Posed by Technological Innovation

Structured Conservation Data for the Next Information Age

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Conservators' records provide crucial updates to the physical descriptions of tangible heritage after modification by conservation treatment, providing detailed accounts of materials and structures not otherwise described by registrars and catalogers. The 2016 FAIC project report *Charting the Digital Landscape of the Conservation Profession* summarized how heavy reliance on unstructured narrative reporting and the conservation field's failure to migrate data to the digital landscape have siloed the cumulative object histories that conservation documentation offers. Five years after the *Digital Landscape* report; twelve years after publication of the previous Mellon survey project report, David Green and Rachel Mustalish's *Digital Technologies and the Management of Conservation Documentation*; and after several calls to share and compare documentation form templates, the profession is no closer to the normalization and standardization necessary for findable and usable data in the digital era. Structured conservation data is essential for the construction of reliable object histories, viability analysis of treatment materials and techniques over time, and trustworthy records retrieval. After evaluating existing preservation data models against the AIC guidelines for conservation documentation, the author conducted an internal survey in the Stanford Libraries Conservation Services unit to gather the staff's reasons for consulting past treatment records and their documentation search criteria. The author then developed a database for conservation and assessment that employs a new conservation data model with the AIC guidelines as a broad framework complemented by findings from the internal staff survey. The new database application creates searchable, structured conservation data that is suited to analysis and advanced computing, while the front end leverages common contemporary web browser technologies to create modular and responsive forms that adjust to the reporting conservator's needs. The project utilized technology that is standard and accessible, but developing the extensible data model required much discussion between conservators and metadata specialists. To make any headway in modernizing conservation documentation, the field must pick up on Diane Zorich's *Charting the Digital Landscape* recommendations from 2016. Conservators should establish partnerships with archivists, librarians, registrars, and other adjacent allies already working with structured data and form working groups to update practices and create standards. Working groups should examine how conservators and colleagues access and use conservation data and reconsider the broad and vague definitions of treatment documentation in existing guidelines and literature. To further the development of standards, participants across the field could compare existing database back end structures similar to how past efforts have gathered treatment and assessment form templates for comparison. The profession might also benefit from a new technology forum where practitioners could share resources and discuss evolving needs at all levels of specialization. In efforts regarding data and computing where change is constant and always gaining momentum, the conservation field must keep pace through open community dialogue to supplement the periodic grant-funded projects and recommendations for change or risk being further excluded from technology discussions and left behind as colleagues move on and beyond the Information Age.

When AI Meets Literary Collections: Feasibility of AI Visual Technology on Identifying Paper Deterioration

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The National Museum of Taiwan Literature (NMTL) is Taiwan's first national-level literary museum. NMTL's mission is to preserve precious literary relics, and is committed to its literary promotion, display, and research in the field of Taiwan literature, relentlessly doing so for the past 18 years. The NMTL's collections includes books, manuscripts, photographs, utensils and so on, with paper materials and books being the major ones. However, it is very important for a museum to accurately understand the condition of its collections. If the supporting facilities of preservation are properly established, then greater benefits can be achieved in terms of the future application and long-term storage of the collections. Since 2010, the NMTL has been implementing a plan for documenting the collections, with more than 50,000 items to date. The collections have been reviewed and recorded in detail, and their conditions evaluated as well. However, when the number has reached up to 110,000 items, the work becomes more cumbersome and time-consuming. This article discusses the application of science and technology in the preservation of museum collections. It is hoped that the Artificial Intelligence (AI) visual analysis technology and machine learning model can assist collection condition assessment in the future so as to enhance efficiency as compared to the traditional manual procedure. This research is a collaboration between the NMTL and the Industrial Technology Research Institute (ITRI) aiming to use the AI technology to identify the deterioration of the paper collection. A pilot study on the method of establishing an image database for identifying deterioration was conducted. Firstly, objects such as books, manuscripts, newspaper, photography, etc. which contained several common and representative deterioration conditions were selected. Secondly, the deterioration status and patterns were further analyzed and labeled manually, the collected digital images were submitted to the Aldea—an AI co-created platform—to hold a competition to find an optimal AI model with the highest success rate for identifying deterioration, so as to evaluate the feasibility of AI visual technology in our work. The second stage of research will involve the analysis of degradation images to determine which digital image labelling methods are suitable for training AI, thereby summarizing the unanimous principle for digital image labelling methods. In this research, the feasibility of introducing AI visual analysis technology into paper deterioration identification was evaluated. It is hoped that in the future, through the revolutionary new technology, the digitization and documentation of collections will be implemented to help the NMTL grasp the overall condition of its collections effectively, while establishing a new vision for collection preservation.

From Blinking Bulbs to Advanced AI: The past, present and future of HVAC control

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The first thermostat for controlling heating was invented in 1883. This activated a light bulb in a boiler room that indicated that more coal needed to be added to the furnace. In the 140 years since, how our heating ventilation and air conditioning (HVAC) systems are controlled have changed dramatically. Until the 1970's, when the first electronic controls were introduced, we relied on pneumatic or compression air systems. Since then the advancements in controlling HVAC systems have rapidly evolved, with each iteration permitting better control of our collection spaces, a reduction in energy consumption and providing better (more informed) decision making regarding the condition our spaces. This presentation will reflect on the history and advancements of control systems for HVAC and introduce the current technological thinking and state-of-the-art aimed at reducing the carbon footprint and energy usage of cultural heritage institutions. As we progress deeper into the digital age, we not only see control systems that can manage our HVAC systems, but systems that can provide complete control over the entire facility, with the Internet of Things controlling everything from lighting through to security. Major advancements in artificial intelligence (AI) are enabling intelligent HVAC system controls that learn and adapt to changes or adjustments to the system. In the future we may not need to plan when to turn a system off or preprogram the operational hours of an institution into the computer. The system will learn from our behavior and requirements and will self-adjust accordingly. This would not only pertain to the operation of the HVAC system, but future AI will also be cognizant of energy supplier availability and pricing and may be able to choose different sources of energy for a facility depending on the cost or availability. We have come a long way from a thermostat and light bulb and we continue to advance, all with the end goal of creating a quality preservation environment whilst reducing our energy consumption and carbon footprint.

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Eyes Only? Revealing or preserving secrets of Congolese art objects

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Each year, ever-evolving imaging techniques open up new and exciting possibilities for conservators. X-ray Computer Tomography (CT) is one technique that has slowly grown in use in the cultural heritage and conservation field over the last decades. Medical and industrial scanners offer a chance to visualize an object in 3D and travel freely inside its interior. Most importantly, it allows them to do so non-destructively. This enables conservators to answer questions about a heritage object's materials, manufacturing, and degradation processes, and ultimately facilitates them to understand and treat the object in their care better than previously possible. The TOCOWO research project (Tomography of Congolese Wooden Objects) was set up to explore the possibilities of micron- and sub-micron CT as a non-invasive alternative for the identification of tropical wood species. As a collaboration between the Royal Museum for Central Africa and Ghent University in Belgium, the project has the vast collection of wooden artifacts in the museum to fall back on: more than 50,000 sculptures, musical instruments, equipment, furniture, power objects, and more. Using the scanners available at the University facilities, TOCOWO's main purpose is to visualize the wood these objects are made of and determine whether a wood species can be identified based on high-resolution scans. An added benefit for the conservation department of the museum is that the scans also offer a 3D view of the object's interior, circumventing coatings or other materials added to its surface. Literature asserts that more information and knowledge about the object should always be celebrated. Seeing as the TOCOWO project labors to reveal the wealth of tropical wood species present in the museum, this statement rings true. However, by scanning more and more ethnographic objects, revealing every inch, inside and out, an unexpected but not-to-be-ignored question crops up. What about objects that inherently carry secrets within them? Objects ascribed a power by their source community, with a life cycle of their own. Objects that were meant to be seen by only a few, and whose precise constituents are known by even fewer. With imaging techniques allowing us conservators increasingly unlimited insight into ethnographical objects, should we be the ones to impose these limits, especially when disclosing results with others? Simply put: just because we are able to see, does that mean we should? Two Congolese power objects are examined in a case study to illustrate the difficulties and nuances of the posed question. Both the conservational advantages as the ethical quandaries of the scans are demonstrated, providing context and a deeper understanding to both sides of the coin. This paper means to present the issue to a wider group of conservators, with no assertion of articulating a definite answer, but rather with the intent to open up debate. Looking towards a future that promises more technological advances, we must define the responsibility we hold as caretakers and handlers of heritage objects, and determine how we will meet the corresponding ethical challenges.

Using Data with Humans: Successes and failures of data storytelling in the realm of conservation

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Much of the work of professional conservators is the written documentation of our treatment interventions, in which we often find ourselves teetering between the false binary of recounting rote fact and a pervasive desire to express our own experiences, feelings, and concerns about our chosen actions or lack thereof. Our field's hesitancy at using, for instance, the terms "I" or "me" in reports and publications in part reflects the ever-present anxiety that our actions be conflated with those of the unsophisticated 'restorer' of previous centuries. As the ability to collect data and analytical information about our objects, environments, and museum ecosystem has become increasingly available to the conservator and the population at-large, so has the importance of framing this information in a manner that conforms to our guiding principles. The emerging skill of 'data storytelling' is the ability to convey information beyond simply numbers and charts, as a narrative that speaks to the people around us. This presentation relates anecdotes in everyday conservation practice where the dissemination of information and data was approached with the goal of resolving conflicts, changing minds, and offering

alternate perspectives. While data can strengthen a conservator's argument, the driver of change lies in both the narrative we construct to present that information, as well as in both expressing, understanding, and marrying the desires of ourselves and our colleagues. This talk aims to open discussions between conservators and allied professionals about the ways in which we have successfully—and unsuccessfully—attempted to employ data-driven decision-making in our everyday interactions.

Track 2: Interdisciplinary Research Methods to (Re-)Establish Object Histories and Provenance for Material Culture

Collaboration and Technical Investigation to Better Understand Indigenous Northwest Coast Cultural Material

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Collaboration and technical investigation to better understand Northwest Coast cultural material Megan Salas This paper will focus on current work at the Denver Museum of Nature & Science (DMNS) to study and plan for the preservation of several hundred cultural items from the Pacific Northwest Coast. In 2020, DMNS was awarded an Institute of Museum and Library services (IMLS) grant (MA-245839-OMS-20) to fund a project entitled Northwest Coast Collection: Building Bridges and Detailed Conservation Survey. The goal of the project is to advance stewardship for items in the Northwest Coast Collection through a collaborative process with the Indigenous communities from which the items come: Makah, Nuuchah-nulth, Kwakwaka'wakw, Haida, and Tlingit. This collaboration with community members is key to better understanding the collection items, promoting access, and planning for long-term care of these items in culturally appropriate ways. An interdisciplinary approach is necessary for this project. Museum catalog records for these collection pieces often lack information describing their original functions, iconography, materials, and cultures of origin. This is the case for a variety of reasons, the foremost being that these items were not collected as part of anthropological fieldwork, but rather came to DMNS as part of a large private donation and were accompanied by various levels of documentation. There are many Northwest Coast pieces for which cultural association is unclear, according to records. DMNS is actively engaged in ethically-grounded repatriation; however, a lack of information about the origin of pieces makes this challenging. Collaboration and communication with Indigenous knowledge keepers is a vital aspect of this project. Many of these individuals are artists and makers, who understand not only traditional methods of manufacture, but also traditional methods of repair. Their knowledge has helped to distinguish between repairs done when the item was still in the community versus restorations after the item was removed from its cultural context. Their expertise has also helped us correct and clarify catalog record information. At DMNS, access to in-house advanced analytical techniques has been limited to date. Therefore, investigations utilize macroscopic and microscopic observation and imaging techniques, including reflected infrared and ultraviolet-induced visible luminescence digital photography. Infrared reflected digital photography has been a powerful tool to better resolve painted compositions on the pieces. IR photography has better revealed painted compositions on a variety of substrates including wood and basketry. Sharing these images with community members facilitates recognition of forms that are not easily resolved with the naked eye. UV-induced visible luminescence is another tool we are using to distinguish materials and interventions on the pieces. Stereomicroscopy with an encoded digital camera has been a valuable asset to observe the surfaces of the pieces. The ability to capture high resolution images at high magnification allows for not only better understanding of manufacturing techniques and condition issues, but also for communicating these observations to wider audiences including source communities. Technical investigations have been highly informed and guided by knowledge shared by community members. The results of technical investigations have been shared with tribal representatives, new discoveries have been the source of fruitful discussions, and this collaborative work has opened avenues of further study. Contributions from collections managers and curators, both within and beyond DMNS, have also enriched our understanding of the history of specific pieces via archival research.

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A Community Centered Approach to the Stewardship of Alfonso Ossorio's *Feast and Famine*

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Alfonso Ossorio (1916-90), is well known for his contributions to the New York abstract expressionist art scene—as an artist, collector and curator. Ossorio was born in Manila, the Philippines, growing up and attending school in the United States. In the 1960's, Ossorio began making self-titled 'congregations'—assemblages with strong religious overtones, influenced by his Christian upbringing. The Los Angeles County Museum of Art (LACMA) has one of these 'congregations'—*Feast and Famine* (1966)—in their collection. Similar to other congregations, *Feast and Famine* consists of a heavy, circular, wood frame overflowing with objects found in curio shops, such as antlers, bone specimens, glass eyes, shells and petrified wood, all of which is set in multi-colored resin. The inanimate becomes animated as these seemingly disparate objects collide together in the assemblage. This artwork has been shown on and off at LACMA since its acquisition in 1991, usually with the medium line of "plastic and mixed media." Recently, the object was brought out of storage to review for the upcoming exhibition, Lee Alexander McQueen: *Mind, Mythos, Muse*. At this time, human remains were identified as part of the assemblage: an articulated cranium and mandible, a scapula, an ulna, a radius, and four ribs. The remains are disassociated from each other, displayed in various ways in the installation and with no known provenance. When reflecting on the past care of this object, it is notable that the presence of human remains was overlooked in its display, storage and stewardship. Through public calls for museum accountability, transparency and decolonization, our lens has refocused to examine the museum's past treatment of this object critically. With cross-departmental collaboration, it was decided that further investigation and action is needed for LACMA to be the future caretakers of this object. While there are established pathways for the repatriation of human remains in anthropological collections, as a mid-twentieth century work, Ossorio's work presents layers of unprecedented issues to be navigated. The interdisciplinary team working on this project at LACMA has pursued a multifaceted, community-centered approach to better understand the context and significance of the work. This case study will detail LACMA's collaborative work to determine the next steps for the future of this artwork and the care of human remains in the collection.

The Success of a Team Effort: Preservation initiatives at the AfricaMuseum

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The conservators at the AfricaMuseum in Tervuren (Belgium) have set up several small-scale collaboration initiatives to understand and preserve the collection of central African artefacts in the wake of the decolonization movement of the museum. As conservators, we are experts on the general material aspects of objects and their degradation mechanisms; but we encounter the limits of our knowledge on a daily basis. We lack the specific skills of (conservation) scientists and we have limited understanding of the cultural meaning of the Central African objects since they belong to a multitude of different cultures 4000 miles away. Collaboration has become key in the process of understanding and preserving the collection. A first research project focuses on the wooden objects in the collections by firstly attempting to use micro-CT scanning as a tool for non-invasive wood identification (TOCOWO). This project is a collaborative research project with the UGent-Woodlab of Ghent University. Systematic Identification of the wood used for objects helps the conservators with their daily preservation and loan activities. Furthermore, a positive wood identification might support curators' queries on provenance and it might even aid wood biologists in answering questions concerning evolutions in regional forestry and vegetation and local use of wood in the 20th century. But the research project comes with its challenges since the conservators are confronted with ritual objects that are not. A second research project focuses on the textile collection of the museum (CAPTex) and is a joint project with Meise Botanical Garden. CAPTex will focus on the undervalued textile making

processes and materials and intends on sharing knowledge with crafts(wo)men, experts, and conservators to create more awareness of the high skills of Congolese crafts(wo)men and the richness of Congolese cultural practices in general. Understanding the textiles and cloths is a significant step towards understanding the cultures that wore and used and still use these important objects. Furthermore, understanding the technical processes will aid in the identification of the major deterioration catalysts of plant-fibre based textiles. The storage conditions can be adapted according to the observed damages which will lead to the extension of their lifespan. Lastly, our conservation team is actively working on long term collaborations with our colleagues Congolese and Rwandese heritage workers. This partnership runs on multiple levels from sharing pest management ideas to discussing ethical questions on hands-on restoration and sharing visions for the future.

Establishing Context and Continuity for the Use of Human Remains in Tibetan Ritual Objects: A methodology

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This paper will draw from ten years of postgraduate, conservation-led research on the historic and present use, fabrication, circulation and handling of Tibetan ritual objects made with human remains. This work combines the technical examination and documentation of skull vessels, thighbone trumpets, carved bone ornaments and double-sided skull drums in the collections of UK and US museums — as well as institutions within the Tibetan cultural region — with a multidisciplinary methodology of iconographic research into historic visual cultures of Tibetan and Himalayan Buddhism; the reading of religious and historical sources in regional languages; and ethnographic fieldwork and consultation within practitioner communities (e.g. interview, photo-elicitation and observation). The results of this project have been collated as a technical and material cultural resource which is informed by practitioner knowledge and intended as a complement to the ritual expertise with which these objects are activated in religious settings, yet written specifically by and for non-practitioners. Moreover, the diversity of narratives and values associated with these ritual instruments present a range of interpretations, decision-making processes and handling strategies which can be understood as a continuity of technical and material knowledge exchanged between historic and present communities of object custodians. This paper will furthermore present how the findings of this research can and have already been applied to the care, handling, study and display of these materials in museums and cultural institutions, including within practitioner communities.

Conservation Initiative in African Art at the Virginia Museum of Fine Arts: The Impact of Interdisciplinary Research + Collaboration on Collections of African Material Culture

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The Andrew W. Mellon foundation awarded the VMFA substantial support for a four-year collaborative conservation/curatorial initiative to carry out the technical analysis and treatment, to study, and to research the museum's exceptional collection of Historic African art. The project team of four conservators and three curators worked together closely as well as in consultation with members of the object source communities and with specialist scholars, curators, and conservators. Conservators partnered with scientific research facilities for materials analysis outside the museum's capacity. The project generated information and scholarship that has contributed to the material and cultural understanding of the work and guided the handling and exhibition of the objects. While this work has helped repopulate the collection's lost or discarded histories, it also raised ethical questions about the discovery and distribution of privileged information. The authors will

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describe the project and present examples that demonstrate the impact of broad reaching collaborations to enhance material and cultural understanding, to correct misinformation, and reveal provenance. The Conservation Initiative in African Art culminated in the symposium, *Bridging Disciplines in the Study of African Art: the Curator-Conservator Connection* and resulted in the 2020 publication *THE ARTS OF AFRICA: Studying and Conserving the Collection Virginia Museum of Fine Arts*.

Uncovering provenance: An interdisciplinary approach

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By design, museums are organized to sustain Western knowledge systems and methodologies for categorizing cultural materials. However, many items in indigenous museum collections were collected as part of late 19th – early 20th century salvage ethnology and, depending on the collector, may lack thorough and/or accurate documentation or provenance. An interdisciplinary approach to collections and conservation research can help correct the record and add provenance information. This approach draws on multiple sources of information including the deep expertise residing in indigenous communities which may challenge our systems and ways of knowing. A case study will describe the attribution of provenance in Pueblo pottery through collaborative work with traditional Pueblo potters along with conservation research on condition issues specific to certain Pueblos.

Track 3: Saying “Yes”: Conservation Professionals as Liaisons, Facilitators, and Unifiers

Touch Decisions

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Conservators have a complex relationship with touching things. As a profession, while we look to build more inclusive and diverse practices, this relationship with touch needs to be restructured. As the profession looks to the future, conservators need to become co-creators of access rather than gatekeepers. This paper will review conservation's engagement with touch attempting to extract a more nuanced understanding of the values that can be achieved through touching defined by specific context. Through the development of frameworks designed to conceive a creative and flexible future relationship between thoughtful conservation activities and enabling meaningful physical experience with cultural heritage artefacts. Traditionally, conservation has tended to approach the issue of touch in one of two ways; this can be characterised as the simple obvious and low professional risk of the 'do not touch approach,' and the contrary permissive driven by engagement of showing willingness to allow the public to touch because there is an awareness that it has value. Neither approach fully engages with the tangible changes resulting from physical contact, and the tangible and intangible human gains that result from physical contact can be managed together well. The familiar narrative that preservation and access are in conflict is identified the conservation literature and much more easily recognised through the ever visible 'do not touch' signs and conversations between colleagues managing collections. Touch management should not be seen as a dichotomy of permissive versus restrictive; an alternative mechanism is required. Flexible solutions should be sought to ensure there are frameworks for appropriate successful resolutions to access. This assessment should balance a detailed understanding of conservation needs as well as that of user needs. All too often, cost-benefit analysis shows a detailed understanding of potential damage (informed by condition audit, understanding of materials, examination of the materials, research, etc.) balanced against a poorly defined definition of the 'value' of touch. While it is unarguable that there is a value in connecting emotionally and physically with heritage, that value is not equivalent in every opportunity to connect. Ideas of equal access and fairness cannot simply be applied because access to cultural heritage in an institution is rarely equitable. It is therefore inappropriate to transfer the assumption of benefits from the single case to the general. Benefits of touch can be physical and tangible, such as learning the weight, texture, temperature or flexibility of an object, touch can inform other senses such as empathy by physically carrying a heavy load for example.

Touch can provide a connection, where a person stands in a place associated with an event. Touch can be used to understand the movement of a mechanism and finally touch is essential in learning how to manipulate classes of things. By examining issues surrounding who conservation is for, how conservators discuss touch and the criteria used to define access, this paper invites those in the profession to be more open to the benefits of the variety of touch experiences in a contextually appropriate manner.

French Conservation Experts Facing Shrinking Cities: The evolution of the role of the Architectes des bâtiments de France in city-centres

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In France, heritage has been considered since the French Revolution as a national asset that the central state must select, protect and transmit to future generations. Since 1962, France has developed a unique system of urban heritage protection, the Safeguarded Sectors (Secteurs sauvegardés). These sectors protect coherent urban ensembles whose integrity must be safeguarded despite the urban development. Developed during the period of growth (post-war reconstruction), this regime is built on a top-down governance which places the protected sectors under the direct and exclusive supervision of the State and its experts. This is particularly the case for the Architectes des bâtiments de France (ABF), a civil servant who is responsible for the conservation and transmission of all buildings in the protected sectors. The ABF is, in the collective imagination, the person who says “no” to owners and local representatives wishing to transform their building. Yet today, more and more French territories are shrinking. This systemic and global phenomenon directly impacts urban heritage in city centres: these neighbourhoods are no longer sufficiently attractive, they are becoming poorer, residential vacancy can reach 40%, and buildings are falling into ruin. This situation calls into question the very integrity and transmission of this heritage as well as the legitimacy of the State to monopolise the heritage process. The urgency is such that all territorial actors (State, region, departments and municipalities) are mobilising to elaborate heavy revitalisation programmes to safeguard this endangered heritage. This paper aims to shed light on the reconfiguration of the interplay of actors around these shrinking heritages. It questions the evolution of the role of the ABF, the person who says ‘no’, and the relationship it has with local institutional and civil actors. To do this, this research is based on an inductive approach and semi-directive interviews carried out with ABFs and local elected officials of two small shrinking rural towns in France (Villefranche-de-Rouergue and Thiers). This research shows that ABF are losing legitimacy on planning Safeguarded Sectors, both within the government and at local level. This leads ABF to develop a dialogue on the issues of revitalisation with local representatives. This dialogue allows a better integration of urban and heritage dimensions in the safeguarded sectors. The ABF also takes a more active part in the monitoring of investors upstream of the projects (before the purchase) and during the works. It adapts its recommendations according to the financial means of the owners who wish to carry out works. These developments are in line with a broader consultation on heritage conservation issues, a consultation that has become unavoidable due to the reduction in State subsidies. In the background of these reconfigurations of the roles of urban heritage experts, it is a question of finding a more sustainable governance that will favour the conservation and transmission of urban heritage in territories in decline.

Bears Ears Site Preservation Project: Responding to Visitor Impacts on Cliff Dwellings in Southeast Utah

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Southeast Utah is famous for its remote desert canyons. The Ancestral Pueblo called this region home for two thousand years and the arid environment has preserved many of their cliff dwellings. Their Pueblo descendants accept that the ancestors still live, pray, and sing in these places. In recognition of this cultural connection, Bears Ears National Monument was created by executive order in 2016

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with a mandate that it be collaboratively managed with a Native tribal commission. Within a year the monument was reduced by 60 percent resulting in tribal outrage, extensive news coverage, and a flood of visitors to back country dwellings in the region. Recognizing the impact visitors can have on cultural heritage sites, the World Monuments Fund placed the region on its endangered Watch List and provided a grant to study and preserve threatened cliff dwellings under the Bears Ears Site Preservation Project. Condition assessment of several cliff dwellings determined that visitor impacts were often severe and increasing. Without direction, visitors seem to treat cliff dwellings as exploration experiences rather than sacred cultural places. Fragile architectural elements, such as wooden door lintels, adobe door jambs, plaster floors, and wall murals had been damaged and foot traffic left many structures critically unstable. Artifacts, including painted pottery, feather-twined blankets, and yucca sandals, were exposed, damaged, or even collected. Unwittingly, the actions of these visitors disrupted the living connection of Pueblo people to these ancestral places. In response to this visitor damage, a multitude of field and laboratory-based methods were employed to preserve the scientific and cultural significance of five cliff dwellings. Standing structures were dated with dendrochronology and captured with 3-D photogrammetry. Artifacts were documented in place. Deteriorated architecture was conserved using comparable and locally sourced materials. Preservation was the primary goal of the project and preservation considerations informed all project decisions. Bears Ears Site Preservation Project treatment plans were developed and implemented by a network of concerned partners. State and Federal agencies identified sites with high visitation. An architectural conservator developed the technical plans with input from Pueblo Tribal Historic Preservation Officers. Crews of Native youth with the Ancestral Lands Conservation Corp. and staff from a local non-profit helped implement many of the treatments. Ethnographers and Pueblo Cultural Resource Advisory Teams visited the cliff dwellings during treatment to capture Pueblo perspectives on conservation and cultural connections to the region. Site management plans, ethnographic interviews, revised technical briefs, and education materials were produced over the course of the project. More importantly, several treatment methods were revised during crucial conversations between project partners. The collaboration and methods developed during the Bears Ears Site Preservation Project provide a model for future collaborative management and stewardship of Pueblo sites in Bears Ears National Monument and other ancestral landscapes.

A Cross-Disciplinary Charrette: Exploring Conflicts & Proposing Solutions for Opening Sealed Sound Recordings

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The meaning and purpose of disc sound recordings from Thomas Edison National Historical Park (TENHP) in West Orange, NJ, has changed between the time of their creation 100 years ago and today. Thomas Edison was not only an inventor but an entrepreneur, and producing sound recordings was one of many profitable enterprises of the Edison Company. Today, the National Park Service (NPS) preserves 9,323 sealed “Master Mold” disc sound recordings at TENHP. Edison used the Master Molds, copper negatives of master wax musical recordings made in New York City and Europe between 1910–1929, to press “Diamond Disc” and “Needle-Type” records for sale. After mass-production, each copper mold was preserved by electrotyping its surface with nickel. Each sealed Master Mold is the closest surviving generation to the original studio master recording and represents the highest-quality (and in some cases the only) audio available of these recordings. The recordings, some of which have never been heard by anyone alive today, embody the contradiction inherent in the NPS’s mission to “preserve unimpaired the natural and cultural resources ... for the enjoyment, education, and inspiration of this and future generations.” NPS collections belong to all Americans, and these tantalizingly rare historical recordings should ideally be available to the public. But what happens when accessing the sound risks compromising the integrity of the physical object or its long-term sound quality? Does retrieving the audio for the public’s “enjoyment, education, and inspiration” contradict the NPS’s mandate to “preserve unimpaired” this unique historical resource? By design, access to the grooved surfaces of the Master Molds requires that the electrotyped seal be mechanically released—cut open and pried apart. Of real concern is the irreversible deterioration caused by environmental exposure and wear from playback once

the discs are opened and the sound played and digitally transferred. In 2019, conservators at the NPS Historic Architecture, Conservation and Engineering Center (HACE) combined efforts with staff at TENHP to draft a preservation and access policy for the collection. In attempting to determine for what uses and under what circumstances (if at all) opening the sealed molds would be permitted, it became clear that anticipating the specifics of demand as well as potential problems and conflicts was beyond the scope of the conservators’ and curator’s imagination. To broaden our understanding of the implications and risks of access, insight from a wider group of experts and stakeholders was sought. We organized a charrette in which sound collectors, audio engineers, preventive conservators, archivists, and librarians were invited for a day of cross-disciplinary discussion and (sometimes heated) debate. This day of collaboration across fields and institutions was instrumental in developing the Park’s current access policy statement and in clarifying what next steps and further study must be undertaken before opening the discs. This presentation will describe the collection’s provenance, the NPS’s goals for access, practical and ethical concerns addressed in the charrette, and next steps for further analysis. In addition to slides, it will be illustrated with audio clips of recordings from the collection.

Inherent Vice: Conservation as a Catalyst for Artistic Collaboration

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The RISD Museum in Providence, Rhode Island, is intrinsically linked to the Rhode Island School of Design (RISD); staff throughout the museum work closely with students across academic departments via teaching, work-study, fellowships, and research visits. The Costume and Textiles Department—staffed by two curators, two conservators, and home to 30,000 items from 1500 BCE to the present—enjoys a longstanding and deeply engaged relationship with the campus community. A recent decision to deaccession severely deteriorated Gilded Age garments provided the opportunity to develop this seemingly routine process into a collaborative and creative investigation of museums, collections care, and conservation. Fashion and textile collections are deeply affected by inherent vice, full of fragile objects that were never meant to last indefinitely—this inevitable degradation is rampant in Gilded Age collections of weighted silk and melting sequins. Likewise, costume and textile storage itself suffers from inherent faults rooted in a foundation of deeply biased museum ideologies. From individual garments and collecting practices to the fashion system and its environmental impacts, inherent vice and intrinsically unsustainable practices exist at many levels in the museum. Students at RISD are deeply aware of and invested in these issues. In response, conservators and curators from the Department of Costume and Textiles have organized an interdisciplinary, year-long project entitled “Inherent Vice,” the first part of which presents deaccessioned garments in a provocative gallery installation designed to engage students and the public with ghost-like and tattered garments. The exhibited garments were explored further in a Wintersession course, hosted by RISD’s Apparel departments, during which students, conservators, curators, faculty, and guest speakers explored both literal and figurative forms of inherent vice: from the physical deterioration of textiles and ephemerality of materials to foundational Eurocentric notions of value that define museum collections. An ensuing Spring semester Apparel department class culminated in an integrated studio project whereby students were provided the deaccessioned garments to create original artwork, which will be displayed in the museum during the Fall 2022 semester. The goal of this project is to remain open and collaborative from the initial planning process to the display of the student work, in the end, letting student research guide the shape of the project as a whole. This paper will explore each step of the initiative and will include contributions from students, faculty, and others involved. By reflecting on condition and disassembling and possibly reconstructing tired and abject garments, we ask whether it is possible to begin the process of addressing and rectifying the realities of inherent vice at various levels in the museum. Our aim is to highlight one example of how routine collections care issues and processes that are often isolated behind closed doors—inherent vice, deaccessioning—can be leveraged by conservators to encourage community collaboration and engagement.

GENERAL SESSIONS: CONCURRENT

Objects, Paper, Textiles, Outreach: Conservation Capacity Development at the Minnesota Historical Society

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Capacity development is a branch of museum work sometimes found at larger cultural institutions or statewide organizations, dedicated to increasing the capabilities of smaller local organizations, including museums, archives, libraries, and many other cultural institutions. The Local History Services department at the Minnesota Historical Society was founded in 1916 and for over a century it has supported smaller organizations across the state of Minnesota to interpret and preserve the history of their community. Capacity development at the Minnesota Historical Society includes grant distribution, professional training opportunities, free site visits, and advice on anything ranging from fundraising to writing a collections management policy to creating a website. In 2019, Local History Services hired its first full-time conservator dedicated to capacity development. Conservators can play an important role in capacity development by supporting the capabilities of individuals and small organizations to care for their own collections. FAIC engages in capacity development with programs like Connecting to Collections Care and the Collections Assessment for Preservation program. The AIC website states that "Conservation encompasses all those actions taken toward the long-term preservation of cultural heritage". By our own definition, conservation is not limited to conservators - conservation is an action that anyone can accomplish, if they have the knowledge and resources to do so. Capacity development is a branch of conservation practice that can increase the accessibility of conservation knowledge, promote inclusivity, and create avenues for a more diverse field. This presentation will discuss conservation outreach at the Minnesota Historical Society as it serves to increase capacity at small cultural institutions throughout the state. It will consider the following questions: Can conservation be a service instead of a privilege? How does our expertise in conservation provide value to people rather than to things? How can we compromise to meet people's needs while still adhering to the Code of Ethics? Conservation capacity development requires creative thinking and openness to other experiences and perspectives to help people care for the things that matter to them in a way that works for them. It is a modern approach to conservation based on a century-old approach to local history.

Track 4: Conserving Relationships: New Horizons for Collaboration and Communication

Save the Past and Inspire the Future: A Kingdom-wide Community Research Project Aims to Save Memories on Vanishing Traditional Saudi Male Costumes by Collecting Information in a Museum Database

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The focus of documentation on female traditional Middle Eastern costumes in the past decades left male Arab costumes to a certain extent under-researched. The preservation of Saudi male costume heritage particularly was limited letting their fine details of personified stylization to fade in the modern life of young Saudis. The growing lack of knowledge on traditional costumes among contemporary Arabs became evident when the author, a professional textile and costume conservator, art educator and Islamic art specialist, start documenting Saudi male costumes of the 20th century. The lack of extensive bibliography and identified costumes from each region of the Kingdom inspired the creation of a spider net-patterned methodology of information collection from the remaining sources alive: the elderlies. Young Saudi volunteers were asked to discuss with elders and extract information on Saudi male costumes. The gathered information is allowing iThra museum conservator to analyse data and create a unique costume heritage database, which expands towards anthropological research. As a result, the young Saudis can emerge into their father's dressing habits and preserve their memory to the next generation in the form of intense diegesis.

The author's experience in documentation of textiles and costumes allowed the creation of a questionnaire complying with current ethical interviewing processes, which was distributed to selected volunteers. Volunteers were crucial element to the success of this project, since the variety of Arab language dialects and the researcher's inability of the researcher to identify the right candidates from across the lands of Saudia, as well as the hesitation of particularly older females to contact and discuss with a foreigner family details made clear from the start that Saudis should process these discussions. Of course, the aim of 'conserving memories about to disappear forever' was axial in this research. A major breakthrough was the considerable number of unpublished photographs submitted by Saudi families, depicting themselves or their fathers and grandfathers wearing traditional clothes in their own personal style. Such a contribution often 'embodied' oral information provided during the interviews. With this information in hand, it was possible to envision what and how Saudis would wear in the mid 20th century.

So far almost two hundred families are interviewed and young Saudis show a considerable interest to learn and collect information and visual evidence on their fathers' dressing codes and preferences, which were often based on needs and social status. More than four thousand images are collected, some of them never previously published and a considerable vocabulary of expressions and terms are recorded into Ithra Museum's database. In reality, this is not an project without an end, similar to life's nature of preserving life, memory and cultural heritage transferred from the old to the new.

Reflections on Authority in the Conservation of Indigenous Objects in Museums

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Today's standards of consultation, collaboration, and community engagement in the conservation of indigenous objects have become a professional expectation. While a growing body of literature describes examples of interactions, few contributions describe how decision-making authority is established in those situations. Three generations of objects conservators share their perspective on the development of collaborative consultation and methods to incorporate indigenous authority into conservation practice. Ellen Carrlee of the Alaska State Museum, Amy Tjong of the American Museum of Natural History, and Adrienne Gendron interning at the Cleveland Museum of Art explore the influences of institutional scale and geography as well as the intellectual lineage that establishes the current trajectory in museum conservation practice. A model drawing from anthropological approaches over the more conventional art historical orientation of the conservation field illustrates how networks of relationships among different kinds of recognized experts have increasingly been used to reach consensus on treatment authority. The application of egalitarian consensus-building that makes space for non-human agents such as objects and animals in relationship networks has been inspired by indigenous scholarship and epistemology as well as social science theory. The conservation field has recently seen a shift towards values-based decision making, an approach that supplements the field's traditional materials-based framework with an understanding of the broader significance of objects through the characterization of stakeholder values. Comparison of experiences in both large urban institutions and smaller local organizations as well as degrees of decision-making power possessed by the individual conservator at different stages of their career illustrates challenges to implementing meaningful collaboration. Emphasis on openness, sharing, willingness to be uncomfortable, and a decision to focus on examples that have succeeded helps model how a networks-of-relationships approach can leverage our reciprocal connections to overcome obstacles of funding, time, distance, and discrimination.

The Human Factor: How to Recover the Hidden Craftsmanship of a Portuguese Moldmaker

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GENERAL SESSIONS: CONCURRENT

As fatherless child, José de Jesus Branco (1931-1982), nicknamed 'Faiunça', belonged to the singular Portuguese 'Casapianos' community, named after the Portuguese State Care Home Casa Pia. It was within this social welfare institution, between 1940-49, that young Faiunça learned locksmithing and modeling. He became a Moldmaker ('Formador', in Portuguese) by trade, working with Portuguese renowned sculptors of Public Art, between 1950 and 1982, also training students – who would later become artists – from the Sculpture Course at the Higher School of Fine Arts in Lisbon (Escola Superior de Belas-Artes de Lisboa). Despite his professional notoriety and expertise, Faiunça developed tasks considered accessory, thus leaving little visible trace of his collaborative work. He died prematurely at the age of 51. Due to massive introduction of new technologies, much of his know-how is at risk of being lost. A project is being designed to rescue and preserve this heritage, in its broader sense – human, intangible and tangible. It provides an opportunity to reflect on what heritage is. Research is particularly focused on the relevance of the human factor: Faiunça's 'home' group (the 'Casapianos') and his professional environment. Emphasis thus lies in the recording of the individual and collective memories and experiences, through interviews and written statements of those who knew Faiunça: parents, close relatives, acquaintances, artists, other moldmakers and past students. This intergenerational approach, although challenging, is an enriching and innovative dimension of the project. Simultaneously, any artifact likely to give substance to the aforementioned narrative and to illustrate the professional context of production in the field of Sculpture between 1950 and 1980 will be considered in this project. This includes the very diverse patrimonial documentation and objects related to Faiunça (photographs, working tools, effigies, paintings) – some of which were made by his contemporaries – as well as the monumental statues where he is known to have collaborated. In order to ensure that all this knowledge is documented, organized and readily available, undergraduate students from the Department of Conservation and Restoration from NOVA School of Science and Technology (Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa) will be directly involved, recording and filming intangible aspects and conserving several objects. An exhibition meant for the general Public is scheduled for the summer of 2022, to be held at Casa Pia, the care institution where Faiunça grew up. This key action intends to raise awareness towards a specific individual within the 'Casapianos' community and a 20-century-Mouldmaker, but also to revitalize cultural and social values through a broad spectrum of specialists and non-specialists in heritage matters. It will further enhance the key role of the field of Conservation in the safeguard of tangible and intangible heritage. In the FAIUNÇA project, every participant, including students in conservation, is an agent of transmission, thus playing an active part in building a broader culture, past, present, and future, which addresses several social, artistic and scientific dimensions, in which preservation is the motto.

Embracing Infinite Slippage

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The Tate research project Reshaping the Collectible: When Artworks Live in the Museum used a set of case studies to explore the relationship between complex artworks and museum processes. A group of works by Ima-Abasi Okon was chosen due to the way they unsettle traditional notions of museum collecting. By prioritizing the collaborative process of "learning the artwork" over our own institutional workflows, the acquisition and display process became as much a reflexive scan of the museum as it did an exploration of the artworks. As a result of the Western desire to efficiently collect and display, museum processes have been shaped by the ideology of complete ownership, complete knowing and artwork fixity. Ima unsettles the first by creating what she has described as an "unlimited edition", a distributed model of ownership in which Tate owns limited elements of the work, while further elements can exist and be shown alongside Tate's, as well as being added to or borrowed from at will. The artist also unsettles the idea of complete knowledge by creating external dependencies - nominated networks of specialists who interpret elements of the work for a new environment and perform specific labour. The work then resists fixing through the artist's involvement in future processes - responding bodily to new installation spaces, and personally undertaking specific processes related to reproducible aspects of the artwork.

These characteristics prompt the need for a new model of collaboration between artist and museum: To move away from owning and towards hosting, to be comfortable not knowing but to be able to perform caring. Collaboration required Ima to learn of our processes just as much as we learned hers so that we could collaboratively understand how the work could live in the museum - highlighting

the reciprocity of collaborative learning. The artist's practice imagines a non-hierarchical collaboration between the artwork objects, people, and processes, calling for an approach to conservation that decenters preventative measures in favour of understanding the artist's relationship to the artwork elements, their entropy and circulation. This approach by the artist also blurred the boundaries between specialisms in the museum, calling for collaboration between conservation disciplines. We found the research project taught us to be more comfortable in not knowing, demonstrating the time and care needed for the discourse that arises in its place. We were also mindful that the research project afforded us an unusually high allocation of time and resources. This raises questions about how we can implement our learning into regular work-flows, advocating for deliberate slowness, collaboration and care against a backdrop of productivity, efficiency and scarcity. This paper will give an overview of the project, and discuss some of the important questions that arose, such as: what might have been lost had we not undertaken this research, how can the multiplicity of collaboration be adequately reflected and sustained, and what are our responsibilities in transmitting our learning forward?

Art Conservators: Caregivers and Storytellers

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The official history has been told through victorious tales, therefore, the representations of white, glorious, rational and heroic men predominate. On May 17, 2021, the Mizak, an indigenous Colombian community, overthrew the monument of Gonzalo Jiménez de Quesada that was located in the historic center of the city. Quesada was a Spanish conqueror who founded Bogotá in the 16th century. The overthrow of this sculpture and other monuments in our country were sustained in the effects of an incomplete narrative that for more than five centuries had led indigenous communities to disregard and reject. Always, in the middle of social protests, there is a sense of tension, euphoria, confrontation and resistance. The profound claims from indigenous people and the speed at which all this happens demand immediate resolutions.

In between this need for immediacy, the art conservators appear. We are actors that weave objects at other rhythms and at other times. The long-lasting time. For that reason, we cannot forget the next things in our practice:

- History is itself a version with a will of truth, constructed from the present experiences and enunciations. History is not definitive and unique, but fluctuant and diverse.
- Objects must be seen through their dialogical potential in time: not just critically today (with this sense of a profound mood for a change), but understanding the valuations they have had in the past, and expecting a better future than this present – a future that does not deny the past.
- The objects must be conceived by understanding their multiple dimensions, without setting a unique meaning about them. In this way, objects don't lose their capacity of being testimonies, documents and vehicles of interpellation of different meanings in time.
- We should have a historical and critical consciousness compass, guiding our practice. Because of the existence of the objects we care for, there is a chance for stories: for the old ones, for the deciduous ones, for those that are useful, and for all those new narratives, which must complete omissions and silences.

Today, a Gonzalo Jiménez that has been fractured and stripped from his sword, gives us the chance to narrate history in a completely different way: with breaks and irruptions. From this critical perspective, preserving these pieces does not mean reinstating or restoring orders that urge to be reviewed. On the contrary, it advocates understanding that to generate new dialogues, the destruction or disappearance of monuments denies the chance to perceive cultural objects as witnesses or historical testimonies that are capable of narrating a moment of rupture. A moment of transformation.

With the compass of the existence of cultural heritage as a possibility, we can bet on having the willingness to modify reality. This bet demands hard work: an articulation of the past and the defeated, with the pieces and stories that had been officially recognized. In this scenario, art conservators have the tools to open the narratives, to help rewrite history and to tell it in another way.

GENERAL SESSIONS: CONCURRENT

New Hall, New Paths: Hall Revisualization Leads to Renovated Practice

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Renovation presents an opportunity to evaluate past procedures and ensure that our conservation department incorporates the best modern practices. When evaluating controversial or outdated gallery displays, a high degree of introspection is required in considering how conservation, and museums in general, approach cultural objects that are not our own. Most importantly, museum professionals must listen to those who are affected by the displacement of their material culture, and respect their voices in developing the new exhibits and determining how they are portrayed. As the multi-year renovation and revisioning of the Native North American Hall at the Field Museum in Chicago finishes its final phase, we reflect on the many internal and external relationships formed and nourished over the past four years. Our main goal was to bring community voices into the museum and ensure that they have the opportunity to inform and direct the development of the new Hall. We also capitalized on the chance for once divided departments within the museum to come together as a team to realize this goal. This has led to productive and meaningful collaborations, as well as mistakes and lessons learned. This experience has resulted in new practices that will be incorporated into the Field's approach to exhibition development and community involvement going forward. When the hall opens in May 2022, our hope is that native communities will have increased their connection to the museum's collections and that trust develops between the museum and the communities. We will continue to cultivate these connections for many years to come.

Track 5a: The Conservator as Agent of Change Chance? Choice? Change?

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As we reflect on where our profession has been and might go, it remains true that we are still a young profession. To examine ourselves is timely and salutary yet I think it behooves us to look at what others see. While we have copious examples of press clippings celebrating technical discoveries and spectacular restorations we have far fewer thoughtful treatments of us, of our labors and of our critical social and cultural roles. This paper proposes to establish links between conservation and other disciplines and modes of inquiry. Sources will range widely and include art historians, philosophers, critics, poets and will include such writers as Steven Jackson, Erwin Panofsky, Lewis Hyde and others. The connections between these seemingly diverse thinkers and makers will, I hope, demonstrate not just the profoundly humane profession we call conservation but also the ways in which conservation offers a constructive world view, one that is useful beyond our own borders.

Sociopolitical Flux & Conservation Interventions: Studying Fascist Monuments in Italy

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In times of great political, social, and economic change, the preservation, interpretation and impact of monuments and historical sites are often re-evaluated. This presentation explores the ways in which changes in cultural values can impact the conservation of public monuments and artworks, how conservators can impact interventions and interpretation of such works, and whether our thinking about conservation ethics is evolving as it becomes clear that our work as conservators is not at all neutral, but in fact, can have powerful intended and/or unintended sociopolitical impact. As the value (or lack of value) of America's confederate monuments has entered mainstream public discussion, questions about the roles of conservators in the preservation/maintenance of difficult heritage have also entered public discourse. Thinking about the ways in which other countries have, and are, tackling questions about preservation and difficult heritage resulted in the author's embarking on an eleven-month-long Rome Prize fellowship from

2018-2019. The ensuing investigation of difficult heritage and its conservation in Italy sparked questions about the motivations and narrations behind conservation interventions, both in Italy and in the US. Examples of interventions - missteps and successes alike - make clear the power of conservators to reinforce or rebut socio-political trends. Throughout the cities and towns of Italy, particularly Rome, many fascist monuments are physically tethered to the landscape in the form of buildings and roads still in use today. Both pragmatic and ideological reasons lie behind the creation and survival of so many of Italy's fascist monuments and works. How they are viewed and valued today versus at the time of their erection is complicated, as is the question of how communities, bureaucrats, and conservators approach the preservation of these politically charged sites and objects. Time spent looking at the physical and ideological implications of changing narratives and values on fascist monuments, and in discussion and collaboration with Italian scholars - who are just beginning to address their country's difficult heritage in a systematic way - resulted in a closer look at several specific interventions which will be presented here as case studies. These different interventions (in Rome, Predappio, and Bolzano) resulted in the restoration of a work's original intent, the re-purposing of an historic site, the re-contextualization of historic and historical objects, and in the generation of new discussions around major fascist monuments. These case studies illustrate ways in which narratives and the meaning around difficult heritage sites and monuments change, not only with evolving sociopolitical climates, but with interventions by conservators. The conservation of monuments is rarely if ever politically or socially neutral and, as a result, interventions can greatly affect interpretation and understanding. These case studies suggest, too, that what we preserve and how we choose to preserve it will not only become part of the history of the object or monument, but part of the history of a community's sociopolitical values.

The Ethics of Care: Examining Ethics from Non-conservation Resources to Inform Human- Centered Conservation

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The ethics of care is a theory within the broader subject of philosophy that deals with ethics and human behavior. Carol Gilligan, a professor of Humanities and Applied Psychology at New York University who is an ethicist, feminist, and psychologist, introduced the idea of the ethics of care in the 1980s based around the ideas of taking care of relationships and other people. These ideas were in contrast to previous ethical theories by her predecessors that focused on individual rights and justice. Since Gilligan first introduced these ideas, other ethicists have expanded upon and further developed them. Given the work that we conservators do to care for collections from cultures around the world, this branch of ethical theory is highly related to collections care. This presentation will look at the five qualities associated with the ethics of care (attentiveness, responsibility, competence, responsiveness, and the joint quality of plurality, communication, trust, and respect) and show their correlation to conservation best practices. Although conservation has a well-established history of contemplating ethical considerations over the years, these past deliberations have been framed in an object-centered way, related to materials and techniques, and focused on practical aspects of executing a treatment plan. For example questions have included: What materials are appropriate to use? Should a loss be filled or not? Is inpainting appropriate? This type of approach does not typically consider the object's relationship to people. Over the past several decades, the shift towards human-centered ethics has taken hold. More recently, this has been propelled by examining conservation's role in social-justice and a shift towards centering minority points of view. These advances in conservation should be strengthened by considering expert scholarship in other disciplines outside of our field. By examining existing ethical theories developed by scholars like Gilligan and those who have followed her, we can broaden our understanding of ethics beyond treatment of individual objects and fortify our foundation of human-centered approaches to collections care. Conservators appropriate tools, technology, and materials from other specialized fields all the time. There are specialists who are devoted to the study of ethics, so in typical conservation style, let us look to the experts to inform our own thinking and approach.

GENERAL SESSIONS: CONCURRENT

Track 5b: History through the Lens of Treatments

Rethinking Textile Repairs on an Iconic Aircraft: Conservation of the Wright Military Flyer

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¹National Air and Space Museum, Chantilly, VA, US ²Frankel Textile Conservation LLC, Baltimore, MD, US

The world's first military airplane was purchased by the United States Army from Orville and Wilbur Wright in 1909 and is one of the stars of the National Air and Space Museum's (NASM) collection. Known as the 1909 Wright Military Flyer, it has been on display in various Smithsonian galleries almost continuously since its 1911 accession. NASM's seven-year project to renovate the entire Mall museum, offered the rare opportunity to thoroughly treat the aircraft at the Udvar-Hazy Center in Virginia. The 1909 Flyer is unique among historic aircraft as it has remained largely unchanged for over 110 years. The wooden and fabric structure we see today was flown by the Wrights and other early aviators; the two years of service left a patina of exhaust residue, oil stains, grimy handprints on the fabric, and multiple repairs due to minor crashes. After its short operational period the Flyer slowly developed a less noteworthy patina derived from exhibition in unconditioned, sunlit galleries with roof leaks and accumulated dust. Until recently, standard museum practice was to replace deteriorated airplane fabric: a traditional aspect of flight repair and maintenance. Today, we value survivors not only for their alluring appearance but as unique primary resources for historical evidence. Consequently, the evidence of post-collection repair philosophies remained evident on the Flyer as crude wire repairs to the wooden structure and every variation of fabric repair, from unsightly sewn and glued patches to adhesive tape repairs over the original Signal Corps insignia. Despite this, the Flyer retains its original textile covering and is an extremely rare example of a wooden, fabric-covered aircraft from powered flight's earliest period. NASM took a collaborative, consensus-based approach to treatment, involving curators, conservators, restoration specialists, and specialist contractors. Our joint aim was to walk the path between preservation of the original material and its authentic appearance while revisiting previous inappropriate repairs. We utilized techniques and materials sympathetic to the artifact to provide structural support for continued display, and visual integration where needed. Smithsonian policies allowed some staff to work from home during the coronavirus pandemic while hands-on treatment continued with appropriate safeguards, providing an unexpected opportunity to research the Flyer's service and display history. By examining sources such as the aircraft's Army logbook and historical Smithsonian photos, we were able to distinguish the historically significant damages from those caused during exhibition. With input from an expert on the Wrights' craftsmanship, the team used this research to inform treatment decisions regarding revision of previous repairs and replacement of lost or broken elements. Following this ethos, treatment began with overall surface cleaning, followed by wet cleaning of the fabric and repair of structural elements. Original fabric was temporarily removed from the frame only when necessary due to severe damages or broken internal structures; torn and fragile fabric was supported using underlays or full linings. In September 2021 the Wright Military Flyer was reinstalled as the centerpiece in NASM's Early Flight gallery, slated to open to the public in late 2022.

A Future Defined by Risk: The Tomb of Tutankhamen and Its Influence on the Development of the Field of Conservation

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November 2022 will mark the centennial of the discovery of the tomb of Tutankhamen in Egypt's Valley of the Kings. In the hundred years since Howard Carter famously uttered, "yes, wonderful things", in response to glimpsing the golden treasure found within, how the tomb and its objects have been thought about, presented, and perceived has had a profound impact on preservation and conservation decisions surrounding their care. In this presentation, the tomb will be examined from various vantage points including within the context of the impact that the fields of archaeology and Egyptology had on the development of archaeological conservation in the 1920s, the struggle for Independence in Egypt and the rise of

World Heritage and its protection as a global phenomenon. How were conservation ideas and thinking about the tomb constructed in the midst of these events? And how and why did a dominant 'heritage-at-risk' narrative emerge and persist over the past hundred years? In response to the annual meeting theme, Reflecting on the Past, Imaging the Future, I suggest that a narrative of risk has more broadly come to define the profession and overshadow the ways the field has thought about cultural heritage. The tomb's highly publicized history which has intersected with notable figures and organizations in the conservation field provides a lens through which to start to address—and reckon with—the multitude of drivers that have shaped the field of conservation in terms of managing risk. How has this influenced how we as conservators have come to understand our profession and the ways we engage with cultural heritage? What influence has this had on practice and how we act and perform our jobs today? Tutankhamen's tomb is used as a case study through which to untangle and then to begin to think about these questions. The centennial of the discovery of the tomb and the 50th anniversary of AIC provides an opportunity to reflect and question what we do as a field and to consider if we need to be thinking about change and cultural heritage differently. This contribution draws from existing research from other fields and attempts to question whether we have ignored the potential negative influences our approaches may have had on how people think about and engage with heritage and prevented more inclusive futures that would inspire broader stakeholder participation. Will we be able to re-envision a future for the tomb of Tutankhamen that both ensures its protection but also does not limit its potential?

Conservation Treatment of Rembrandt's *The Night Watch*: The Decision-making Process

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Starting in the summer of 2019, Rembrandt's *Night Watch* (1642, h 378.4 x w 453 cm) in the Rijksmuseum, Amsterdam, has been scientifically investigated by a team of scientists, conservators and curators using the latest and most advanced techniques, ranging from digital imaging and scientific and technical research to computer science and artificial intelligence. The research was a crucial step in gathering knowledge about the painting's condition, its complex treatment history, the materials used and the way it was painted. This detailed information provided the basis for a responsible decision about its conservation treatment, whether and how to treat the painting and assessing the risks involved. To this end, decision diagrams and flow charts were developed. As discussed by Michalski and Dossi-Doria (2011) these tools provide an effective way to illustrate and explore the pros and cons of the numerous steps that ultimately lead to treatment choices and provide a meaningful way of sharing and communicating decisions. For *The Night Watch*, three treatment options were considered viable: a minimal intervention consisting of a long-term monitoring protocol based on the images and data gathered during the research phase. Here it is envisaged that areas of interest in the painting will be systematically scanned at selected time intervals. The second option consists of long-term monitoring, as well as structural treatment. The third option includes the first two options, as well as varnish removal and restoration, and seeks to address preventive, structural and aesthetic aspects. To assist in the decision-making process, the following criteria were determined as being important for *The Night Watch*: long-term stability, visual appearance, meaning and authenticity and historicity. As a Dutch national icon, the long-term preservation of the painting is crucial. As with any treatment there is often a trade-off between the use of solvents, moisture or heat that potentially can impact its long-term stability. Doing nothing, however, could also negatively affect the painting's long-term structural stability. And while a full treatment would improve the visual appearance of the painting, cleaning of a damaged surface that has undergone excessive cleaning in the past is never straightforward. In terms of potential loss of historicity, more than three centuries have passed between 1642 when *The Night Watch* was painted. Aspects that have affected its materiality include at least four linings, numerous regenerations and three major restorations (1751-52, 1945-47, 1975-76), all of which have left their mark to some degree on the painting. Will a new treatment inadvertently remove or alter traces of its past (treatment) history? We surmise this has already occurred, but this makes the significance of finding traces of past treatment on the painting even more important. While these decision criteria are of importance to the painting, other factors, including visibility of the painting to museum visitors, duration of treatment, budget and public engagement also need to be considered. Ultimately the goal of the decision-making process, is to make clear for future generations why what was done, and to ensure all possible information was taken into consideration.

Track 6: Preventive Conservation, Monitoring, and Access; Evolution and Change

Decontextualisation: A Form of Dissociation or a New Risk?

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This paper follows up on the recent call made during last AIC meeting to re-evaluate conservation practices and proposes to reconsider methods to assess and manage risk to collection in light of the most up to date concept of heritage and its care. More specifically the notion of dissociation as a “metaphysical agent” (Waller and Cato 2011) will be rescanned in view of its capability to cover the negative impact of inadequate documentation on interpretation, use and care of collection. Over the past twenty-five years, the concept of heritage care has been transforming from a material-based approach to a value-based or a people centered approach. This shift developed from the growing recognition that heritage items comprise of intertwined tangible and intangible features. This often implies that cultural value of a collection only comes into effect in interaction with its responding audience, if not generated or activated during interaction/use. A Collection Value assessment is the prerequisite for implementing such collection care approaches and should be performed by the collecting institution/stakeholders on the basis of an item's cultural significance, its relative importance within the collection and intended use. In return, Collection Value likely determines decisions regarding its interpretation, use, and care by the holding institution/stakeholders. This results in characterizing the relationship between the valuation of an item, its representation and use within the institution, and its care as ‘symbiotic’ (Taylor & Cassar 2008). Collection Care can now be understood as the careful management of the Collection Value of an item throughout its predefined lifetime. Such management is ideally consistent and sustainable for present and long-term use and function while considering the impact of collection use and care on people, institutional operations, finances, and the environment. It is consequently of crucial importance to ensure that the assessment process of the Collection Value of an item is adequately documented to properly monitor and efficiently manage it. The various impacts on interpretation, presentation, inventory, storage or other uses of an item when the assessment process of its Collection Value is not properly done with adequate documentation will be illustrated using various examples. The risk of losing most valuable information when systematic documentation of the interdependence between an archeological object and its excavation site is lacking has already been widely acknowledged. The importance of provenance research to ethically use and adequately care items is also well established. Documentation of relations between conceptual and material integrities of some items from contemporary art collection is often one of the main tools for securing its perpetuation. Case studies selected from ethnographic collections will illustrate how appropriate documentation of relevant collaboration between stakeholders can result in successful revitalization or re-signification of the given item. Finally, benefits to expand such documentation practices in light of a “practice of preventive conservation that incorporates a (...) broader thinking around the contexts of objects, people, place, and time” (Tse & Labrador 2018) will be discussed as it provides an efficient overarching conceptual framework to mitigate impact of contextual dissociation for various collections.

Fifty Years of Preventive Conservation: From Avoiding Change to Maximizing Values Delivered and Retained

Robert Waller¹

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Fifty years ago, in the 1970s, Gary Thomson was writing what would become a landmark book in our field, *The Museum Environment*, still a valuable resource today. This volume focused on environmental causes of physical changes to material culture. A decade later, the importance of recognizing threats other than ambient environmental threats, such as fire, flood, theft, etc., was being integrated into our field's consciousness. In another important milestone, this was formalized

by Stefan Michalski's publishing of the *Framework for Preservation of Museum Collections* in 1994. Realizing that only identifying threats impacting the state of collections and a few key measures for guarding against those threats was not enough to enable proactive management of preservation. What was required was an understanding of the relative magnitudes of all risks to specific collections in specific situations, as well as strategies for and costs of mitigating those risks. In response to that challenge, risk assessment and risk management approaches have been, and continue to be, developed. At about the same time, our field was developing its awareness that just the physical state of items in collections was not all that we need to be concerned about. Miriam Clavir's book, *Preserving What is Valued: Museums, Conservation and First Nations*, being an exemplar of the work to engage societies and segments of societies valuing aspects of collection items beyond simple physical state. The plurality of values was further explored by others and importantly captured in the *Significance and Significance2.0* publications. Agnes Brokerhof and colleagues have and continue to work on clarifying the ways in which understandings of collection value(s) can and should influence collection care and management priorities. The growing attention to decolonization in its broadest sense is further focusing attention on consideration of multiple values and value systems. Much progress has been made over the past fifty years, but major challenges remain. A significant insight from risk analysis, as revealed by the Cultural Property Risk Analysis Model (CPRAM), is that the magnitudes of risks invariably follow a Pareto distribution. Typically, 80% of expected losses in value will result from 20% of identified risks. It is easy to draw attention to the need to apply incremental resources for risk mitigation to those higher risks. More difficult is letting go of concern over demonstrably insignificant risks even though that letting go could free resources for application to priority issues. Collectively, we must learn to respect, but not be enslaved by, rational quantification. We must pursue precision in quantification to benefit from the discipline in evidence seeking and critical thinking it encourages, yet understand the resulting numbers are not necessarily correct. Further development of preventive conservation as a distinct professional endeavor will require us to appreciate the difference between the role of preventive conservation for small versus medium-large institutions. Finally, and perhaps most challenging, we must learn to integrate rational quantification with pluralistic world views and value systems.

Social Disconnection: Is It the 11th Agent of Deterioration?

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In recent decades theoretical concepts of Cultural Heritage, Conservation-Restoration, and Museum have been developed considering more and more intangible aspects in a consistent and systematic way. Examples are social, affective, and symbolic aspects. However, intangibility is currently addressed only with tangential approaches in Preventive Conservation and Conservation Science. In this work, with the purpose of explicitly and systematically increasing intangible actions in Preventive Conservation strategies, we propose the 11th Agent of Deterioration. We call this agent Social Disconnection and present its definition, relationship with other agents, its ambiguity, and an example where we detected, reported, avoided and treated it. This proposal results from a project developed since 2016 with high school students, from our own past experiences, and from effective communication between our team members. Our team is composed of professionals from Education, Museology and Conservation Science, with diverse backgrounds, such as chemistry, history, information science and archeology. The ten traditional agents are focused on material issues, involving physical and chemical damages and strategies. However, C. Caple in the text “Preventive conservation in museums” (Routledge, 2012) remembers that “Regardless of whether new or traditional methods and materials are used, only if artefacts are valued, are resources made available to preserve them. So the first requirement for preventive conservation is to ensure that society values the object.” He reminds us thus that we need to take into account a key intangible aspect to preventively conserve the material objects; this is where the 11th Agent of Deterioration comes in. We consider Social Disconnection as the absence of both social recognition and feeling of belonging by society in relation to heritage. It deteriorates objects in two ways. The first is an intangible deterioration, through the forgetfulness and loss of the object's meaning. The second is a tangible/material deterioration, through, for instance, decrease in funding for preservation and research, decrease of social surveillance, and acceptance of unskilled professionals to handle the

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objects. Social Disconnection is caused by complex and interconnected factors, including social, educational, economic, historical and political aspects inherent to different contexts. This complexity is also applied to strategies to avoid and treat it. Therefore, in this work we do not intend to exhaustively address Social Disconnection, but propose and introduce it to the fields of Preventive Conservation and Conservation Science.

Lighting the Way: The Evolution of Preservation-Based Museum Lighting Policies and Practices Between 1978 and 2020

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Prior to 1978, relevant information about preservation-based museum lighting policies and practices was scattered among a wide variety of technical publications, each dealing with only a narrow segment of critical information. The importance of *The Museum Environment* by Garry Thomson, published in 1978, was the methodical way that Thomson clearly explained and summarized in a single publication key information that conservators and other specialists involved in preservation and exhibition lighting needed to know.

The Museum Environment was published at a fortuitous time. During the late 1970s, the museum world experienced major transformations, and Thomson's publication became a guidebook to help navigate some of the following developments. There was a dramatic increase in the number of international travelling temporary exhibitions such as the "Treasures of Tutankhamun". This resulted in the formalization of specific environmental requirements for the preservation of collections, including light level restrictions, that had to be met by the borrowing institutions. Museums became popular destination points for the general public. This resulted in an increase in new museum construction and renovations. Often, daylight details became a key element in museum design, both in public and exhibition spaces. Museums started or enlarged their Conservation Departments as part of the overall trend in museum expansion. As the number of conservation training programs increased, more conservators were available to fill these new positions, including a cadre of conservators armed with light meters!

The first edition of *The Museum Environment* specified 50 lux for very light sensitive materials such as paper, and 150 lux for moderately sensitive materials such as oil paintings, which was subsequently increased to 200 lux in the second edition, published in 1986, based on recent studies. Although 50 lux/200 lux has been and continues to be the general rule for most museum exhibitions, many other aspects of preservation-based lighting policies and practices continue to evolve, with a greater emphasis on the total amount of light exposure over time and the assessment of potential damage based on cumulative exposure. As a consequence, the role of the conservator has expanded beyond the initial role as "light police" where we were primarily focused on ensuring that light levels were within acceptable limits. This presentation will describe the most important changes that have taken place over the last 45 years and how this has gradually redefined the conservator's role and involvement with lighting policy. Examples will include: New methods for determining risk from light damage. How risk-related data is used to improve methods and policies for preserving museum collections. New equipment to monitor and control lighting conditions. The role of LED fixtures and "smart" controls as a preservation tool.

In sum, while we still live in a 50 lux/200 lux world, there has been significant progress in our understanding and utilization of new information and equipment to improve our ability to preserve collections. As we extend our reach, we are building on the foundation provided by *The Museum Environment*.

Back to the Future: Managing Pests in a Changing World

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Although ancient Egyptians believed the dung beetle (*Scarabeus sacer*) was a symbol of rebirth, we know from ancient texts that they were also plagued by

insect infestations. Over millennia we have attempted to combat the power insects and animals have in our world. Modern cultural heritage professionals unfortunately often realize this living power through the damage that insect and vertebrate pests can wreak on our collections. For thousands of years people have relied on a variety of methods to combat infestations including sanitation, mechanical, cultural, biological and limited chemical control. Around World War II when new organic compounds developed as nerve gasses were found to have insecticidal qualities, our practices to control pests in the Western world shifted almost entirely to chemical methods. In the 1940's to the mid 60's, synthetic organic insecticides, like DDT were considered a modern breakthrough. They became ubiquitous as they increased our food production and removed insects that carried diseases. Other forms of pest management were abandoned, ultimately leading to a crisis as higher and higher doses of chemicals became necessary to combat insects' increasing chemical resistance. In 1962, Rachel Carson braved criticism from agricultural leaders and chemical manufacturers, with the publication of her book, *Silent Spring*. This publication eventually led to the formation of the EPA in 1970 and a re-evaluation of our philosophy towards combating the world of pests. A fuller understanding of the effects of chemical control on cultural heritage staff, collections and the greater environment have required us to turn away from toxic pesticides. The past 50 years has seen a shift towards Integrated Pest Management (IPM) strategies that focus on a range of prevention techniques utilizing knowledge of insect biology, behavior and ecology to combat infestations. Since the late 1990's, museums and other cultural heritage institutions have begun to adapt these agricultural techniques to suit our specific collection risks and work practices. While combating pests is now considered an essential part of good collection care, its implementation is time consuming and often unappealing, resulting in variable success and implementation across the field. This paper will assess some of the most important successes in implementing IPM in museums, libraries and archives over the past decades, echoing the development of professionalism in preservation and collection care, while also examining where improvements are needed. The focus, however, will be explaining some of the future trends. There are exciting developments utilizing newer technologies such as remote monitoring, artificial intelligence, and data analysis. But recent surveys by the MuseumPests Working Group, and papers presented at the 2021 Pest Odyssey conference, also demonstrate that low-tech approaches based on sound science are needed for practitioners with fewer resources in all parts of the world. New resources and tools will be highlighted to aid practitioners of IPM worldwide as we reimagine our efforts for a more sustainable future.

Standards, Science, and Sustainability: Four Decades of Environmental Management for Collections Preservation

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The impacts of environmental conditions – specifically temperature and relative humidity – on collections preservation have long been recognized in the preservation and conservation communities; observations of likely effects, and efforts to potentially mitigate those via environmental "control," date to the early twentieth century, well pre-dating the professionalization of the preservation and conservation fields. Through the mid-20th century, environmental control in museum and library construction was largely driven by technological capacity and occupancy demands – massive air-handling systems, serving large cross-sections of buildings with significant quantities of fresh air, were designed to maintain human comfort temperatures and relative humidity conditions, centering on 70°F and moderate summer RH conditions of 50-60% RH. By 1978, the publication of Garry Thomson's *The Museum Environment* marked a watershed moment of sorts, providing the preservation and conservation communities with an accessible publication that provided guidance (specifically, numbers – however misinterpreted) for appropriate environmental conditions.

For the ensuing 40+ years, environmental management for collections preservation has been in a state of constant evolution, responding simultaneously to desires for standardization, advances in materials science that have refined our understanding of environmentally-driven degradation, and, most recently, the need for sustainable strategies that correct the inappropriateness of unabated fossil fuel consumption in the name of cultural heritage preservation. This talk will examine and provide an overview of the ebbs and flows of that four-decade history, including: The guiding materials science studies that influence our current

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understanding of environmentally-induced risk; Building practices ranging from the tight structures of the energy-crisis 1970s and 1980s to the fresh-air driven concepts of LEED construction, and compromise between the two; The movement from ubiquitous mechanical design and control to the future potential of passive structures; And the challenge, and evolution, of standards and professional guidance to manage the environmentally-driven degradation of our cultural heritage collections.

History Session

50 Years in the Making: The Evolution of Our Profession and Thoughts about Its Future

Moderators: Rebecca Rushfield¹, Joyce Hill Stoner²

¹Rebecca Rushfield Arts Consultant, New York, NY, US ²Edward F. and Elizabeth Goodman Rosenberg Professor of Material Culture, UD, Director, Preservation Studies Doctoral Program, UD, Paintings Conservator, Winterthur/UD Program in Art Conservation, University of Delaware, Newark, DE, US

In September 2001, W. Andrew Oddy organized a meeting at the British Museum, “Past Practice- Future Prospects,” which aimed to survey the progress of, and predictions for, different conservation specialties. Twenty years later we can now look again at where conservation has come from and where it might go. The proposed session would have two parts. In the first part, representatives of various specialties will present short (8-10 minute) overviews of highlights in the development of their specialties over the past fifty years.

Since 1975, the FAIC Oral History of Conservation Project and archive has collected source material on the history of conservation in interviews with conservators so that others can use that material to reflect upon and evaluate treatments and trends since the mid-20th century; the transcripts will be made available to speakers as requested. (Enthusiastic committees are forming in different specialty groups to prepare a variety of presentations.) In the second part, there will be longer in-depth talks by conservators in at least three areas (book and paper, textiles and analytical instrumentation, so far) who have already carried out significant studies (including doctoral dissertations).

Closing Session

Leadership. Evolution. Communities.

As the conservation profession actively examines its ethics, inclusive practices, and approaches to more equitable care of shared heritage, conservators are increasingly asked to play a role in evolving new models of collections care and stewardship. This session presents a dialogue among the representatives of three institutions, each catalyzed by different circumstances, different in scale and resources, but all evolving toward more community-engaged, equitable models of care that preserve not only objects but knowledge systems as well.

Reimagining the Smithsonian’s National Museum of African Art

Like much of the museum world, the National Museum of African Art is experiencing a sea change. Old museological values and approaches are being re-evaluated in a move towards a more intentional amplification and empowerment of partners from and on the continent. The Museum was originally founded in 1964 as the Center for Cross-Cultural Communication and used its modest collection to organize programs, educational activities and cultural exposure for local school children, particularly those of diasporic communities. In 1979, the Center was incorporated into the Smithsonian Institution, reconceptualized as an art museum and with this expansion the museum grew both its historic and contemporary collections.

In the following decade, our profession saw the passing of the NMAI Act (1989), followed closely by NAGPRA (1990), and conservators working on Native American

collections began to listen to source communities, collaborate, and innovate new ways of working with this cultural heritage. Natural history and cultural history museums, especially in Europe, followed suit with their colonial-era collections. When NMAfA was established as an art museum, academic scholarship and historical research regarding provenance, context, and function were the prevailing methodologies driving policy and procedure. Collections care based on these methodologies guided our best efforts at respectful handling, but without direct input from communities.

In addition to the social awakening that has been initiated by the BLM, Decolonization and Restitution movements, a recent change in our museum leadership has afforded us a real opportunity—latitude, time and vision—to pursue ways of changing how we work and how we might foreground African voices at the museum. With funding from the Mellon Foundation, the museum has recently launched an “African Museology” project with the end goal of becoming a 21st Century Global Art Museum through engaging people on the continent and in the diaspora in all aspects of our work at the museum, beginning with collections care.

Evolving the Practice of Conservation, Care, and Stewardship at the National Museum of the American Indian

Realized through the “National Museum of the American Indian Act” passed in 1989, the museum is a product of decades of Native advocacy, fundamentally rooted in human rights. The Museum’s guiding operating plan entitled, “The Way of the People” outlined the principles and values of the museum, establishing partnership and equitable authority as foundational elements. The collections-based departments charged with integrating Indigenous ways of knowing and being with conventional museum practice had no roadmap for this new path forward. When the conservation department was established in 1991 the profession and training was firmly rooted in a Euro-American materials-based practice. Through the commitment and patience of our Native and Indigenous constituency and support from the Andrew W. Mellon Foundation, we worked to evolve the foundation of our conservation practices. This requires the continual deconstruction of binary structures and the creation of more relational and intersectional methods of conservation, collections care and stewardship. We acknowledge that there is a long way to go and the direction forward needs to include more diverse voices, philosophies, perspectives – and importantly, systems that document and implement this pluralistic practice of conservation and collections care. The NMAI Conservation Department strives to evolve and promote equity and social justice for Native peoples, as described in the Museum’s current mission and vision statements. We acknowledge this commitment is limitless and hope to work with our AIC community to collectively determine our shared future.

Architecture - May 15

Evaluating the Efficacy of Cyclododecane in Cross-sectional Architectural Paint Analysis

Brooke Russell¹, Katey Corda¹, Catherine Matsen², Mary Slater
¹EverGreene Architectural Arts, Brooklyn, NY, US ²Winterthur Museum, Garden, and Library, Winterthur, DE, US

Embedding finish samples in clear resin is the most commonly accepted method of performing cross-section analysis for the identification of pigments and media in the conservation field. Polyester, epoxy, or acrylic resins are typically used. The resin holds the delicate paint layers intact, allowing the grinding and polishing process needed for cross-section examination while preserving the sequential stratigraphy. The resin additionally allows for enhanced visibility under microscopy.

This standard method of cross-section preparation comes at a cost. The resin often penetrates and embeds within the sample, particularly in more porous samples such as water soluble or under-bound (paint with a higher pigment to media ratio) paint samples, altering not only the optical appearance and color characterization of the layers, but also impacting the ability to perform many types of chemical and molecular analysis accurately. In short: the resin ruins the analytic potential of the sample.

A novel approach to inhibiting the infiltration of the resin into paint samples was published in the Journal of Analytical and Bioanalytical Chemistry in June, 2008. The article, titled Stratigraphic analysis of organic materials in wall painting using micro-FTIR attenuated total reflectance and a novel sample preparation technique (Martin de Fonjaudran, Pique, Nevin and Cather) posits that by coating the paint sample in melted cyclododecane, the cyclododecane will prevent the resin from infiltrating porous paint materials during the embedding process. Upon curing and exposure of the sample face through polishing or cutting, the cyclododecane will sublime, resulting in a resin-surrounded, but not infiltrated, paint sample.

The aim of this article is to review the implementation of the cyclododecane preparation method on architectural paint samples that are highly sensitive to resin infiltration-- namely, distemper paints - and determine if this is a viable alternative to direct resin binding. It will discuss pertinent nuances for success in the preparatory process. In addition, it will compare the process to the standard method and discuss the benefits of the cyclododecane method as a low-cost, low-tech, readily accessible option.

Limewash Lessons: Field Testing a Failure

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After a \$5-million restoration is complete and awards have been won, how could a building look shabby after only a few years?

A building in the greater New York metropolitan area, constructed in the 1870s, sat vacant for decades after it was abandoned in the 1950s. The two-story structure is one of the earliest examples of cast stone construction in the United States. As part of a larger redevelopment plan, the building was purchased by a private entity with a promise to revive the derelict structure. The renovation removed years of faux brick and cementitious paint and, upon completion, literally gleamed in the sun thanks to a protective application of limewash.

Because limewashes are absorbed into the porous masonry substrate, they are considered to be highly durable and breathable. When applied correctly, limewash should simply erode away over time, not chip, peel, or trap moisture. Yet the base of this building is littered with flaking bits of limewash. What is causing this deterioration?

Limewash has been around since the time of the Pyramids and for centuries remained a simple mixture of lime putty and water. In addition to providing a clean, bright finish, limewash is also odorless, non-allergenic, and can serve as a fire retardant, antiseptic, and antifungal painted finish. Over the years, additives such as salt, molasses, tallow, and casein have been introduced in an attempt to make the limewash more durable. Today, most of those traditional ingredients have been replaced with acrylic binders or modifiers.

The National Center for Preservation Technology and Training recently published a study of traditional and modified limewashes using artificial weathering for their lab studies, and recommended a simple mixture of lime putty and water as the most durable for coating handmade and modern brick without additives that could damage the masonry. Could an acrylic modifier have been added to the limewash used on the historic building in the hopes of increasing the durability? Could this addition actually be contributing to its failure? Alternatively, could the peeling and flaking be attributed to application error and not the material itself?

This presentation will combine field testing and lab analysis in an effort to identify the likely cause of this deterioration so that recommendations can be made for avoiding similar failures in the future. Field testing will include adhesion tests, as per ASTM D3359 Standard Test Methods for Rating Adhesion by Tape Test and a visual evaluation to determine how the coating is performing aesthetically in terms of color retention and uniformity of appearance. Laboratory testing, including acid digestion and Fourier Transform Infrared (FTIR), will be utilized to confirm or refute our suspicion of the presence of acrylic modifiers. In addition, small samples will be removed to be examined using cross sectional analysis to determine the number of layers applied and their thickness.

Saving Streamline Moderne: Stabilization, Repair and Restoration of the 1939 Saban Building at the New Academy Museum of Motion Pictures, Los Angeles

John Fidler¹, Maria Mohammed SE², Christina Varvi³
¹John Fidler Preservation Technology Inc, Marina Del Rey, CA, US ²Structural Focus, Gardena, CA, US ³RLA Conservation, Los Angeles, CA, US

Called in midway through efforts to establish what has become the \$482m project to build and complete the new Academy Museum of Motion Pictures designed by Renzo Piano, a separate supplementary project team was hired to find ways to stabilize and restore the 1939 Streamline Moderne facades of the former May Co., department store that fronts the development and provides a gateway to Los Angeles' Miracle Mile.

Applying the tenets of the AIC-APT New Orleans Charter, the renamed Saban Building is the largest artifact in the new Museum's collection and was worthy of conservation standards of care in its refurbishment. The team employed novel documentation methods to catch up with the rest of the construction program; deployed custom-designed laboratory analysis and engineering workshop testing to prove an innovative cladding remedial system; and managed to save substantial amounts of the exterior cladding in stone, metal and gold-glass mosaic from demolition and replacement - thus contributing towards the project's LEED Gold sustainability goals; and compliance with the City's desire for both material and design preservation.

Moving Wonderland

Ron Harvey¹, Nina Roth-Wells²
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In 1932 Alfred Thaddeus Merian painted the interior of a shed dormer in his mother's house in Wayne Maine and created what we know now as the Alice Room. The Alice Room is located in the residence of Grace Burleigh. Locals know the room as many children in the Wayne area have had afternoon tea with Alice and the other residents of Wonderland. In the fall of 2018 conservators Nina Roth-Wells and Ron Harvey were contracted to remove the painted panels of the Alice Room in this private residence and make them ready for re-installation at their new home at the Cary Memorial Library in Wayne, Maine.

This paper will outline the conservation process undertaken to remove, treat and reinstall painted dry wall panels depicting Alice in Wonderland. The project followed a phased approach to allow time for fundraising and increase community engagement. The paper will describe all the phases: removal of wall panels, treatment and stabilization, reinstallation, and the installation of appropriate lighting. There will be an emphasis on the challenges faced working to a faithful replica of an historic room in an offsite location using original materials and new construction.

Architecture: Photogrammetry - May 16

Decision-making and Planning in the Photogrammetric Survey of Wall Paintings

Lori Wong¹, Wendy Rose², Mario Santana Quintero³, Christian Quimet⁴

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In the field of wall painting conservation, photogrammetry is an increasingly common documentation tool. The resulting data can be used for a variety of applications such as for condition recording, monitoring and understanding risks: two-dimensional orthophotos, or rectified images, can be generated and used as basemaps for graphically recording and mapping conservation information (e.g. conditions, treatments, etc.); and, three dimensional models, captured over time, can be used to monitor change and for the interpretation and presentation of these decorated surfaces to a broader audience.

However, undertaking photogrammetry of wall paintings within complex archaeological sites and architectural spaces can be both challenging and time consuming given the size of the site, access constraints, resolution requirements, lighting issues, vulnerability, irregular topography, and range of possible surface attributes (e.g. varnishes, soot blackening, etc.). Furthermore, wall paintings have features that are both two-dimensional as well as three-dimensional, micro as well as macro, and modeling both the surface detail and the geometry may require different capture approaches and protocols.

This presentation aims to provide practical guidance to conservators in planning and undertaking photogrammetric surveys of wall paintings in complex architectural and archaeological spaces. Understanding the conservation needs of the site and wall paintings and how the photogrammetric data will be used are important first steps in the decision-making and planning process. A question-and-answer workflow is proposed that can help to maximize results while considering the limitations of capture, processing and storage, and access when surveying wall paintings, as well as the skills and investment required.

The Role of Photogrammetry in the Evaluation of the Lausanne Cathedral (Switzerland): From 3D Survey to the Documentation and Analysis of the State of Conservation of Its Stones

Chiara Stefani¹, Elise Feihl¹

¹Archéotech SA, Epalinges, Switzerland

Information Technology (IT) over the past two decades has constituted an integral part of the process of Built Heritage conservation. In particular, nowadays laser-grammetry and photogrammetry techniques allow obtaining exact 2D and 3D digital records of monuments with high levels of geometric and colorimetric precision. The large data set obtained provides a fundamental support for the analysis and comprehension of the building, and for dissemination of information to stakeholders. The documentation of the building can be shared among the different specialists working in the multidisciplinary field of cultural heritage preservation, such as art historians, engineers, archaeologists, architects, conservators-restorers, stonemasons, etc., contributing to the long-term preservation of the same artifact. Moreover, digital records have an important role in supporting and facilitating long term monitoring and maintenance of monuments: in fact, these last ones are characterized by vast surfaces that are often difficult to reach and therefore need to be regularly documented and controlled.

The proposed article would present the methodology adopted and the solutions obtained with photogrammetry and other techniques regarding highly detailed documentation of the external walls in molasse sandstone of 13th Century Cathedral of Notre Dame in the city of Lausanne in Switzerland. In addition, based on a

3D point cloud and reference-based 2D documentation, the article would show the role of this kind of data to support the analysis and documentation of the state of conservation of the building. In particular, this study presents an innovative semi-automatic approach for the analysis of stone degradations, based on filtering 3D geometric and colorimetric information obtained with photogrammetry and other techniques to detect stone degradations. In the specific case, the analysis focuses on three major pathologies of stone degradation: deformation and bulges, losses and lacunas, plants and microbiological growth, and crust formation. This kind of documentation is collected using drones capturing a huge number of high-resolution photos all around the cathedral and without the need of scaffoldings. The measurements repeated over time and compared with earlier documentation would allow identifying changes and would prompt specific close-up assessment of the problematic areas by stone conservation experts (this time using scaffolding). In the context of conservation management for the façades, such semi-automatic analysis of geometric and colorimetric information would allow directing the limited resources available for conservation and maintenance to the assessment of the identified specific portions in need of close-up inspection.

The challenge and the innovation of this approach is to provide the same 2D / 3D referenced dataset and a complete 3D cartography of the outer stone degradations to all professionals involved in the cathedral study and monitoring.

The paper will discuss the encountered challenges specific to the case study, the solutions developed, and the potential of the approach for the conservation and monitoring practice for this monument protected by the Swiss confederation.

Using Photogrammetry to Overcome Challenges of Documenting *América Tropical* by David Alfaro Siqueiros

Tom McClintock¹, Leslie Rainer¹, Edgar Garcia²

¹Getty Conservation Institute, Los Angeles, CA, US ²El Pueblo de Los Angeles Historic Monument, Los Angeles, CA, US

The Getty Conservation Institute and the City of Los Angeles have collaborated to preserve David Alfaro Siqueiros's 1932 mural *América Tropical*, located on a rooftop of downtown's historic Olvera St. Siqueiros is one of the great Mexican artists of the twentieth century, and the mural is significant as it is the only example of his work remaining *in situ* and open to the public in the United States. Due to its controversial subject matter, the mural was whitewashed shortly after its completion, only to be rediscovered in the 1960s. Through the collaborative project, the GCI contributed to the mural's stabilization and conservation, and in 2012 a shelter was installed to protect it from rain and direct solar exposure. Starting in 2022, El Pueblo Historical Monument, principal project partner and manager of the site, will be responsible for ongoing monitoring and maintenance of the mural.

Before transferring the monitoring and maintenance to El Pueblo the project team determined that the overall documentation of the mural, which would be used for routine condition monitoring, needed improvement, as the site and the subject impose challenges that have made traditional overall photography inadequate for the task. The outdoor mural is large, 82 feet wide by 18 feet tall, with canopy support columns that obscure parts of the mural, which does not allow for overall capture at sufficient resolution for monitoring. Moreover, the variable lighting conditions imparted by the shelter yield inconsistent illumination. Previous overall images had been produced by stitching photos together, either manually or in Photoshop, though these were found to be geometrically inaccurate. Finally, the left and right edges of the mural had not been incorporated in overall post-treatment documentation because they are obscured by the shelter's support columns.

Photogrammetry was the ideal tool to overcome these challenges. The edges could be integrated into the overall documentation by modeling them with very close-range photographs taken from behind the shelter's support columns. Previous issues with dimensional accuracy were resolved by the software's ability to export an ortho-rectified image from the three-dimensional model produced. The desired resolution of the final product was achieved by planning the precise distance of photo capture and the number of photographs necessary for optimal model processing. The result is that, for the first time, El Pueblo is able to undertake monitoring of the entire mural using a single overall image.

The success of this documentation project reflects an intentional and calculated approach to photogrammetric capture, determining the process to accomplish the

SPECIALTY SESSIONS: ARCHITECTURE

desired output within parameters of equipment available and constraints of the site. While the variables discussed are specific to this instance, the decision-making process undertaken and lessons learned are widely applicable to photogrammetry of large scale murals.

New Ways of Seeing and Recording: A Case Study in Using Photogrammetry to Advance Wall Painting Conservation

Kiernan Graves¹, Carla Schroer², Mark Mudge², Camilla Martinucci³

¹Site & Studio Conservation, Los Angeles, CA, US ²Cultural Heritage Imaging, San Francisco, CA, US ³SUPSI, Lugano, Switzerland

Prior to the conservation phase of the multi-tiered and interdisciplinary project to research, preserve, and exhibit the *Pan American Unity* mural painted by Diego Rivera in 1940, extraordinarily high resolution and accurate photogrammetric data of the artwork were captured and modeled by Cultural Heritage Imaging. The conservation team was able to utilize this data in every stage of their program, including the investigations into original technique; condition assessment, recording and monitoring; and treatment recording. The photogrammetry product was also useful to the team as it simplified basemap production of the relatively large surface, accurately recorded the entire surface prior to treatment, and allowed for detailed investigations and planning to occur remotely -- especially important during the pandemic when site access was restricted. The effectiveness of photogrammetric data is correlated to their visual presentation and accessibility. In this case, the data were processed to create two distinct ways of visualizing the results in 2-D. First, an orthomosaic was generated to create a high resolution, color corrected, rectified representation of the painted image. Secondly, Digital Elevation Models (DEMs) showed the fresco's topography in microscopic delineation by depicting the surface using a false color system relating to the chromatic spectrum where each color represents a different level of surface texture. Both outputs were individually useful, however, when combined using software that overlaid the image types and employed tools to adjust layer opacity, even further information was extracted. Additionally, the data--as processed through the software--is freely accessible online through a partnership with Stanford University. This presentation seeks to describe how the *Pan American Unity* conservation team benefited from both the type of documentation and presentation approach and how photogrammetry was a very effective use of resources.

Photogrammetry of Diego Rivera's *Pan American Unity* Mural: Producing High Precision Color and Shape Maps from 3D Data

Carla Schroer¹, Mark Mudge¹, Kiernan Graves²

¹Cultural Heritage Imaging, San Francisco, CA, US ²Site & Studio Conservation, Los Angeles, CA, US

This presentation will show high-resolution 2D outputs derived from a 3D photogrammetry model of the 22ft by 74ft 1940 *Pan American Unity* fresco mural by Diego Rivera and share our experience capturing this amazing artwork. A photogrammetry-based, high-resolution 8-billion-point 3D model of the mural was captured using ~2,500 50-megapixel images. From this data an 8 gigapixel distortion and perspective corrected orthomosaic 2D digital image of the complete surface of the mural was created along with a registered Digital Elevation Model (DEM). A DEM is a 2D false color image visualizing the 3D surface shape of the subject. In the DEM it is possible to see brush strokes in the plaster, pentimento patches to the plaster, *giornata* lines, and condition information such as cracks, abrasions, delamination, and flaking.

The mural was originally imaged with photogrammetry in December 2015. Results from this work were used by the SFMOMA sponsored conservation team in performing condition assessments and planning conservation activities including planning the move of the mural to SFMOMA from City College of San Francisco. A second imaging campaign took place in July 2020 after initial conservation activity and cleaning of the mural had taken place. These results were key to benchmarking the murals condition before its move to SFMOMA.

For relatively flat imaging subjects, obtaining the photographic data set for a photogrammetry project is usually straightforward, even for a large canvas painting; this project was challenging due to its grand scale and the way the mural was installed in the Diego Rivera Theater at City College of San Francisco (CCSF). The sheer scale of the mural at 6.7 meters X 22.4 meters (22' X 74') meant collecting a massive number of photos and managing all of that data through the processing pipeline. In addition, the mural was installed all the way to the ceiling and right up against the side walls of the theater lobby, and a railing protecting the mural also served to obstruct access and line-of-sight to the bottom of the mural. This made even illumination challenging. The 10 panels of the mural were stacked in 5 vertical panel pairs. Each pair was installed at an angle to it neighbor, making a curved shape -- not a flat surface as the mural was originally painted. This curve shape required digital "flattening" of the 3D model before the 2D representations could be created. We will describe how we overcame these challenges.

This presentation will include a discussion of the photogrammetry planning including the determination of resolution and precision needs for the project. We will describe the outputs the team considered from the photogrammetric data, and what worked best to aide conservation and mural move activities, as well as how the imaging results are being shared with the general public.

A discussion of the metadata and archiving strategy for the project will also be included.

Book and Paper - May 15

Investigating the Effects of Rigid Polysaccharide Gels on Several Paper Sizings

Karissa Muratore¹

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Still a new material for the field of library and paper conservation, rigid polysaccharide gels continue to be a vital area of research. This project attempts to address anecdotal concerns of discoloration in gelatin-sized papers treated with gellan gum. To investigate this observation, papers with different sizings were treated with gellan gum and agarose, followed by accelerated aging.

Five papers with different sizings were selected for investigation—no sizing, antique gelatin (from a 1752 text block), modern gelatin, alum rosin, and starch-based Alkyl ketene dimers (AKDs). These papers were treated with three different kinds of rigid gel—2% Ticagel L-6, 2% CPKelco KELCOGEL® LT100 Gellan Gum, and 5% Stellar Scientific Agarose LE. Half of the treatments included interleaving with HM-54 Usu-Gami Thinnest (9 g/m²) tissue. Half of all the samples were then aged at the Library of Congress at 80 degrees C +/- 2 degrees, 65% RH +/- 2% for 21 days. All samples were characterized before treatment, after treatment, and after aging using multiple analytical methods. An X-Rite i1 Pro spectrophotometer was used to measure colorimetry to track any discoloration and/or darkening trends. Horiba meters were used to measure pH and conductivity to detect any potential correlations with the colorimetry trends. Imaging under ambient and ultraviolet illumination was used to monitor any visible effects and potential correlations with the colorimetry trends.

At the time this abstract was written, all testing and measurements were complete, though analysis of the data is ongoing. Whether or not any correlations are discovered, this specific issue has not been previously published on, nor has this large of a dataset been collected. Thus, it would add to the growing body of knowledge on the use of rigid polysaccharide gels in library and paper conservation.

Where Tradition meets Technology: Utilizing Microfibrillated Cellulose as a Repair Material in Fan Conservation

Kathryn Boodle¹

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Advances with microfibrillated cellulose (MFC)—also known colloquially as nanocellulose—has improved our ability to create near invisible mends on paper-based objects, especially those repairs that rely on both transparency and strength. While casting MFC into a thin film for repairs is the most common form of application, the nanocellulose can also be used in its gel form either alone or mixed with an adhesive to apply miniscule mends directly to the broken fibers of the paper. This type of application, combined with the nanocellulose's ability to become extremely transparent, provides new opportunities for a minimally invasive repair on the surface of an object and utilizes cellulose's inherent bonding properties.

This presentation will explore the benefits and shortcomings of applying nanocellulose gel in combination with traditional fan conservation techniques on three Gilbert and Sullivan souvenir fans. As the fans were decorated with scenes from the plays, the ability to not interrupt the continuity of the image was highly desirable. The use of nanocellulose was specifically utilized in areas where the fans leaves were fraying, but not yet completely broken in an effort to minimize handling and limit the expansion of the fan package overall. Additionally, this talk will discuss the different percentages of nanocellulose in combination with various adhesives and how testing helped to determine the combination that would provide the best repair and flexibility required for the unique aspects of a hand fan.

Nanocellulose in Practice: Properties of Microfibrillated Cellulose and Cellulose Nanocrystals

Rachel Mochon¹

¹*Harry Ransom Center, Austin, TX, US*

Nanocellulose has emerged as a versatile, sustainable material in numerous industries, such as the production of medical devices, food products, cosmetics, and electronics. In the field of paper conservation, nanocellulose has been increasingly studied as a treatment material because of its physical strength, microscopic scale, chemical stability, and high transparency.

The term nanocellulose is used to describe several types of processed cellulose fibers with diameters on the nanometer scale and lengths ranging from several hundred nanometers to a few micrometers. Likely the most common nanocellulose being tested, microfibrillated cellulose is processed from wood or plant-based pulp that undergoes chemical, enzymatic or mechanical purification treatments prior to a mechanical shearing process that fibrillates the pulp to isolate the microfibrils. In contrast, cellulose nanocrystals are prepared from acid hydrolysis of cellulose pulp, isolating the crystalline region of the cellulose. Cellulose nanocrystals can be prepared from various cellulose sources, including wood and plant-based pulp, algae, tunicate, and bacteria.

These two types of nanocellulose differ dramatically in their physical appearances and working properties. However, both materials are highly sensitive due to their extreme hygroscopic nature and propensity for distortion, which presents challenges when integrating these materials into traditional treatment approaches. This presentation will evaluate the range of forms these materials may take that could be useful to conservators. Different casting techniques and preparations with additives, colorants and adhesives will be discussed. Finally, the potential of these two materials in treatment applications will be explored.

Art on Paper Discussion Group - Treatment: Collaborative Conservation

As we grapple with the effects of the global pandemic, we recognize that as human beings (and as conservators!) we become better when we are connected to other individuals. Oftentimes, paper conservators can find themselves isolated as the only conservator in a lab, as the only paper person in the area, or as the sole proprietor of a private studio. Everyone, including those who are conservators in larger labs, can benefit from the different perspectives that arise out of conversations with colleagues. It is the goal of this session to offer that space: a space for conservators to come together and discuss treatments, or treatment-related problems, that are particularly challenging with their peers. A wide range of speakers, from private practice to institutional, from late to early career professionals, and from a broad geographical range will present to achieve a diversity of perspectives and viewpoints.

Book and Paper - May 16

Book and Paper Library Archives Discussion Groups

Consuela (Chela) Metzger¹, Lauren Telepak², Erin Hammeke³, Jo Anne Martinez-Kilgore⁴

¹*UCLA Library, Los Angeles, CA, US* ²*Harvard University, Cambridge, MA, US* ³*Duke University Libraries, Durham, NC* ⁴*Arizona State Library, Archives, and Public Records, Phoenix, AZ, US*

Archives and libraries can be stewards of collections that were appropriated through conquest, theft, and colonialism. Libraries and archives can also develop “post custodial” relationships with community collections that do not involve the institution taking actual physical custody of the materials. This process of repatriation and/or post-custodial collecting relationships can be complex and evenly politically charged. As conservation and preservation professionals, what is our role during this process? This session aims to provide more context to this question through three short presentations that explore best practices, background information, and a case study. The majority of the time will be left for open discussion with the audience to share questions, comments and to share their own experiences. Protocols for Native American Archival Materials Jo Anne Martinez-Kilgore, Conservator, Arizona State Library, Archives, and Public Records The Protocols for Native American Archival Materials were developed to provide best practices for the culturally responsive care and use of Native American archival and documentary materials held by non-tribal organizations. This talk will discuss how the protocols shape work at the state archives in the treatment of collections and in consulting with custodians of collections throughout the state. Post-custodial library and archives conservation Erin Hammeke, Senior Conservator for Special Collections, Duke University Libraries This exploratory talk will present a background for, and overview of, post-custodial and participatory library and archives and the role that conservation may play in them. Repatriation in academic libraries, two recent conservation experiences Consuela (Chela) Metzger, Head of Preservation & Conservation, UCLA Library UCLA Library has been contacted by those seeking to rebuild European Jewish libraries destroyed by the Nazis. In both cases, people found online versions of UCLA books that clearly had marks of ownership from the European Jewish libraries in question. Conservation has been part of the repatriation conversation in interesting ways. The future may hold more of these repatriation actions.

Library and Archives Conservation and the Path to Professionalization

Ellen Cunningham-Kruppa¹

¹*Harry Ransom Center, Austin, TX, US*

In the United States, the stirrings of what would become the modern field of library and archives conservation began during the early Cold War period, particularly in the latter half of the 1950s. At that time a handful of practicing bookbinders-cum-conservators within the national Guild of Book Workers began to build the inchoate field's knowledge base, establishing a library collection of the most current book and paper conservation reference sources and launching a journal that played a singular role in publishing emerging concepts and scientific and technological applications important to book conservation. Fast forward to 1980, the year library and archives conservation became a field of advanced study in the academy, in the School of Library Service at Columbia University. The nearly three-decade path to “professionalization” of the new conservation specialization involved wide-ranging historical, social, political, and cultural forces that worked for and against formally educating and training conservators to address the preservation issues specific to the nation's research libraries and archives. This presentation will focus on the 1970s, a decade in the U.S. in which conservation became increasingly integrated in the work of collecting institutions. Signaling a maturing field, the American Institute for Conservation and the National Conservation Advisory Council were established, promulgating collaborations and standards with the authority of sanctioning bodies. For the first time, a federal funding agency, the National Endowment for the Humanities, began to fund preservation projects in the nation's research libraries. Central to the professionalization of preservation and

conservation in the nation's largest research libraries was the work of the fledgling Research Libraries Group. Established in 1974 with support from the Andrew W. Mellon Foundation, the directors of the small but influential RLG hired the nation's first preservation managers. Charged with addressing the needs of the large number of embrittled collection holdings in their libraries (Harvard, Yale, Columbia, and New York Public Library), these pace-setting preservation managers were essential to the library and archives preservation/conservation specialization gaining momentum and validation in the mid-late 1970s. One person in particular, Pamela Darling, played a crucial role in establishing the first graduate education programs in library and archives conservation and preservation administration in Columbia's School of Library Service. Though Paul Banks has received much of the credit as the founder of this program, he did not go the road alone—Darling's partnership in the effort was crucial.

T.H. Saunders Sample Book: A Treasure Trove of 19th Century Papers

Rosaleen Hill¹, Natasa Krsmanovic¹, Robin Canham¹

¹*Queen's University, Kingston, Ontario, Canada*

In 1855, the English papermaker T.H. Saunders represented England at the Exposition Universelle des produits de l'agriculture, de l'industrie et des beaux-arts, in Paris. Saunders & Co. created and exhibited a paper sample book, “Illustrations of the British Paper Manufacture,” containing 151 paper samples divided into three categories: papers made by hand, papers made by machine, and special papers. T.H. Saunders & Co. was well-known for their watermarked papers which were used for banknotes, cheques, stamps, and other official records.

The W.D. Jordan Rare Books and Special Collections at Queen's University holds one of nine known institutional copies of “Illustrations of the British Paper Manufacture.” The library's untreated paper sample book is in poor condition with detached boards, extensive foxing, fading, discoloration, and image transfer, and demands that we, as its custodians, reflect on what forensic information can be uncovered in an untreated object versus what is lost when “typical” conservation treatments are undertaken.

This paper will outline the *T.H. Saunders Project*, which is designed to increase our understanding of 19th Century hand and machine-made papers and to make this information accessible to a wide range of researchers via the *T.H. Saunders Project* website. The project website will include the results of technical analysis of the paper samples (XRF, FTIR and GCMS) with an initial focus on watermarked and coloured papers and non-destructive fiber analysis. A review of current best practice for the conservation and digitization of sample books will be completed and accompanied by a technically-rich digital surrogate/ specimen reference tool to follow in a later phase of the project.

Fifty years have passed since the only known conservation article relating to one copy of the sample book was published in the Bulletin of the American Group, International Institute for Conservation and little has since been written about T.H. Saunders & Co. The authors hope that the T.H. Saunders Project website will be a resource for researchers to engage with the sample book as a digital object and source of technical information.

Conservation and Study of Simon Pokagon's Birch Bark Books

Marieka Kaye¹, Oa Sjoblom²

¹*University of Michigan Library, Ann Arbor, MI, US* ²*National Park Service, HACE, Lowell, MA, US*

While birch bark is more commonly found in museum collections, it is less common in libraries. The need to learn more about the history and material technology of birch bark in bookmaking arose when two conservators, Oa Sjoblom and Marieka Kaye, received damaged copies of Simon Pokagon's (Pokagon Band of Potawatomi) birch bark books *The Red Man's Greeting* and *The Red Man's Rebuke*, at the Weissman Preservation Center, Harvard Library, and the University of Michigan Library. These small and delicate books, printed on North American birch bark for the Chicago World's Columbian Exposition in 1893, are frequently studied for their importance to Indigenous book history and the strong statements Pokagon made, advocating for the rights of Indigenous communities. The damage found in the books made

SPECIALTY SESSIONS: BOOK & PAPER

them unsafe to handle, and repair was required to continue allowing use. Conversations with experts in other disciplines and current artists working with birch bark were a vital part of these treatments and led to collaborative projects. Apart from treatment solutions, much was learned about how birch bark was harvested and processed for this type of use, as well as the cultural significance and use by the Anishinaabe.

Book and Paper - May 17

Professional Identity in Library and Archives Conservation

Jen Hunt Johnson¹, Giselle Simon²

¹University of Notre Dame Hesburgh Libraries, South Bend, IN, US ²University of Iowa Libraries, Iowa City, IA, US

Over roughly 50 years, the specialization of library and archives conservation has matured while withstanding a significant series of shifts that have shaped the role of the modern-day conservator.

An evolution of training models from apprenticeship, to librarianship, to art conservation programs have imbued the field with an amalgam of perspectives, if simultaneously opening up ambiguity. Within the academic sphere, accelerating technology has altered not only how the conservation of research artifacts is undertaken, but also how these artifacts are accessed, and used in a research library environment. As such, the needs of the library have called for a reprioritization of the skills offered by conservators that reaches beyond the traditional model of a technically-focused practitioner. Today's conservators have many "hats" to wear: technician, manager, scientist, photographer, advocate, scholar, etcetera. How do library conservators today define their own professional identity and values? What forces drive their impact on the collections they serve.

In this one-hour session four panelists will present their personal reflections and experiences that developed their identity as library conservators. A series of short presentations will be followed by a panel discussion and Q&A session with the audience. The panel will reflect on what it means to be a library conservator at this moment and time, what identity is reflected by the specialty as a whole, and how we have been shaped by the transformative cultural changes experienced in our lifetimes.

Panelists:

- Ellen Cunningham-Kruppa, Associate Director for Preservation and Conservation, Harry Ransom Center, University of Texas at Austin
- Justin P. Johnson, Senior Conservator, Books and Paper, University of Washington Libraries
- Christine McCarthy, Director of Preservation and Conservation Services, Yale University Library
- Karissa Muratore, Conservation Resident, Northwestern University Libraries

Moderator and Panel Organizers:

- Jen Hunt Johnson, Special Collections Conservator, University of Notre Dame Hesburgh Libraries
- Giselle Simón, Conservator, University of Iowa Libraries and Adjunct Faculty at the University of Iowa Center for the Book

A Proven Case of Repainted Ming Dynasty Chinese Ancestor Portrait Painting

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¹San-Jian Art & Conservation Co., Ltd., Taipei, Taiwan

"Tsai Fu-Yi Portrait" the paper-based Chinese ancestor portrait painting, is a hanging scroll worshipped by the Tsai family every year since the end of Ming Dynasty (14-17th century). It is currently the only known oldest extant ancestor portrait hand down in the private family in Kinmen, Taiwan.

Due to the repeated hanging and rerolling for hundreds of years, this hanging scroll had become seriously damaged. The painting was supposed to have been treated twice before, and the latest was around the 1950s. The portrait was almost repainted with modern paint, where no longer be able to see the original pigment or the drawing lines. But soon, the damaged situation became worse caused by the repainted paint. Because of the severe conditions, the Tsai family had to abstain from their traditional worship to the hanging scroll that has lasted for hundreds of years.

This conservation project continued the previous historical background and scientific investigation, the main purpose is to attempt and expect to remove the modern synthetic paint which overpainted on the surface of the original traditional mineral pigments, as well as remount in an appropriate mounting format. In the beginning, we used a variety of methods and solvents to test, but they all failed. We frequently thought about how the spot test method runs into limitations and the difficulties we were facing in this project, this case provides a reference experience if there is another paper-based artwork that encountered modern paint repainted issues. Eventually, we adopted volatilize gas of ethanol to soften the paint. Carefully remove it without damage the underneath pigments, little by little, the painting revealed its original beautiful red cinnabar color that showed under previous XRF analysis and the original Ming Dynasty style ink drawing lines. This response to the Tsai family's inheritance record of this painting and the stories of their ancestor Tsai Fu-Yi, confirming the inferences of art historians on the study of the time of this portrait.

A unique frame to keep this portrait in traditional hanging scroll format, without rolling up and avoiding creases and cracks, safely display and store as well. Four replica paintings reproduce very accurately to continue the inheritance and worship tradition for the family generations. The result of conservation proved the historical value of this ancestor portrait painting. It was registered as significant antiquity in 2020 by the Ministry of Cultural of Taiwan. And the county government has not only provided further preservation to this cultural asset also the memory for the Tsai family and the people in Kinmen. So this is an excellent conservation project, integrated not only conservation and research in art history but also the Tsai family and the Government.

Can an Old-School Treatment Ever Catch Up with the Change? A Hybrid Method for Treating and Remounting a Ming Dynasty Chinese Silk Scroll Collected in the National Palace Museum, Taipei

Sun-Hsin Hung¹, Ika Hsiao²

¹National Palace Museum, Taipei, Taiwan ²Cleveland Museum of Art, Cleveland, OH, US

Traditionally, remounting a scroll with Chinese methods seemed to be the only path to treat a Chinese painting in terms of filling losses, cleaning stains. Restoring a Chinese scroll almost always equaled remounting it. These older mounting elements tended to be discarded because of their role as "backstage contributors." For example, the wooden dowels used in a rolled hanging scroll could be harmful to the artwork if they carried more acidic ingredients or were structurally warped. Additionally, the backing layers were considered less important because they were not displayed, but rather hidden against the wall. Finally, the silk borders were usually replaced with new ones because they were considered ancillary to the painting. Besides judgements on the low importance of retaining these materials, the simple fact that it is easier to replace an older mount with a newer one contributed to remounting justifications. In other words, it is more complicated to locally treat Chinese paintings due to the complexity of aged and fragile multi-layers of mounting; it is especially difficult to give the treated parts of the scroll the same flexibility and thickness as the untreated parts, which is a task that requires a high level of skill.

Yet, a remounting process is also not without challenge as it can be considered an aggressive approach given the amount of water introduced into the object. While most conservators desire the minimal acceptable treatment necessary, following the AIC Code of Ethics, this approach is not always possible when trying to treat and retain an old mounting. For example, the conservator must keep the same ratio of expansion and contraction throughout all layers and areas when partially separating the original mount, treating it only partially, and then assembling it back together.

SPECIALTY SESSIONS: BOOK & PAPER

In the past decade, these minor remedial treatments in both the US and in China to restore a Chinese scroll have gained much attention and been promoted to have as good an outcome as remounting. Now, rather than discarding older elements, any accessories for mounting a Chinese scroll are viewed as precious as the artwork itself because they can be studied to document the historical techniques and methods of the period; therefore, new treatments attempt to save as much original mounting material as possible. This approach will be demonstrated by a case study of a Chinese painting by scholarly artist Qiu Ying dated to the 16th century that depicts a landscape with mountains and a pavilion. The mounting materials, including border silks and backing layers, are estimated to be 17th-century and deemed worthy of saving by both the curators and the conservators. This project was made possible through the cooperation of conservators from the National Palace Museum in Taipei and the Cleveland Museum of Art. This paper will reveal the innovative techniques and thought process behind this treatment which resulted in the older elements being saved and safely re-used. Keeping these mounting materials facilitates the study of the mounting materials, including their manufacturing and the aesthetics of the period.

BONG HiTS 4 JESUS': Conserving a Controversy

Seth Irwin¹

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Artwork and historical objects that originate from either cultural or political controversy pose a unique challenge for conservators. Often these types of objects are created for the purpose of political protest, resulting in condition and aesthetic issues linked to a specific event. This can present an ethical dilemma for conservators as we are tasked with repairing damage to objects while at the same time preserve their use history. Conservators can be faced with the difficult questions of what to do when the physical damage to an object is the most inherent part of the object and/or that it is the entire reason for the object's historical importance? In cases such as these, the conservator becomes a pseudo investigator attempting to ascertain when damage happened, what damage is historically important, what damage should be repaired, and what damage should be left alone. This was the case for a fifteen-foot-long banner that found itself at the center of one of the most important First Amendment U.S. Supreme Court Cases of the last half a century. The banner, made entirely out of butcher paper and duct tape, by high-schooler Joseph Frederick of Juneau Alaska, was hoisted up the on the snow-covered streets in January of 2002, during the 2002 Winter Olympics Torch Relay. Little did he know that this action would result in his suspension and a lawsuit, that would wind its way to the U.S. Supreme Court and become a landmark case in deciding the constitutional rights of students and free speech. While the case made national headlines for years, the banner found itself on its own journey, traversing the U.S. multiple times and eventually finding its way to the First Amendment Museum of Maine in 2021, in very poor condition and required a major intervention to be exhibited. Due to the size, ethical implications, and desire by the museum to exhibit it, the project became a good model for approaching and conserving "protest art". This talk will discuss the wild and remarkable story of the U.S. Supreme Court Case *Morse v. Frederick*, and specifically about the ethical implications and treatment of the fifteen-foot-long "BONG HiTS 4 JESUS" banner that was at the center of this important case.

The Chew Kee Store: Preserving the Legacy of the California Cantonese Gold Rush

Jennifer Parson¹

¹*Kala Conservation, San Francisco, CA, US*

The Chew Kee Store in Fiddletown, California, established during the Gold Rush, was an herbal medicine shop and general store that serviced the Chinese immigrant community and remains a unique material archive of the legacy of Chinese American history. With a main storefront at the entrance and living quarters in the back, it served as a business and home for its residents and gives the visitor a rare glimpse into the lives of early Chinese immigrants to California. It operated as a store until 1913 and was the center of the once vibrant community, the largest Chinese community in California outside San Francisco. The store was occupied continuously until the last Chinese resident in Fiddletown, Jimmy Chow, died in 1965. He kept the store and its contents intact and the building stands today as a time capsule of Cantonese Gold Rush immigrant culture. Over the past 40 years,

there has been an ongoing community-initiated effort to preserve the Chew Kee Store building and its contents, now a museum and California Historic site. The building is a traditional rammed-earth construction; its thick adobe walls are covered in layers of peeling 19th century newspapers. The rooms are filled with original items from the store and other objects of daily life. The walls and shelves reflect the material culture of a 19th-century Chinese merchant: colorful banners with calligraphy, religious ephemera, calendars, decorative tea boxes, medicine bottles, and account books. Most of these paper-based materials were in a severely deteriorated state. This talk will outline the historic significance of the Chew Kee store, past interventions to restore the building and its contents, and lastly my recent conservation treatment of the varied paper-based materials.

Sewing, Adhesion and Grain Direction in Book Conservation

Rita Udina¹

¹*Rita Udina · Paper & Book Conservation, Premià de Mar, Spain*

Bookbinding structures consist basically on sewn or adhere components. The type of attachment of each part to the rest defines the mechanism a book will function and be handled. Conservators are compelled to preserve the main supports unaltered and yet precisely because structural parts allow the functioning of the object it is often accepted that when they are damaged they are better replaced rather than solely preserved. However, restoring the original structure is not always enough, specifically for disproportioned bindings. That is, those that are not efficient in their current proportion (size, weight, or other features), being therefore not durable even when restored.

A few examples of the use of endpapers against the grain direction are discussed (both in the ancient times and more recently) as a probable way to deal with the weakness of the joint. It is likely that experienced bookbinders used it on purpose to prevent a premature detachment of flyleaves. The hypothesis highlights the benefits of sewn attachments in flexible areas as opposite of adhered ones. Whenever sewing is not feasible, the grain direction shall provide a structural nature to some extent, noteworthy for adhered movable unions.

These ideas held in the past are to be considered in the future for ever complex decision making of book conservation.

Chinoiserie/Chinese Export: A Comparison of Conditions and Treatments of Two Wallcoverings in Comparable Oceanside Environments

Deborah LaCamera¹, Lorraine Bigrigg¹, TK McClintock¹

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The Jeremiah Lee Mansion, a c.1765 wooden structure within the historic port city of Marblehead, Massachusetts, has a relief printed English Chinoiserie wallpaper surviving from the date of construction installed within a small interior hall. Rough Point, a c.1891-1922 masonry structure, has a c.1800 hand painted Chinese export wallcovering mounted in a ballroom overlooking the rugged coastline of Newport, Rhode Island. A comparison of these two interior embellishments is instructive in light of their installation within exposed New England seaside structures as coastal weather patterns grow increasingly extreme. Because of their differing locations within building structures of varying porosity; the nature of their paper supports, media, and mounting formats; history of care; and compromises in condition and appearance, their overall conservation treatment designs differed appreciably in their priorities, complexity, degree of intervention, procedures and materials, and remounting formats.

The Chinoiserie wallpaper was assembled from overlapping sheets of heavyweight laid paper and mounted directly to coarse plaster walls with overlapping vertical seams but without benefit of a lining of paper or fabric. It exhibited marked fragility, widespread separation from the walls, and extreme cleavage of media, all of which had received minimal attention over the building's 250 year history. Conservation treatment largely focused on consolidation of the surviving media, reinforcement by lining, and overall remounting using a traditional wall preparation of fabric and paper aimed at stabilization with an "archaeological" appearance. In contrast, the

Chinese export wallcovering had a long history of poor decision making associated with mounting and subsequent repair. Up to three rolls were assembled and mounted on poorly joined Masonite panels for display as sections surrounded by moldings. The wallcovering exhibited structural damage including large tears and separations from the Masonite panels and marked delamination of the paper with associated losses in image resulting from extreme fluctuations in the seaside climate. Furthermore, aesthetic compromises stemmed from general discoloration as a result of exposure, poor quality mounting and repair materials, and especially from the uneven loss of the malachite ground with subsequent poor-quality overpainting in acrylic media. In such a grand, formal room, the treatment objective was equally focused on structural insecurity as it was on compromises to esthetic integrity. The removal of the original support from the Masonite panels, lining, readhesion of the separated laminations of paper, and removal as possible of the remaining overpaint was considerably more challenging than for the Chinoiserie wallpaper. Also more complex were the decisions regarding how the design which suffered from background loss and insoluble overpainting could be reintegrated as well as what panel system would be most appropriate for remounting on exterior masonry walls bearing direct seaside exposure.

In summary, the treatment of the Chinoiserie wallpaper and Chinese export wall-painting represent two extremes of overall conservation treatment. The different installations within seaside New England historic homes, original materials, mounting formats, and compromises in condition and appearance necessitated different treatment strategies that illustrate a repertoire of objectives, technical procedures, and materials in the crafting of individually tailored solutions.

“Pressing Politics:” A Technical Study of German Expressionist and Mexican Prints from the Los Angeles County Museum of Art

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Ten prints from two curatorial departments, the Rifkind Collection and Latin American collection, were chosen for a technical study to prior to their joint exhibition “Pressing Politics.” The study group of 10 objects, five from each collection, included a variety of prints, from fine art portfolio prints to mass-produced broadsides and books. An in-depth investigation into the materials and techniques used to produce these paper supports and printing inks has not been undertaken to date. The study was conducted by LACMA’s Assistant Paper Conservator and Associate Conservation Scientist, with multispectral documentary imaging by the Senior Imaging Specialist and Photographer. Visual and microscopic examination, X-Ray Fluorescence, Micro-fade Testing, and fiber identification via Polarizing Light Microscopy were carried out to identify the fiber and filler content of the supports, the pigments used in the printing inks, and the manufacturing techniques used to produce the supports. While curatorial and conservation hypothesized that a variety of supports ranging from utilitarian newsprint to high-quality fine art papers were used, this study revealed that the study sample of ten prints was largely composed of bleached wood pulp paper. This new knowledge of the artworks’ materials has significant implications for their preventive conservation recommendations, and for the longevity of these and other works in each respective collection.

Collection Care - May 15

Collections Management Practices in Conservation

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Effective conservation requires good collection management and registration practices. These methods provide a legal and ethical framework to the care of cultural property. Conservation practice is underpinned by complementary ethics, but the guidance provided through laws and regulation for conservation practice are narrower. While many institutions have collections management professionals on staff, the expectations for how collection management and conservation professionals can benefit from jointly stewarding the collection is often not thoroughly laid out. Conservators are highly trained in direct care of heritage materials, but often the burden of legal custody (temporary or permanent) and fiduciary responsibility are not fully understood. As stewards of collections and cultural property, collections managers and registrars are specially trained in local, domestic, and international legal and ethical standards, and they use policies, procedures, databases, and general expertise to ensure compliance. Conservation professionals represent a specialized subset of the overall collections stewardship discipline, and policies, procedures, and collections information systems developed within conservation departments would benefit from this more holistic lens.

Both the general public and professionals working within cultural heritage have long held the misconception that collections management practices are intrinsic to all manner of museum training and can be assumed to be in place if the organization is a museum, collections-based research laboratory, or other heritage-affiliated organization. The fundamental misunderstanding arises when it is assumed that collections management practices are simply logical pathways that anyone working within a heritage context can develop and master. To do so is folly and undermines the foundation of ethical and legal practice. Using the Smithsonian’s Museum Conservation Institute (MCI) as a case study, this presentation will demonstrate the benefits of applying collections management and registration practices to a collections-based conservation research lab—an organization without permanent collections but regularly assuming temporary custody of accessioned objects and samples for conservation treatment, scientific research, and teaching. Since its founding in the mid-1960s, MCI has relied on conservators and research scientists to develop and maintain all manner of policies, practice, and systems without the benefit of collections management or registration professionals. Historical systems in place for managing collections- and sample-based operations of the MCI, therefore, followed ad hoc procedures developed based on need rather than following a centralized framework with imbedded integration.

Over the last 3 years, since becoming an official collecting unit of the Smithsonian, MCI has made changes to their policies and procedures to better reflect the laws and ethics of the larger cultural heritage field while improving the ethical care of collections. This included the development of a Collections Management Policy, Collections Management Procedures, Collection Information Systems, and legal transaction forms. Through the expertise of collections management, legal counsel, and input from conservation and scientific staff, a framework for overall collections stewardship is now guiding the development of revised practices and procedures and holistic collection care.

Evolving Strategies for Safeguarding Collections at the Library of Congress

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Strategies to care for the Library of Congress collections have evolved in response to changes in how collections are used, displayed, handled, and stored. Preservation and conservation priorities and approaches have clearly been influenced by the research and discussion in the field on how to limit risk while promoting meaningful access—a critical goal for a publicly held resource and asset. Over the past three decades the Library has added new storage options including offsite campuses that

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provide very good storage environments while presenting transport, handling, and immediate access challenges for some formats. This presentation will highlight some of the decisions we have made about how we stabilize, house, store and display a variety of objects and collection types, review lessons learned, and discuss future directions with a heightened institutional focus on digitization, exhibition and public engagement. These collections will include a large collection of theatrical artwork, groups of documents and archival materials prepared to be easily handled by curators and specialists during public events, objects housed for handling within a library environment, and challenging formats sent to offsite storage. The presentation will also touch upon the integrated work of conservators, preservation specialists, and technicians and their roles within the Conservation Division.

Lessons from the Pandemic: The Evolution of New Solutions for Collection Care and Management from Inclusive Collecting Practice

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The paper describes how conservators at Amgueddfa Cymru – National Museum Wales (ACNMW) responded to a rapid change in collecting practice at their museum. ACNMW has initiated a new vigorous Rapid Response Collecting (RRC) policy to counteract exclusion, maintain relevance and ensure everyone is represented in the national collection. Coined as a term by the V&A(1) in the UK in 2013 RRC is defined as the collection of contemporary objects in response to major moments in history ‘to collect the meaningful present’. Although not uncommon as a collecting strategy, the Covid-19 pandemic and the emergence of the Black Lives Matter movement have given RRC greater prominence as museums seek to demonstrate cultural democracy and move away from the trope of museum neutrality.

Museums have traditionally collected items that were survivors from past human activity. The ephemeral was already lost before museums considered acquisition. This had the advantage of framing conservation challenges around materials with a degree of resilience but had the disadvantage of under-representing activities, issues, and people. The advent of contemporary ‘now’ collecting has seen museums collect objects that are inherently ephemeral. At ACNMW the policy of increasing representation has seen the museum recently acquire decorated toilet-roll tubes to commemorate health care workers’ service during Covid, cardboard placards from Black Lives Matter protests and laminated tattoo flashes used by the first Welsh female tattoo artist as a ‘pattern book’ for prospective customers. This paper will discuss each of these case studies.

These objects are made from inherently unstable materials and are difficult to preserve. Traditional conservation responses might include creating specialist and unsustainable storage environments and complex interventive treatments. Having considered these options, conservation staff reconfigured their perspective from keeping material aspects to investing in supporting practice which communicates cultural value. For the tattoo flashes this meant taking advantage of their (albeit deteriorating) laminated state for highly engaged use now. The consequences of such decisions, specifically that conservation is not a default of keeping for the future, must be carefully managed. This is leading to an evolution in our conservation strategy. The greatest challenge remains a shift in perception about our relationship to continuing materiality into the future. A similar phenomenon is being experienced in museums world-wide. A range of theoretical and practical responses exist: for example, the Intangible Cultural Heritage & Museums Project (2) make a distinction between ‘preservation’ defined as ‘keeping objects unaltered’, and ‘safeguarding’ which they use to describe as ‘ensuring the viability of intangible cultural heritage’ as well as ‘the revitalisation of the various aspects of such heritage’.

This paper will contribute to a discussion about whether conservation and safeguarding are distinct concepts and whether conservation can accommodate ideas of communicating value and revitalising heritage. Is a conservation approach developed in response to RRC can be ethically consistent across all collection types? Conserving ongoing and evolving intangible cultural heritage aspects should form part of all conservation practice.

¹ MUSINGS: RAPID RESPONSE COLLECTING: COVID-19 (musingsmmst.blogspot.com) accessed 24/08/21).

² (<https://www.ichandmuseums.eu/en>)

Collection Care Professional Education: Evolution and Future Directions

Current collection care educators present the history and evolution of three respective higher education programs with an emphasis on educating collection care specialists from a wide range of fields, including archives and library science, museum studies, undergraduate education and more. The goal for this session is to increase communication about learning outcomes for collection care professionals, examining how its evolution has shaped current practice and forecasting what we might envision for its future. The session is moderated by Priscilla Anderson and Patrick Ravines and will include questions posed to audience members, short presentations by three educators, and discussion in both small and large groups.

- Presenter Mary Coughlin (Associate Professor, The George Washington University Corcoran School of Art and Design Museum Studies program) illustrates how teaching preventive conservation to non-conservators in a museum studies program has developed over nearly a half-century, the impact it has had on the field, and ideas for how to move forward.
- Presenter Melissa Tedone (Conservator and Lab Head for Library Materials Conservation, Winterthur Museum, Gardens & Library) describes the formation, current approaches, and current challenges of The Andrew W. Mellon Foundation funded Library and Archives Conservation Education (LACE) Consortium, including questions about current interventive and preventive conservation practices in libraries.
- Presenter Madeline Hagerman (Instructor, University of Delaware Department of Art Conservation) explores the demographics of undergraduate students in the art conservation major including how they get to and where they go after the program.

PANELIST ABSTRACTS

Fifty Years in Old College: The Evolution of the Undergraduate Conservation Program at the University of Delaware

Madeline Hagerman

The art conservation undergraduate degree at the University of Delaware (UD) initially began as an interdepartmental collaboration between the Art History and Chemistry departments in 1971. The in the late 1970s, the Art Conservation Department created the program to ensure that undergraduate students gained the necessary prerequisites to apply for US graduate training in art conservation. Departmental courses were mainly technical, focused on conservation treatment, artistic skills, and reconstructions. In addition, students were required to take a range of chemistry, art history, and materials-based courses in other departments. From the mid-2000s, the department has continued to expand course offerings that focus on ethics, cultural diversity, and theoretical knowledge, while maintaining a strong tradition of craft skill and technical ability. The department currently has three faculty members dedicated to undergraduate instruction plus another faculty member who shares teaching responsibilities between the undergraduate and graduate programs. Two additional faculty members teach occasional undergraduate internships. All faculty members are either practicing art conservators or conservation scientists.

Reflected in Class: the Evolution of Teaching Preventive Conservation to Non-conservators

Mary Coughlin, Cathy Hawks, Shelly Sturman

For 45 years, The George Washington University (GW) in Washington, DC, has been teaching preventive conservation to non-conservators. In 1976, Carolyn Rose began teaching GW graduate students in ethnographic and archaeological conservation that aesthetic restoration is not always an appropriate goal and it may cause the loss of information that could provide insight into materials, methods, and intent. Carolyn Rose’s forward-thinking approaches uniquely situated GW as the first Museum Studies training program in the United States to teach Preventive Conservation, before it was even called that. Over the last two decades, approximately 40 students have taken preventive conservation classes per annum, either in-person or online, meaning that since 2000, at least 800 non-conservators have been exposed to the theory and practice of preventive conservation at GW.

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By using published articles on museum training, comparing syllabi from classes over time, surveying alumni, and soliciting reflections from graduates who have carved out careers in preventive conservation, we will illustrate how teaching preventive conservation to non-conservators has developed over nearly a half-century, the impact it has had on the field, and ideas for how to move forward.

The LACE Consortium: The Evolution of Library & Archives Conservation Education at WUDPAC

Melissa Tedone

A description of the Library and Archives Conservation Education (LACE) Consortium formed by the Institute of Fine Arts at New York University, Patricia H. and Richard E. Garman Art Conservation Department at SUNY Buffalo State College, and Winterthur/University of Delaware Program in Art Conservation (WUDPAC) in 2017 will ground a brief discussion of current approaches and current challenges in educating library and archives conservators. This talk will also situate WUDPAC's library and archives conservation major within a broader historical context, raising questions along the way about current interventive and preventive conservation practices in libraries, the relationship between library and museum environments, and the future of library and archives conservation education.

Collection Care - May 16

Priority Risk Assessment and Matrices: Key Strategic Imperatives Using a Model Level Continuum to Bridge the Gaps and Securing Our History

Tricia Lawrence Powell¹

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The world is changing at a fast past and similarly, we are experiencing adverse climate change. These climatic conditions have significantly impacted the environmental control mechanisms required to preserve and conserve the collection at the National Library of Jamaica. Jamaica is a tropical country and based on location, experiences a hurricane season from June 1 to November 30 each year. Over the last 20 years, the library continues to experience frequent malfunction of air condition units, increased dust nuisance, decay in physical infrastructure, and uncontrolled humidity and heat among others. The NLJ in response to this growing and concerning trend decided to implement, in November 2020, a control and compliance programme lead by its Crisis and Risk Management Committee to detail a priority assessment and matrix as part of its strategic imperative using a Model Level Continuum (MLC) to bridge the gaps and secure our history and heritage for posterity.

The MLC approach allows us to identify our risk and for the purpose of this presentation our collection risk to include both print and audiovisual. This risk assessment identifies our current risk profile, our ability to address and counter through sustainability, a defined endangered collection, the levels of deterioration of the collection against the defined MLC, the time for repair/restoration of conservation methods, the budget required along the continuum and the human interventions to include external stakeholders to close the gaps. It also includes the limitations which will impact our sustainability agenda which will be the responsibility of the monitoring and evaluation committee under the Crisis and Risk Management Committee.

This Model Level Continuum is currently centralized at the NLJ and will counter a first in first (FIFO) logistic process within our Preservation & Conservation Branch and the Audiovisual and Micrographics Branch. The detail of the process is embedded in a standard operating procedure to ensure efficiency and effectiveness. This FIFO approach reflects the needs of patrons and forms a critical component of how we seek to balance our mandate to preserve the national interest and to allow continuity of research and access to information. The model when fully implemented throughout the NLJ will form a standard approach across the 100-member institution across the Jamaica Library and Information Network (JAMLIN). It is therefore through this intervention that we will be able to reflect on our past, imagine our future as our past will be preserved, our present sustained and the future available through a robust and structured preservation and conservation imperative in a rapidly changing world.

Reconsidering the Enemy: Using UV-C Light for Mold Remediation

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The presence of mold is an on-going issue at the Historical Society of Pennsylvania (HSP). Whether from donations not carefully vetted and unfortunate disasters such as leaks, to donations deemed to have such high research value, they are accepted in any state with the promise to ourselves, we'll figure it out later. And now, we have. Exposing materials with mold to UV-C light virtually eliminates mold in lab tests.

Founded in 1824, HSP is one of the largest history libraries in the nation. The collection consists of over 20 million manuscripts, 600,000 books, and 300,000 graphics items. HSP holds many national treasures, including the first two drafts of the United States Constitution, an original printer's proof of the Declaration of Independence, and the earliest surviving American photograph.

The Price Family Papers arrived in early 2017. The 13 large page boxes were a jumble of papers, books, and photographs - and full of mold. The archives staff donned respirators, took a quick inventory, established the institutions Research Value Ranking (10 - HSP's highest ranking), before removing the collection the mold room. The collection spans the years 1729-1971, and contains papers of a family highly involved in politics, real estate, civic, cultural and charitable organizations in Philadelphia. One member of the family was instrumental in the development of the Philadelphia Museum of Art. Another helped establish the Preston Retreat, a charitable maternity hospital for single women. The collection also contains notable artifacts such as a small cutting of George Washington's hair. Before we were able to begin treatment, several historians contacted us desperate to get their hands on the materials. Due to health concerns this was impossible.

Reflecting on past practices of mold remediation, helped me imagine a future where mold remediation is fully possible. During my fourteen years at HSP, mold has been encountered numerous times. Many different approaches to mitigation have been tried including in-house vacuuming and using outside vendors, with mixed result. Sending this collection to an outside vendor would be impossible due to the herculean task of inventorying the loose materials. The idea to use UV-C light for mold remediation came after a series of conversations with colleagues in regards to their light policies for exhibitions. UV-C light alters the DNA of any living organism it comes in contact with. In the case of mold, the UV-C light alters the DNA in the mold spore so that it can no longer reproduce.

This presentation will discuss the idea development and decision-making process in conversations with colleagues at other institutions, as well as library staff co-workers, that lead to using UV-C light for mold remediation. Materials swabbed and sent to labs for mold tests before and after treatment, show the virtual elimination of mold on the documents. Blue Scales were used to monitor any fading of the materials. The presentation will review these and other considerations such as choosing which documents to expose, as well as best practices for staff working with UV-C light.

"Valderi - Valdera": Testing and Solutions for the Phenomenon of the Wandering of Objects Due to Vibrations

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The "wandering" of objects is a disconcerting vibration phenomenon often observed in museum exhibitions and storage facilities. It can be caused by visitors moving past particular kinds of exhibitions on older, flexible museum floors, but also by construction work, loud music, or heavy traffic in or near a collection. In most cases, wandering does not pose a physical threat to the objects unless, of course, they wander to the end of a shelf with no raised rims. However, besides looking bad, repeated wandering in exhibits can create more work and object handling for curators and conservators as they constantly have to return objects to their proper positions. In storage facilities, wandering can also result in 'disso-ciation', for example in natural history collections, if similar objects wander among themselves or away from labels which are not attached to the objects.

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Practical solutions for wandering in exhibitions include the use of strategically placed bits of museum putty, or using special mounts to physically fix the object to their location. However, this is not always aesthetically desirable or physically possible. In order to develop less invasive solutions for the problem of wandering, an understanding of the wandering phenomenon is required.

An experimental program was therefore conducted to determine the mechanism of wandering. Several types of objects including ceramics, glass, plastics, and metals were placed on two different kinds of shelves, one made of glass, and the other a consumer MDF shelf with a fake wood veneer. The shelves were mounted freely on end supports as is often the case in exhibitions. The entire construction was then mounted on a commercial vibration testing table, followed by placing the objects free-standing at specific positions on the shelves. The object/shelf systems were first vibrated at frequencies from approximately 5 to 100 Hz in order to determine at what frequencies the objects and shelves begin to resonate, the assumption being that wandering would occur during resonance. They were then tested at increasing vibration levels at the resonant frequencies to determine the vibration levels at which they begin to wander.

It was found that wandering primarily occurs at the resonant frequency of the shelving system itself and not the resonant frequency of the objects. The lower vibration limit for wandering as well as how far and where an object wanders on a particular type of shelf depends on a number of factors including the weight, geometry and number of objects on the shelf, and characteristics of the contact surface and friction between the object and the shelving. Based on these results, a number of additional practical and aesthetically non-invasive measures are suggested for preventing wandering involving relatively simple changes in exhibition shelf design and placement of objects.

Connecting the Loop – Reinterpreting Collection Assessment

Fenella France¹, Andrew Forsberg¹

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For our research project “Assessing the Condition of the National Collection” a significant component was connecting visual assessment of the condition of books from 1840-1940 with the results from objective test methods (see <https://nationalbookcollection.org/methodology>). We were surprised to learn from our partners that there was no standard condition assessment form that allowed ease of interpretation between collections. This was especially problematic for preservation and collection care professionals who were trying to make informed withdrawal and retention decisions. We will discuss some of the opportunities and challenges with Linked Open Data (LOD) terminologies that can aid or hinder sharing data, depending on the complexity of the modeling.

We developed our visual assessment condition criteria for this specific research project based on the feedback from consultation with a range of interested parties, and conducted a round-robin amongst staff to better understand and reduce the range of subjectivity in the assessment, resulting in a “visual terminology” for every term we used to describe the condition of these volumes. Each term was carefully selected to define levels of condition, damage or deterioration, and was matched with one or more images that visually described the condition terminology. The visual assessment descriptors have been used to link with physical, chemical and optical (invasive and non-invasive) test methods to provide a more objective comparable measure of the condition of the book.

As we captured the scientific data, we found specific categories and groupings of data that helped explain condition differences and similarities. In an iterative process we revisited the visual assessment when data analytics revealed that the original terms, classes and groupings of specific condition criteria could be refined to provide better descriptors that more closely linked to variation in condition. For instance, our visual assessment involves selecting a ‘paper type’ for each major (> 30%) variety of stock in the textblock: ‘normal,’ ‘calendered,’ or ‘glossy.’ On the one hand, in practice during a visual assessment these categories are fuzzier at their edges than one might imagine, particularly when inconsistent paper degradation through a textblock can lead some pages to feel very smooth, others moderately textured. On the other hand, from the scientific data collected to date, the far more influential distinction to be made is between coated and uncoated stock, which just so happens to be far easier to distinguish visually. There may be other very valid reasons to categorize paper according to the original distinctions, but so far the un/coated distinction presents itself as both simpler for people to

quickly gauge and more significant in terms of degradation pathways.

The process of thoughtfully analyzing and classifying condition data has allowed us to better prioritize visual assessment terms. Using the visual terminology, we can include additional images to assist in explaining the nuances of paper degradation and how the linking of visual and objective test methods can be used to reduce subjectivity in visual assessment procedures.

Vital Signs: Condition Survey and Vulnerability Assessment for Built Heritage

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This paper outlines the development of a framework for rapid condition survey and risk and vulnerability assessment for built heritage using new digital surveying methods coupled with spatial analytical tools. The Center for Architectural Conservation (CAC) has been developing and testing survey methodologies that seek to formalize and expedite the survey process as a cyclical monitoring tool for more effective site management in the face of changing climate. Many past and current site condition surveys tend to focus on the identification and remedial treatment of immediate conditions; while this serves an important and necessary function, most surveys do not collect essential data conducive for replication or in a manner that can be used for predictive modeling of future damage.

Over the past five years, the CAC has developed and tested a range of survey methods at several Vanishing Treasures National Parks including Fort Union, Pecos, and Tuzigoot National Monument. As for much of the desert southwest, these parks are expected to experience increased drought over the coming years; however, intensive individual precipitation events have already challenged current methods and cycles of preservation leading to unprecedented wall failure and collapse at many sites. Site managers need a better tool to help prioritize resource risk based on current conditions, and future conditions as a function of an entire set of factors including environmental context, original construction, past treatments, and micro-weather data.

Part of the process has involved the development and testing of a Rapid Assessment Survey (RAS) that identifies the critical ‘vital signs’ of any resource regardless of its age, materials, or construction. The RAS was formatted in a digital application called Survey 123 which allowed the field survey team to perform the survey using a smartphone or tablet. The benefit of this application is that surveys are highly customizable, and the data is generated in digital format, so there is no need to transpose that data to a tabular or database format afterwards. Additionally, Survey 123 directly interfaces with ArcGIS online and allows for immediate spatialization of the collected data, an important part of the analysis.

Over the course of just over two weeks on site, the CAC team was able to complete two different surveys at Tuzigoot: the first survey recorded over 350 cracks on standing rubble stone walls and throughout the site’s pedestrian areas; the second survey assessed specific targeted conditions of over 300 masonry walls in two representative areas to evaluate the RAS for this specific site. Further analysis of the data relative to wall construction, past conditions, and interventions (legacy data), and weather data including time lapse photography (at some sites) completes the picture to establish relative risk and vulnerability for individual features across the entire site. The expediency of real-time spatialization has the potential to influence the ways that site managers and preservation crews prioritize their work in real-time and, through analysis, in the long term, further monitoring or intervention of priority areas. The framework contributes to moving site management from remedial to preventive preservation.

STASHc: Pocket Globes – A Housing Solution

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Pocket globes are small spherical globes held inside a case often with external

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clasps. A housing solution is needed to support about half of the globe's spherical shape to allow for easy removal of the globe from the housing. One of the lab's conservation technicians had previous experience during an internship working with Fosshape. This product is often used to create supports for the textiles as well as in the fashion industry. When wrapped around a form and heated, the material hardens as it cools and retains the shape of the form it was wrapped around. To create supports for the globes we wrapped the Fosshape around various size spheres of similar size to avoid the globes coming in direct contact with the heat. The Fosshape was then lined with a polyester cloth for a smooth surface. Finally, the form was attached to a tray within a box made using a Kasemake machine.

Collection Care - May 17

“Don’t You Know That You’re Toxic?”: Identification and Hazard Mitigation of Polychlorinated Biphenyls (PCBs) During a Large-Scale Collections Move

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Polychlorinated biphenyls (PCBs) are a highly regulated class of organic compounds, due to their 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 legislations, 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 of artifacts that may contain PCBs, working within a pre-established hazard management framework. This process is being implemented during an ongoing large-scale collections move to a new purpose-built facility, on a tight timeline with limited staff and resources. Priorities for PCBs testing are determined based on a wide variety of ever-evolving factors. When required, liquid oil 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 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.

Disaster Risk Management in the Rafael Núñez House Museum: An Integral Project to Mitigate the Effects of Climate Change in the Colombian Caribbean Coast

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On the Rafael Núñez House Museum in Cartagena de Indias (Colombia), the disaster risk assessment began to be implemented recently, which contributed to prioritizing the treatment of the identified risks, taking new preventive conservation measures for the collection, choice of the most suitable conservation and

restoration processes for the collection, and decisions at the museum level that guarantee that the public has a real experience about the XIX century Cartagena society and the lives of former president Rafael Núñez and his wife Soledad Román.

Since Cartagena is a city that in recent years has been affected by the effects of climate change, mainly by the ocean level rise, heavy rains in the last quarter of the year due to the La Niña phenomenon, in addition, it has been found that the Cartagena Bay is sinking, given the extraction of oil and gas from the underground soil. The solution for the future is that some neighborhoods of Cartagena will move due to the floods, or a pumping system will be created along the entire coast so that there is no problem evacuating the rainwater. This last solution is currently being implemented locally in the House Museum, which has recently been affected by floods of rainwater and sewage of the first level, putting not only at risk the wooden property that has a declaration as an Asset of Cultural Interest because it is a rare example of 19th-century Caribbean republican architecture, but because the collection storage is on the first level.

To treat this important risk of flooding, it's been a necessity to identify what other risks the House Museum is exposed to, for which it was concluded that there is a high probability of a fire, corrosion by the airborne salinity, and the effect of slow and progressive agents of deterioration like pests and incorrect lighting. Treatment of the most catastrophic risks not only consisted of adjusting a hydraulic pump, performing maintenance procedures on the roof, in the rainwater drainage system, in some architectural elements, elimination of previous interventions that are not in accordance with the original architecture of the House, and changes in the museography which might help to a wider range of collection use and enjoyment.

This macro project also includes the participation of stakeholders such as the Municipality, the community, and the proximity of the Museum with the fire brigade and civil protection for periodic training of the staff to know how to act in an emergency.

In conclusion, in several cultural institutions, and especially in museums, disaster risk management should become a priority, in such a way that an extension is given to the preventive conservation plan that is normally carried out, to articulate the structural part of a building, the work with the community, the museography, the management of resources, among other aspects that guarantee an integral work for the benefit of the culture.

Climate Risk Mapping for Texas Archives: Working Iteratively with Students for Disaster Preparedness

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Climate change presents an urgent challenge for the preservation of the cultural record. Sea level rise, extreme weather events, warming temperatures, and other manifestations create increasing risk for institutional-level disasters. Collections-scale salvage and treatment will strain existing resources and personnel in the arts and humanities sectors. Accordingly, proactive planning for climate change is a critical part of responsible collections stewardship in the 21st century.

At the University of Texas School of Information, preservation students use GIS (geographic information system) mapping software to visualize climate risks for archives and related collections in the state. Student cohorts address targeted risk types and regions each semester within disaster planning coursework. This iterative approach allows students to tackle big problems within manageable projects, and to build upon previous work toward a growing, collaborative knowledge base. Findings identify potential climate challenges for specific institutions; describe preservation risks to impacted collections materials; and propose proactive solutions for both institutions and regional consortia. Given the size of the state and its variety of climate zones, Texas presents a climate study region rich with potential relevance for other regions of the US and beyond.

As students engage with climate risk planning, they develop skills and interests to chart future directions in preservation, conservation, and collections care. They also lay foundations for future research at the University of Texas. As part of the University's Planet Texas 2050 Grand Challenge, geographers and climate scientists are developing complex flood modeling and climate risk mapping initiatives. When finalized, these tools will support faculty research on climate resilience for collecting institutions in specific storm events and climate warming scenarios.

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Getting to Maybe: A Case Study in Implementing Bizot Green Protocol as an Outgoing Loan Standard

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In 2014, the Bizot Group, an organisation that brings together the directors of some 50 museum institutions from across the globe, proposed the Bizot Green Protocol as a new convention for guiding the environmental conditions for loaned works. The declaration was underpinned by a series of guiding principles that framed revised environmental guidelines, commonly described as being 'wider' than industry standard.

This presentation will look at how several art museums across Australia are working together to consider, test and integrate this Protocol into its loan activities. This has largely been made possible through what might be described as integrative negotiation, or an approach to reach a joint agreement by creating value for each party. These negotiations occur both intra- and interdepartmentally within the each of the respective art museums as well as across institutions, to develop more locally relevant environmental settings whilst maintaining an active loans program.

The Queensland Art Gallery | Gallery of Modern Art (QAGOMA) was interested in implementing adaptive settings for local, particularly for its sub-tropical climates whilst maintaining a robust loan program, whilst the National Gallery of Victoria was a signatory of the Bizot Green Protocol. Both institutions, QAGOMA and the NGV, were committed to reducing energy costs whilst minimising change to collection material and meeting specifications outlined in loan agreements.

Over several years, tests were carried out by Facilities staff intermittently, to see how the art museums buildings and the collections they held, would respond under various settings made to the HVAC system. The experiences of both institutions in developing communication and integrated workflows across conservation, facility and registration teams as well reviewing technical strategies, will be shared.

More complex, was the shift to integrate the Bizot Green Protocol, and other 'wider' settings within the loans workflow. Through the Council of Australasian Art Museum Directors (CAAMD) a forum including conservators, registrars, facility managers and collection managers, was set-up. Through its membership, efforts were made to openly and frankly discuss: the aims of setting environmental parameters; issues, reluctance or impediments in adopt more flexible environmental settings; and a review of policies, procedures and legal documentation to facilitate the change. Whilst some institutions have chosen not to adjust their in-house and outgoing loan agreements, others have, or are in the process of adopting adaptive environmental settings.

By seeking to address environmental settings with a focus on interests, not positions, and facilitating supportive and respectful working relationships, both QAGOMA and the NGV, have integrated interdepartmental and inter-museum decision-making that is based on risks and benefits to wider stakeholder groups. Through this process, there has been a growing interest in supporting other regional and local galleries to consider the same and new projects are under development to support this.

Acoustic Emission and Collection Monitoring at Distance: Reimagining Connections between Scientists and Conservators

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The effective management of collections environment necessitates the consideration of a range of climate control strategies. While the decision to modify specification may be motivated by issues of sustainability, carbon footprint, and environmental impact, this must be accompanied by careful assessment of the

resulting impact on the collection. Such a multi-faceted approach was recently adopted by the National Gallery of Victoria (NGV) in Melbourne, Australia. The NGV's implementation of a more adaptive climate control approach for their collections was informed by visual monitoring of select objects using macrophotography and time-lapse, as well as the use of Acoustic Emission (AE) monitoring on a polychromed wood Flemish retable.

AE monitoring is a robust and highly sensitive method that has been shown to be capable of operating in harsh environments and detecting crack initiation and growth in wooden heritage objects at a microscale. Brittle cracking of the material releases energy in the form of ultrasound waves that propagate through the object and are recorded by sensors positioned on the object's surface.

Application of AE monitoring on an NGV object is a collaborative effort between the NGV and the Getty Conservation Institute (GCI) in Los Angeles, California, USA. The initial collaboration and travel plans drastically shifted due to the COVID-19 pandemic travel restriction. The in-person installation of the AE system by GCI scientists became unfeasible and led to a reimagining in which practical knowledge on instrument installation, data collection and analysis was shared between colleagues with varying backgrounds.

Once the NGV reopened, the AE system was shipped to Melbourne and installation and initiation of monitoring was carried out by conservators at the NGV with remote training and guidance by GCI scientists. Details concerning the selection of the most appropriate object for AE monitoring and suggested locations and attachment methods for sensor placement were discussed in a series of online meetings. Through these interactions, the scientists and conservators broadened their roles, with the former becoming more aware of the practical complications when working with art objects, and the latter fully engaged in the technical issues related with AE monitoring. Paradoxically, the inability to maintain specialist roles within the project fostered creativity and developed trust among the team.

The collaboration between the NGV and GCI achieved the primary goal of successful collection of AE data on the selected object, which helps to inform and optimize the climate control strategy adopted by the NGV. But equally important were the numerous ancillary benefits from the project: seamless integration of the AE system into the didactic display of the Flemish retable, improved AE training to convey technical information to a non-technical audience, and the organization of a 2022 NGV/GCI workshop on AE monitoring that seeks to demonstrate the practicality of the technique as an assessment tool for the wider conservation community. By expanding the traditional roles of conservation scientists and conservators, collaborative projects between remote institutions can similarly expand the possibilities of what can be achieved and deepen the impact on the individuals involved and the field writ large.

Benchmarking Method to Set Risk Control Priorities for Light Exposure and Strategize Microfading at Collection Level

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This paper discusses a benchmarking method to help collection care managers to define the levels of light control for sensitive collection and subsequently identify priorities for microfading. It will be highlighted how this allows the institution to implement sustainable collection use and care practices involving light exposure that also take into account the social and societal commitments of the institution associated to providing access to its collection.

Development of microfading technique seems to soon reach a plateau thanks to the valuable and collegial contributions from the international community of conservation professionals following Withmore's seminal work. The instrument design has been stabilised and made available at a reasonable cost while the minimum technical performances required to enable proper light sensitivity assessment of collection have been relatively well characterised. Protocol for testing collection item, associated report templates and other tools to ease the interpretation and the communication of the obtained results have been widely discussed and shared.

MFTesting to assess item's light sensitivity can transform from an ad hoc and rare test to an in-house exam routinely carried out in conservation labs as long as proper resources are allocated to it. Costs associated to MFTesting should not

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be underestimated: it should cover purchasing the instrument, training its users along with the time required to carrying out the test, interpreting, reporting and communicating its results. In light of this new situation, the paper presents a value management-based method to guide collection stewards to define MFTesting strategy and set priorities for the subset of the collection likely highly sensitive to light.

It is proposed to regroup the subset of the collection made of material vulnerable to light into a manageable number of broad categories of relative *Value at Risk* to light, defined as the portion of its value that is negatively affected by its light induced color change. Levels of risk control are set accordingly to each category and indicated by the resulting 'Preservation Targets' (PT), i.e., the period of managed use during which unwanted change of the item is to be avoided. As sustainability principle recommends: *higher the Value at Risk to light, the tighter the risk control, the longer the PT, the larger the resources allocated to it, the higher the priority to MFTest the item.*

The most effective and efficient way to build broad categories of Value at Risk to light depends on the nature of the institution, its display program and the anatomy of its collection. A benchmarking method to select regrouping scenario of relative Value at Risk to light that fits best collection needs and institution capacities will be discussed. It will be illustrated using case studies constituted by institutions in which the implementation of the described method has been applied to guide decision related to control of light risk to collection. A handful number of indicators to assess and compare scenario performances will be presented, including level of careful access to collection by relative item's value, time required and complexity of implementation, identification of manageable MFT priorities.

Working with Windows: A Case Study in Assessing Risk and Developing Solutions in Exhibition Spaces with Windows

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Daylight has become a common feature in museums, especially for galleries with collections that are moderately or highly sensitive to light-induced damage. In most instances, daylight is introduced through skylights, providing a general level of controlled illumination within the space. Windows are less common in exhibition spaces because window light is more directional and more difficult to control. Unlike skylights, the primary purpose of a window is to provide an exterior view. Consequently, methods to control daylight from a window that compromise the quality of the outdoor view are problematic.

This presentation will describe a case study at the University of Kansas Spencer Museum of Art, a mid-sized art museum renovated in 2016 which added windows to several galleries. Since the galleries are used for changing exhibitions, a multi-layered solution for controlling window light transmission was required, depending on gallery use. The challenge was to develop a practical plan that could provide useful data to develop an acceptable solution to this complex problem.

Seasonal light studies were first conducted to understand the impact of daylight across one calendar year. These studies served as a baseline to determine what level of intervention was needed to achieve conservation lighting standards. Through an hour-by-hour analysis of select days throughout the year, daily and seasonal patterns emerged. Examples of how this analysis was carried out and analyzed will be illustrated and discussed.

From these seasonal studies, it was clear that allowance for both flexible display options and optimal window use required a nuanced approach using a combination of both permanent and variable solutions. Variable solutions utilizing existing window shades were first explored. The windows in this study had two sets of shades, a complete blackout shade and a 6% transmission shade. Various options for using one or both shades in a variety of positions were evaluated and gallery maps were created to establish safe display "zones" based on material to guide future exhibition planning based on window use. The problem was that this range of options rarely provided an acceptable connection to the outside, and required constant and irregular adjustment of the shades, depending on variable daylight conditions and how the gallery was being used.

Window films are one common, permanent solution for daylight control. This project then looked at a novel solution utilizing a perforated window film as an option that could potentially offer a better overall window "experience" compared to a conventional low-transmission window film with similar light reduction capability under conditions where a significant amount of daylight reduction is required. Perforated films are generally manufactured for use in commercial advertising on buses and window displays but are not typically used for the purpose of light filtration.

By layering several light mitigation strategies using both permanent options, such as a window film, and variable options such as additional use of shades and display zones based on an object's light sensitivity, this presentation will demonstrate how a greater balance between window use and object safety may be achieved.

From Condition to Risk Assessment: A Documentation Protocol for the Preventive Conservation of Contemporary Public-Art Collections

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Contemporary Public Art is one of the most dynamic artistic languages to have become an important component of the cultural landscape. However, hazards ranging from the socio-cultural to the natural threaten the survival of public art collections. Moreover, evidence suggests that rates of deterioration may be increasing due to local factors or environmental influences accelerated by climate change. Methodologies and approaches are needed to better manage the effects of these hazards. The purpose of this research is to develop a documentation protocol for condition and risk assessment.

The workflow on which the documentation protocol relies encompasses the different types of information required to record damage and threats, as well as their causes; to assess the magnitude of risk on a scale, and to measure loss in values. All of which serves as a basis to prioritize mitigation treatments.

Application of the protocol is presented with reference to several public art collections in the territory of Siena (Italy). These collections are the result of various artistic events: *Affinità Electiva* (1994), *Arte all'Arte* (1998-2005), *UmoCA* (2011), *DOTS (Down on the Street)* (2015), and *Waldelsa* (2017). The case studies used to validate the method have provided significant support to better understand a large range of risk scenarios. To implement the protocol, different methodologies, techniques and tools were adopted to prepare the recording strategy, inspect the collections, and analyze information.

The aim is to set procedures for carrying out condition and risk assessment of public art collections, based on data collected during inspection. The database includes predefined data entry categories and methods for assessment. In so doing, it will expand the goal of recording collections by providing a platform for control and risk analysis. The result is a model of a digital repository that integrates all useful information to manage and plan the future of public art.

Given that a large number of public artworks are subject to a multiplicity of hazards, the implementation of documentation methods to record and assess conditions and levels of risk is essential. The digital repository provides all the necessary information to support decisions on appropriate typologies and priority of treatments. It will be a medium through which different stakeholders will be more directly informed of how a broader range of risks are associated with public art collections. Furthermore, this system could also be applied in other collections facing similar threats and damage. Finally, the investigation reveals key questions about the documentation and condition assessment to be incorporated into risk management frameworks and approaches applied to public art collections.

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Guided by the Light: Rethinking Approaches to Assessment of Light-Based Artworks

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Light-based artworks, for which artificial light provides key aesthetic properties, functions or themes, are a unique subset of cultural assets that challenge current stewardship strategies at collecting institutions. Incandescent bulbs, in particular, have been a ubiquitous light source put to use as an artistic medium from the early days of light-based art production in the early twentieth century, to its historic height in the 1960s, and into the twenty-first century. Incandescent bulbs can be considered obsolete at this point following shifts in technological developments that yield more efficient light sources, along with environmental regulations worldwide. As a result, the integrity of a large number of light-based artworks are now at risk.

It is increasingly common practice to substitute light emitting diode (LED) bulbs in place of incandescent bulbs during artwork exhibition due to obsolescence, expense, and safety regulations. Obsolescence introduces an urgency around accurately capturing the significance of light sources. The tight linkage between their tangible and intangible elements creates vulnerabilities for the integrity of light-based artworks, which are exacerbated over time with increasing generation gaps. Further, the entanglement of physics and perception in light-based artworks does not fit neatly into existing strategies of stabilization such as conservation documentation.

Three case studies utilizing incandescent light sources illustrate how threats to artwork stability can manifest through LED replacement, and reveal the variable outcomes to this form of treatment. The presentation seeks to outline a holistic approach to assessing change in light-based artworks, providing a framework that incorporates significance beyond technical characteristics, and takes into account the impact of values upheld by museum practice.

An Investigation and Treatment of Eva Hesse's *Several* (1965)

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While on display at Glenstone Museum in January of 2020, an aged rubber cord spontaneously broke on Eva Hesse's *Several* (1965), causing two of its sculptural elements to fall to the ground and prompting the artwork's deinstallation for conservation treatment. *Several*, a delicate mixed media artwork, poses unique challenges for its preservation and display. The sculpture is composed of four pairs of dark grey variable-length 'party balloon' shaped structures, each pair being connected by a rubber cord from which they all hang together on the wall. Each structure is a shell of papier-mâché, originally formed around a now-deflated latex balloon, and painted with grey acrylic paint. Of the four original rubber cords, at least three have broken up to this point. Before coming into Glenstone's collection, the first two breaks had been treated with different methods: one with a bulky mend and one with total replacement. Now with one more broken cord, and the inherent nature of degrading rubber cords that cannot hold the weight of the balloon structures, the need for a more sustainable treatment solution was apparent.

Treatment required consideration of many different aspects, including concerns for the preservation of original material, the potential for introducing newer and more stable materials, and concerns for restrictions in displaying and loaning the artwork. The need to better understand past treatments and future options launched an investigation that included X-radiography, digital microscopy, observation under ultraviolet light, and consultation with a past conservator of the artwork. These methods helped determined the extent of previous restorations and provided context for appropriate treatment paths going forward. Further discussions focused on ethical, practical, and aesthetic considerations as well as known treatment precedents for similar Hesse artworks, and included the voices of the Hesse estate, Glenstone's Curatorial department, and other conservators proficient in

treating Hesse's works. The result was a rich discussion of treatment possibilities, and careful consideration for different priorities. The chosen treatment aimed to find a middle ground that respected Hesse's original material choices, while reducing the chances that the rubber cords fail while on display at Glenstone or on loan.

Facsimile Future: Past, Present, Projections and Potential

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The use of exhibition copies of paper-based art at Moderna Museet has increased exponentially in recent years. A presentation examines this accelerated level of replication, placing it in context whilst looking to possible futures. Changes in the conservator's role in the past 50 years is clear in the modern and contemporary art-world. Facsimiles are utilized as a prism to explore multiple current issues - alternative presentation, protection of originals, dissemination, and resources. Larger questions of the unsustainability of current lending, repatriation, and the climate emergency examine how conservation can move forward combining guardianship with radical, creative thinking.

Discussions in the ethics and aesthetics of copying are anchored in personal practice through examining the authors use of replicas – reproduction processes, aesthetic standards chosen, materials, indistinguishability, presentation, documenting destruction and copies remaining in the system, how the original is affected and if institutional ethical consensus is created. Ontological differences in how copies are perceived and handled are touched upon along with cost, registration, legality, terminology, and artist instructions.

In the context of Moderna Museet's history and contemporary art's explorations of fakes and the manipulation of existing images the paper documents works by Yoko Ono, Marcel Duchamp, On Kawara where newspaper facsimiles protect the original, and Sharon Hayes where single use copies adhered to fiberboard replace vulnerable risographs. Exhibitions include 'Mud Muses – A Rant about Technology' (2019) where installations blended copies and originals.

The huge transformations in society and the artworld the development of the photocopier and digital printing enabled cannot be underestimated, and 3-D printing will enter its explosive stage leading to equally profound change. Photographic prints are sent in digital format for exhibition, and it is easy to imagine scenarios of sculpture facsimiles being printed on demand. Will exhibitions involve holographic technology and virtual reality of sight and touch? Will scanning of collections absorb resources and restrict other preservation alternatives, and how can conservators play a positive role avoiding, as a previous CEO of Xerox International said, 'Have we really made a contribution by making it easier to reproduce junk.'

Generational change and relaxing attitudes to copies and fakes are highlighted. Climate and societal crisis leads easily to dystopian ideas of the future but hope is necessary in every condition so other scenarios are imagined. Will there be a digital museum of uncensored art available to all to view or print in the same way that free access exists in The Uncensored Library in the video game Minecraft.

Is each decision to replicate ad-hoc or a catalyst, enabling copies to be used again and again. The speed of production solves immediate problems but has long-term ramifications. Tensions for the conservator are highlighted – using copies allows less restriction but does it establish damaging precedents and sideline traditional conservation practice or foster creativity and a dynamic environment? Facsimile use blurs boundaries for conservators, institutions, artists and the public and the paper aims to provoke discussion on searching for philosophical coherence in a time of change and calls to action.

Conservation Concerns Regarding Installations that Incorporate Living Plants: A closer look at selected case studies

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Contemporary artists include living plants into their works with increasing frequency. Despite the rising number of installations involving living plants, there

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has been little research from a conservation perspective. Given the prevalence of installations involving living matter in galleries, collections and exhibitions, this is a subject that needs to be more formally addressed, both from a theoretical and a practical conservation treatment perspective. These works of art raise a wide range of conservation concerns, such as pests, water spillage, and the light requirements necessary to sustain the living plants throughout the course of the exhibition. Further, these works pose difficult theoretical issues as they include both traditional sculptural materials as well as ephemeral elements whose care must be coordinated in concert. While these works are distinctly different from the majority of the time-based media artworks, they do share a number of conceptual similarities with media installations. These similarities include the need to replace organisms as one might replace a non-functional or obsolete component on a time-based media installation; the need to coordinate and bring in outside expertise to assist in the care of these works; and the need to adapt the installation to accommodate the gallery's physical layout (such as positioning the sculpture near a window or bringing in additional light sources) while still endeavoring to fulfill the artist's vision of their work.

Due to the numerous demanding aspects of these works of art, the scope of this research concentrated on indoor installations within the context of a museum or institution. To illuminate some of the endemic issues arising in installations that use living plants, two case studies will be presented in this talk. Both *Antoine's Organ* by Rashid Johnson and *Back to the Fields* by Ruth Ewan feature large installations that include a wide range of plant species, each species with its own unique physiological needs. For both artists, the care and maintenance of these works forms a central part of the conception of their individual installations. Based on the study of theoretical approaches and the analysis of the case studies, some initial recommendations were drafted for the conservation practice of installations including living matter.

Study and Restoration Treatment of a Collage by Giulio Turcato: From Precision Mild Heat Transfer Using IMAT Nanotechnology to Novel Sustainable Methods and Strategies for Consolidation and Reintegration

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The present work focuses on the study and restoration treatment of a collage by Giulio Turcato developed as a Master Thesis, discussed in June 2021 at the University of Turin (*Corso di laurea magistrale in Conservazione e restauro dei beni culturali, Università degli Studi di Torino in collaborazione con Centro Conservazione e Restauro "La Venaria Reale"*). The artwork is part of the Intesa Sanpaolo art Collections, located in the Gallerie d'Italia, in Milan. It is highly representative of the complexity of contemporary artworks, being made of carbon paper, crêpe paper, sketch paper, Vinavil, sand, bitumen and alkyd-based ground on canvas.

The collage was extensively damaged as it presented warped flakes and detachments of the sand and Vinavil (PVA) layer from the ground and bitumen substrate, also causing cracks on the paper. Detachments, cracks and loss of material were threatening the conservation of the artwork and compromising its appearance and aesthetic. Constituent materials were characterized through chemical analyses, where needed, and widely studied through mockups and many tests. Tests were also carried out in order to find the best adhesive for consolidation, selected from a range of water-based products, and the best methods for reintegration.

The most challenging part of the treatment consisted in finding a solution to the loss of adhesion and rigid deformation issues concerning wide areas of the artwork. The presence of very different materials and their challenging state of conservation lead to use a careful and cautious approach. All treatment steps were made keeping the canvas on the stretcher, in order not to alter or compromise the authentic material equilibrium of the collage. The novel solution to consolidation and treatment of planar deformation was developed using precision heat transfer method, developed by European IMAT project (Intelligent Materials for Accurate Thermoelectrical Device for Art Conservation), an innovative nanotechnology for

focused mild temperature treatments, tailored for the nuanced needs of the artwork. Flaking and curved layers were successfully re-adhered and flattened using an IMAT prototype. IMAT mat with silicone skin was tested on warped mockups, reproducing the Vinavil and sand layer by Turcato. The aim was to treat the deformations in order to find out the best temperature-time set, combining it with the use of moderate and gradual pressure. The transparent IMAT mat was eventually used on the artwork, successfully halving the height of the detachments and allowing to consolidate them with the selected water-based adhesive.

The work represented an interesting case-study, providing information about the artist's peculiar technique. Conservation issues were solved using new technologies, innovative methods and combination of materials. The whole treatment was carried out following the principles of the so called "minimum intervention", using restoration materials that can be distinguished by a conservator, easily removable and respectful of the artwork, making it enjoyable again by the public.

Fiat Lux: Displaying and Preserving *Flux Light Kit*

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Light bulbs are a cheap and ubiquitous commodity, yet indispensable. Some are entirely plain and functional, others are designed to create interesting atmospheres by featuring a variety of colors, intensity, shapes and effects. They are also very much a reflection of a society's state of technological advancement, and relationship to energy and resources management. These rich yet humble qualities may be precisely what attracted Robert Watts (1923-1988), an artist trained as a mechanical engineer and one of the founders of the Fluxus movement, and prompted him to use a variety of light bulbs to create works of art.

Flux Light Kit and *Flux Light Bulbs* (n.d) are electrical, light-based works that comprise of a variety of vintage and antique light bulbs. They feature different technologies including incandescent and neon glow discharge light bulbs, some with flickering effects. The latter was a technology popular between the 1930s and 1970s, commercialized by companies such as Aerolux and Birdseye. Their bulbs included either neon, argon, or a mixture of both gases and include decorative motifs – flowers, religious imagery, or numbers and letters with which one could spell their name and address. While these companies have been out of business for many years, many of the patents are now available online.

These works were installed for the first time since their acquisition by the Getty Research Institute for the exhibition *Fluxus Means Change: Jean Brown's Avant-Garde Archive* (September 2021-January 2022). Fluxus has strong ties with performance. Many Fluxus pieces are event-like in nature, and it was therefore important to present these works functioning, and not as static objects. Yet the bulbs are now rare and therefore precious objects. As Larry Miller, a Fluxus artist now working with the Watts estate, aptly put it, "there's magic to the original objects, metaphorical magic". It was therefore imperative to also preserve the original bulbs and ensure they would not be entirely consumed by being lit up during the duration of the exhibition.

Because of the limited lifespan of light bulbs, these two goals were at odds. To reconcile them, a range of display strategies were considered to limit the time of operation. The conservation strategies envisaged included re-fabrication and the sourcing of similar replacements when possible, a strategy eventually deemed to be more in keeping with the low-brow, anti-commodity ethos of Fluxus, combined with dimming devices and timers to prolong the life of the bulbs.

The journey to preserve yet turn on these works included much serendipity and encounters with highly skilled neon artists, electricians, and glass fabricators, as well as exceptionally knowledgeable light bulb enthusiasts and collectors - thanks to whom, Fiat Lux: the lights were eventually turned on.

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The Conservation of a “Walk-in Assemblage”: Michael C. McMillen’s *The Central Meridian* at LACMA

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Michael C. McMillen’s *The Central Meridian* (1981) functions as a “walk-in assemblage,” an immersive installation where the visitor is transported to a different time and space within the museum environment. In Spring 2021, the Los Angeles County Museum of Art installed the work for the third time working closely with the artist to recreate, in his words, “the experience of wandering into a neighbor’s garage on a summer evening.” This paper focuses on the conservation aspects of the installation while touching upon the history of “The Garage,” its iterative nature, and the collaborative process of installing the work. The project team relied on the experience of more than a dozen museum departments to transform the 41 crates containing more than 1,400 items into the work presently on view. The conservation included treatment techniques such as aqueous gel and solvent cleaning to reduce graffiti, consolidation to stabilize fragile surfaces, and low-temperature control to preventively address pest issues. However, it also required a more flexible approach to deal with the sheer volume of material, mitigate against theft and vandalism, and make the space safe for both visitors and the museum collection. While longer-term monitoring has only just begun, it has already led to reflection on what it means to care for a work where visitors actively contribute to both the intangible experience and physical components of the installation.

Past, Present and History of a Work of Art: The Decision-Making Process in Conjunction with the Artist for a Respectful Intervention

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The painting *Invitación al infierno* (*Invitation to Hell*) by Argentine artist Luis Felipe Noé, a reference of the New Figuration movement worldwide, was created in 1961 on occasion of the first exhibition of such movement in Buenos Aires. It is emblematic due to its large format (170 x 229 cm) and for reflecting the artist’s technique at the time, which stands out for its combination of traditional media, such as oil paint, with synthetic and asphaltic paint.

Part of the artist’s early production, after its creation, the painting was removed from its stretcher and rolled up to fly with Noé—then a grantee of the French Government—to Paris, where it sat for years in a friend’s studio. In 1976, as a consequence of the political vicissitudes in Argentina, the artist returned to Paris where he met again with his piece, which, once again, remained rolled up in a studio until he returned with it to Argentina in 1987, following the end of the military rule.

Once in Buenos Aires, when the canvas was unrolled, it showed the deterioration caused by time. During the 27 years in which it was rolled up, the asphalt paint had adhered to the back of the canvas, which caused serious deformations to the impastos and large portions of missing paint layer. The complications brought about by the mixed technique, including some areas with subtle oil glazes and others with heavy texture, as well as slow-drying materials, altered the work forever.

At the end of the year 2020, and faced with the need for restoration, the context of COVID-19 pandemic and global lockdown prompted an intervention of the piece in the artist’s current workshop, collaborating hand in hand with Noé. His technique made it difficult to identify the deterioration, and his privileged memory was of vital importance for decision-making throughout the process.

Which details of the painting are original and which are a result of time damage? Which ones were missing from the conception of the work and which ones were lost over time? How much of the passing of time as reflected on the artwork do we want to/should we preserve?

A respectful intervention was the premise, and working together with the artist was key, favoring the process of restoring his painting as it was conceived at the time, instead of an attempt to redo or modify it. The history of the country, the artist, and the painting itself are intertwined in the restoration process.

This paper describes this joint effort to carry out a respectful intervention which preserves the piece as it was originally created without erasing the traces of history it reveals. It also attempts to highlight both the role of the artist, by revisiting a work from the perspective of conservation, and the invaluable contribution of such role to the conservation of Argentine art from the 1960s.

Death in Conservation: Have We Had an Honest Conversation?

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Death is not often considered when thinking about artworks. Case in point is a diagram that Glenn Wharton presented to the Objects Specialty Group in 2015. It showed “Conservation Moments in the Life of Contemporary Art”, starting with creation but not considering an end. During a discussion, I asked why death was not included on his diagram of life stages. A colleague on the panel, working at a museum, identified guilt for not saving a work. Doctors too have identified barriers to discussing the death of patients: death is sometimes seen as a personal failure of the doctor or as a limitation of the field. Doctors are not trained to have difficult conversations surrounding death. Yet, death is a normal part of the lifecycle. How can we prepare conservators to have such conversations with curators, collectors, colleagues, artists, and the public? Two roundtable discussions that will take place over the winter will be summarized in this presentation. One roundtable will be held with conservators at public museums, and another will include conservators in private practice. It is important to consider separately the perspective of institutional and private conservators as it shapes how they think about the finite life of artworks.

In a public institution, artworks at the end of their “useful” life exist in a form of “palliative” state for a long time, in fact, never declared “deceased”. They can be documented, supported in storage, or moved to a study/archive collection of the museum. They may even be quietly de-accessioned. Interestingly, some museum conservators hesitate to discuss publicly the placement of these works in permanent storage, assuming that they will just rest there forever. However, with the luxury of time, various solutions and iterations could be considered. Or, maybe it could be decided to let the object die.

In the private market, dealing with the “end” of an artwork occurs more frequently as time and costs are critical factors in determining a work’s lifespan. Intrinsic to deciding the end of life in the private market is an evaluation process in which insurance companies decide the artwork’s value at a specific moment. For private collectors and their insurance agencies, the end of the artwork’s lifespan is called “total loss” which means the artwork has lost 50% of its value or conserving it would cost more than 50% of its original value. So, private conservators, based on the cost of their proposed treatment, indirectly contribute to declaring whether an artwork is a “total loss”. In addition, after submitting the condition report, conservators are no longer witness to the artwork’s life.

These contextual differences can lead conservators to different relationships and decisions about the death of artworks; same field, but very different outcomes.

My presentation will try to tease out the practice and history of our beliefs regarding the death of artworks. In doing so, I will also try to identify what private and institutional conservators can learn from each other.

Contemporary Art + Electronic Media Joint Session - May 17

The Challenge of Preserving the Spirit of Protest: Documenting and Digitally Reconstructing a 2020 Washington, DC, Black Lives Matter Memorial

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During Black Lives Matter protests in the summer of 2020, several significant, culturally-charged, urban sites emerged in the United States, ranging from impromptu murals, memorials, damaged or altered Confederate and colonial monuments, and walls and fences covered in signs and art. One of these sites was a Black Lives Matter Memorial in Washington, DC that overtook the fence placed around Lafayette Park, directly in front of the northern facade of the White House and facing Black Lives Matter Plaza. The Memorial evolved through several iterations on both sides of H Street NW.

The Memorial consisted of graffiti, art, printed images, flags, shirts, flowers, and protest signs on paper and cardboard and has witnessed several protests and community gatherings, marking both the material and performative aspects of the uprising. The images and text on the Memorial mainly referred to people who were killed by police. There were also calls to abolish, defund, or reform the police, calls to vote, and anti-Trump rhetoric among other topics that generally focused on state-sanctioned violence across the globe. I set out to document this site as a concerned individual involved in the cultural heritage profession and as part of CyArk's "Map the Moment" initiative. The methods of documentation include digital photography, spherical photography, photogrammetry, and oral histories all used to digitally reconstruct the Memorial on a static website and with 3D modeling. This presentation will be a summary of the history of this grassroots, voluntary, and independently-driven documentation and reconstruction of the site. There will be a reflection on what it means to preserve the spirit of protest in the digital reconstructions while considering the implications of varying levels of ownership of the digital materials. Additionally, there will be a discussion on the role of community members and protestors in the preservation and maintenance of this site and efforts to include them in the decisions to make this documentation and digital reconstruction available to the public.

Towards a Conservation Ethics for the Age of the Anthropocene

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In the current epoch of the Anthropocene (Crutzen & Stoermer 2000), human culpability in global environmental change and loss is undeniable. Human-centric economies and practices have irreversibly altered ecologies, societies, and communities around the Planet. Colonial expansion and dominance over peoples, lands, and cultural heritage evidence similar catastrophic effects, the impact of which is gaining wider acknowledgement and reparation. The epistemic cultures of the museum, historically established as collecting repositories of imperial spoils, operate according to intentions of durability and permanence. These ideals, however, tend to exacerbate disassociation between the artefact and its initial context that it purports to represent. This agent of deterioration is evident in artefacts restored to the point of misrecognition or, for example, performance art that defies established binaries like display and storage, or permanence and disappearance.

This paper turns to public healthcare in order to find a practical framework through which to apply ethical principles to conservation practice. The seven mid-level principles proposed for public-health curricula (non-maleficence, beneficence, health maximisation, efficiency, respect for autonomy, justice, proportionality) (Schröder-Bäck et al. 2014) will be read and applied through the feminist new materialist notion of *affirmative ethics* (Braidotti 2017, 2019), to reflect on how conservation can engage in a rethinking of the epistemic cultures of the museum. It will require

active unlearning and undoing of conservation processes and promises to engage in an ethical re-orientation of practices using contemporary art collections as a prismatic lens from the museum to the World.

The implications of this rethinking will see conservation as a leading force in instigating more ethical and posthumanist practices of care. With ethics of care being at the heart of the profession, it is important that through active engagement with practices of *affirmative diffraction* (e.g., Barad 2007) conservation leads in demonstrating ethical decision-making from its sourcing of raw materials to its relational economies. In thinking through and proposing a framework to situate conservation practice at the forefront of social and environmental ethics of care, this paper challenges the traditional role and approach to managing conservation issues with an emphasis on challenging colonial practices.

NFTs, Capitalism, and the Market: The Increasingly Important Role of Conservation in Markets and Decolonial Practice

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As NFTs (non-fungible tokens) and digital art have seen phenomenal sales interest in 2021, various questions have arisen in the conservation of these early-stage digital works. Conservators are invited into an unusual and new relationship with markets: verifying the authenticity and validity of these objects especially when they need to be moved from early blockchain structures. As a case in point, Kevin McCoy's work *Quantum*, the first ever NFT which was made in 2014, had to be reminted on the Ethereum blockchain after its original creation on Namecoin. Conservators have an unusual relationship to the physicality--or intangible authenticity--of works of art. As NFT markets continue to expand and deepen, time-based-media conservators have an opportunity to become expert and neutral arbiters of some standards around these works. This potential role of conservators can not only support and stabilize artists' participation in markets but also create more opportunity for less resourced artists. The development of these systems creates opportunity for decolonial museum practice, following from proposals for blockchain registration and SMART contracts as a means of expanding creative options for the decolonizing practices of restitution of museum objects.

Electronic Media - May 15

Expanding the Horizons: Building Collaborations to Care for Contemporary and Time-Based Media Collections

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Conservation in Taiwan is a relatively young field and the first graduate program was founded in the late '90s. Museums slowly adopted the changes in their staff structure and only few are able to hire full-time conservators as their faculty members. State-run museums find themselves being challenged and pressured on all fronts, especially dealing with contemporary and time-based media. This paper will first introduce the development of contemporary and time-based media conservation and the approach to address these challenges in a state-run museum governed by local laws and regulations.

The authors of this paper will use the Taipei Fine Arts Museum (TFAM) as a starting point to showcase how alumni networks, local partners, and government policies have played crucial roles in building a collaborative ecosystem. As the first modern and contemporary art museum, TFAM has built on the museum's commitment to represent the landscape of contemporary art in Taiwan, establishing one of the largest modern and contemporary art collections. Even as a renowned museum, only one paper conservator is on staff in the Collection Department and it has been a common practice in most museums in Taiwan. Not only has the paper conservator, one of the co-authors of this paper, handled day-to-day responsibilities, but she needs to recognize conservation needs for a variety of objects in the collections. The nature of the work requires the conservator to have a broader understanding of other subjects and specialties.

From scroll painting to ephemeral media, she has been collaborating with a group of contractors and vendors as an attempt to bring training opportunities, different voices and perspectives, and a whole new set of expertise to the realm of public sector. Several contracts were employed for projects from food preservation, oil painting examination, and pest control to name a few. In late 2020, she also initiated a digital preservation project to tackle the complexity in conserving time-based media, and the co-author was invited as a visiting conservator to review the current workflows. In this project, they hosted a series of workshops, consulted computer and library science professors at local universities, and spoke with database experts as well as members at MoMA and the Smithsonian about constructing the first digital repository in Taiwan.

Together with the local community, several preservation strategies for incoming acquisitions are adopted and a baseline survey is being conducted for the first time in order to determine the collection's scope and range. Through pan- and cross-institutional conversations, the authors carefully evaluate the potential resources in the hope of identifying the gap in both knowledge and practice. This paper aims to shed light on the limitations and possible workarounds in museum practices to care for contemporary and time-based media collections in Taiwan.

Right-sizing a Time-Based Media Conservation Program at Glenstone

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When developing a program of care, policies, procedures, and infrastructure for time-based media conservation, ensuring feasibility and correct scale of ambition is of paramount importance – no matter the scale of the institution.

Over the past seven years, Glenstone Museum has developed a time-based media conservation practice that is aligned with the spirit of best practices, yet commensurate with its small conservation department. With the help of outside expertise, Glenstone has been able to find what "best practice" means for them, and develop practices for the care of the media collection. Ben Fino-Radin of Small Data Industries was a partner in this project, working in tandem with the

conservators at Glenstone to assess the collection and develop an achievable and sustainable digital preservation strategy, while balancing the need for condition assessment, preventive conservation, and digitization for time-based media works in the collection.

The selection and creation of the storage solution for digital art required significant research and testing, and then ultimately the chosen solution was changed after realizing it was too labor-intensive, impractical for the small team. Local storage, which was initially avoided due to the work that would be required from the museum's small IT department, was ultimately selected and implemented, as it was the most cost-effective in the long term. With the museum's time-based media collection continuing to grow, it was clear that setting up a well-structured system now would pay off down the line. After implementation and testing, the media collection backlog started to be processed and ingested one by one, with new issues addressed and solved as needed. As part of this process, a new cataloguing strategy for time-based media was developed in collaboration with the Registration department, in order to accurately and systematically distinguish between artwork materials, digital files, and exhibition equipment.

The process of addressing the backlog is still ongoing, but due to the structure put in place, new media artworks are acquired systematically with information gathered prior to and during acquisition to ensure that future preservation needs are anticipated. Continued collaboration has proven valuable in addressing new concerns in a way that both fits the needs of the artwork as well as the expertise and availability of the museum staff.

Beyond the Archive: Preservation and Access for Web-Based Interactive Data Journalism

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As Cooper Hewitt, Smithsonian Design Museum builds its nascent born-digital collection, new genres of work are regularly introduced, each with their own acquisition and preservation needs. This paper focuses on the museum's first effort to collect instances of interactive data journalism. Serving as case studies are three digital stories by a major news outlet, two of which center on the Covid-19 pandemic. Throughout the ongoing acquisition process, Cooper Hewitt is prioritizing public access and hands-on interaction. As our nation's design museum, our emphasis on collecting these works is centered on how the design and interaction enhance information access. These values led to three main areas of research: evaluation of web archiving and recording; an audit of previous web-based acquisitions; and an exploration into GitHub as a repository management tool. While web recording is routine practice at many libraries and archives—many of which are generous in sharing their knowledge of the available tools—museums may have different goals. For this project, Cooper Hewitt delved into the histories and technical features of various web archiving services. To fully understand their advantages and limitations, it proved useful to revisit a selection of older, interactive web-based works in the collection. The lessons learned from previous acquisitions also provided a starting point for further research into GitHub's potential as a transparent, accessible repository for collections assets' source code. A more robust presence on the platform by Cooper Hewitt would meet digital designers where they are and complement secure storage in the museum's digital asset management system. Research on web archives and GitHub as tools for museum collections helps further the dual aims of broadening public access to and maintaining interactivity in digital design. Central to these case studies is the reciprocal relationship between preservation and access, and a vision for how collecting institutions might harness one to further the other.

Preserving Software-based Art at Tate: From Research to Best Practices

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Since they started entering the Tate collection in the early 2000s, software-based artworks have required new modes of conservation through their contingencies on bespoke software programs, complex systems of interconnected components

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and a rapidly changing technological landscape. It has become clear that rates of acquisition are accelerating, and the processes of acquisition and preservation, which were initially seen as individual research projects, had to become part of the day-to-day work of time-based media conservators at Tate. In 2017 the Time-based Media Conservation team at Tate started the Software-based Art Preservation Project, still ongoing, with two primary aims:

1. Define standardised workflows and processes for the preservation of our software-based artworks, including documentation, disk imaging and emulation.
2. Systematically apply these to the existing software-based artworks in the collection, while taking the opportunity to identify any works requiring treatment.

The project has taken insights from a decade of collaborative research undertaken by Tate's Time-based Media Conservation and Collection Care Research teams as its starting point, supplemented by a growing body of related research from colleagues around the world. This paper will describe our work to develop and standardise our internal best practices for the care of software-based art, discussing the approach taken and introducing procedures developed for future software-based artwork acquisitions at Tate. We will also reflect on lessons learnt along the way, particularly around pragmatism and institutional resources, and some of the questions that we have yet to answer.

An Analysis of Software-Based Artworks using Max/MSP through Different Conservation Strategies

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Max (aka. Max/MSP) is a visual programming language that is developed and maintained by Cycling 74. It was developed in the 1980s, and many extensions have been added to Max at different stages, such as MSP for real-time digital audio, and Jitter for video processing. Max is widely loved by artists, software designers, composers, and researchers for their performances, recordings, and installations.

However, a visual programming language like Max is different from the C language or Python, which uses textual code to create programs. Instead, Max allows users to create programs by graphically manipulating the elements in the program, which makes it hard for the conservator to understand it by normal programming logic. In addition, as Max is a commercial software and not open-source, it is more difficult and risky to preserve software-based artworks that used it.

The article will bring out the various applications of Max by analyzing three different artworks as case studies. The first is a sound installation that converts real-time data through Max into a soundscape. The second is an interactive installation of 1995 which used an older version (2.5.2) of Max. By examining different conservation strategies like migration, emulation, and reinterpretation, the most suitable conservation methods will be researched. The output of the different case-studies might show similarities, while on the other hand an alternative conservation approach might be more suited for each specific work.

Peer-to-Peer: Towards the Collective Conservation of Net Art

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This paper examines the conservation of net art that has been shaped by user-generated data, suggesting that its participatory nature engenders new possibilities for conservation. Unfortunately, current research and documentation strategies seem to undervalue the potential of user-generated data, directly impacting the ways in which access to these artworks is restored. I propose a "peer-to-peer" framework that offers a distributed approach, which sanctions acts of collective conservation by identities that have been excluded from mainstream economies of information exchange, namely the hacker and the spammer. By inserting heritage value into data that is otherwise classified as "spam", I make the case that time-based media conservation ought to be de-institutionalised to include the

expanded community of "spammers-hackers-caretakers".

The above proposal emerged out of my own efforts to document net art as an independent researcher and the obstacles which I have faced; for example, in the form of automatically issued bans. This suggests that online activities which may be productive to conservation also tend to be associated with "hacking" or "spamming"—an association that is likely to be tied to the contemporary landscape of the web. By considering a post-Marxist interpretation of the term 'peer-to-peer', practitioners can acknowledge the potential struggles and exploitations of the communities that they may want to integrate into their collective conservation workflows. Most importantly, this theoretical framework allows us to consider the ethics of delegating acts of conservation.

Collective conservation points to an emergent form of community driven stewardship that takes place outside an institution. Possible manifestations include ongoing crowdsourcing initiatives that aggregate documentation generated by users as a result of interacting with the work. In this way, we can start to re-consider what aspects of net art require documentation and re-evaluate who gains permission to enter, what Annet Dekker calls, 'networks of care'.

Objects - May 15

Repairing *Tirs*: Conservation Approaches to Niki de Saint Phalle's Shooting Paintings

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Exhibitions dedicated to specific series of an artist's work are a rare moment in conservation to consider our collective interventions and the disparate destinations we each arrive at when faced with singular works in our collection. After they leave our care and are reassembled side-by-side as a series, they lay bare the range of interventive approaches, material preferences, and philosophies of care that span our field of practice at a moment in time.

French-American artist, Niki de Saint Phalle (1930-2002) produced her series of *Tirs*, or "Shooting Paintings," over the course of three years (1961-1963). The *Tirs* are a diverse group of works produced through the artist's general formula, whereby she would cover assemblages of quotidian objects laced with various containers of paint with white plaster, then proceed to shoot them with a rifle, often in public settings, so that the paint containers would burst and bleed over the pristine white surfaces. The *Tirs* were sold and placed in collections around the globe with only a few rare instances of a collection owning more than a token one. By nature of their materials and singularity in a collection, they present conservators with a range of instabilities, unknowns, and degradation phenomena to navigate when preparing them for exhibition, and when aggregated with the dearth of research on the preservation of her work in general, they are daunting to approach.

A selection of *Tirs* were assembled from international collections, both institutional and private, for the exhibition "Niki de Saint Phalle in the 1960s," co-presented by The Menil Collection and the Museum of Contemporary Art San Diego in 2021-2022. This paper will present reflections on the preservation of the *Tirs* as a result of the exhibition. We conducted interviews with the artist foundation and exhibition curators to help characterize the essence of these works and the artist's own notions of preservation, created mock-ups and held a shooting session to better understand the materials and methods of production, treated works from both our collection and the foundation's, and engaged with conservators who treated works for this show to explore the rationale and range of interventions that occurred in their preparation. Our aim is to compile the disparate conservation approaches to this series as a methodological moment in time to reflect on how we have collectively chosen to preserve the essence and materials of de Saint Phalle's *Tirs*.

Gravitational Investigation: The History and Future of Interventive Treatment on an Eva Hesse Sculpture

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A post-minimalist artist, Eva Hesse (1936-1970, American, born in Germany) completed a broad range of sculptural work within a prolific window of 5 years, her style and materials rapidly progressing. *Vertiginous Detour* (1966, collection Hirshhorn Museum and Sculpture Garden) is a great example of her departure from the early wall reliefs of 1964/65, where she continued working with tightly wound rope, but now played with gravity, form, weight, and shifted to a grayscale color palette. This piece consists of a papier-mâché sphere - wrapped in ropes, painted, and coated in polyurethane - held in a net, and hung from the ceiling. The sculpture is lightweight despite its heavy appearance and is in constant suspension. A holistic approach of the care of this complex sculpture was considered through researching past interventions and looking towards the future, through the lens of current research and ethical conversations.

Upon assessing the sculpture in preparation for an upcoming exhibition at the Hirshhorn, traces of multiple - sometimes undocumented - previous interventions were discovered. Examination of these historic repairs revealed structurally unstable and failing mends with incongruous materials, including visible uncoated wire and epoxy. These repairs were failing from weak bonds (risking dissociation),

too rigid (risking damage to the original material), and in certain cases, incorrect locations (risking loss of Hesse's intent). These risks, paired with the inconsistency in the methods and materials used, ultimately led to the decision to remove all historic repairs. Detailed photography and image mapping, material mockups, and extensive adhesive research were completed prior to treatment. A strong, more reversible adhesive with better aging properties and an inconspicuous reinforcing bridge were selected to successfully reattach the ropes to the delicate papier-mâché sphere. This somewhat interventive, fully reversible treatment conducted in 2021 was carefully mapped and documented with the next caretaker in mind, as the entropic nature of this work ensures future treatment will be necessary.

When Doing Nothing is Best for the Future: Analysis and Conservation of Louise Nevelson's *Dawn's Image, Night*

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Dawn's Image, Night is a large-scale sculpture created in 1969 by American sculptor Louise Nevelson (1899-1988). The 24 by 8-foot wall-relief was commissioned by SUNY Buffalo State College and has remained on display in various buildings at the college since. *Dawn's Image, Night* is an assemblage made of unpainted wood and painted overall in the artist's signature matte black. Nevelson was incredibly particular about the matte, uniform surface achieved in her monochrome assemblages, but the materials she used to achieve her desired effect are quite susceptible to damage and irregularities. Unfortunately, *Dawn's Image, Night* is no exception. A heavy layer of dust, greasy fingerprints, and unoriginal white paint splatters disrupted the uniform surface. Shortly after the original installation, protruding nails were deliberately cut and removed from the sculpture, as they were considered a safety risk. Extensive scientific analysis, imaging, and archival research were utilized to design an appropriate treatment and long-term preservation plan. Methods of analysis and imaging techniques include: Fourier transform infrared spectroscopy, pyrolysis-gas chromatography-mass spectrometry, microchemical testing, x-ray fluorescence spectroscopy, and x-radiography. Initially, the removal of the greasy fingerprints and handling marks from the matte black surface was a high priority. As a result of research and analysis, the focus of the project was adjusted in response to a better understanding of the materials used by Nevelson and the inherent qualities of *Dawn's Image, Night*. Ethical considerations surrounding the removal and replacement of the nail components, as well as the overall repainting of the sculpture are discussed. Additionally, the inherent obstacles of treating a large uncoated, matte monochrome sculpture in-situ are addressed. Finally, the sculpture was not repainted as some of Nevelson's other works have previously been but rather, a minimally interventive approach was carried out. The conversation around the various treatment approaches lays the groundwork for any future treatment determined to be necessary. Ultimately, doing very little now is the best course of action for the continued preventative care and future of *Dawn's Image, Night*.

Structural Stabilization of Beverly Pepper's *Weathering Steel Sculpture*

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Beverly Pepper was the first artist to use weathering steel as a material in her sculptures. The material was first being used in railcars and architecture as a stable, corrosion-resistant metal that could be used outdoors without a coating or paint layer. Weathering steel creates a compact, stable corrosion layer when exposed to wet and dry cycles. However, prolonged water contact can cause delamination of the steel. This has led to extensive conservation treatment that has often involved rewelding new panels into the sculpture. Although structurally necessary, these can drastically change the surface appearance of the sculptures due to new material that ages differently and due to weld-burn in areas of repair. There have been minimal publications for treatment options on these types of sculptures. This paper will detail the structural conservation of Beverly Pepper's *Perizzites*, 1972. The artwork is a prototype, made from thinner sheet metal than her other artworks. It has been displayed outdoors resulting in severe losses and delamination to the weathering steel. The treatment uses innovative loss compensation and welding techniques in order to preserve original materials and original surface patina.

Preliminary Research on Plant Extracts and Wax as Corrosion Inhibition Coatings for Iron Alloy Outdoor Sculpture

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Waxes are a common method of barrier coating outdoor metal sculpture in conservation, although several studies have identified instances where waxes can promote corrosion. Plant extracts have been identified in industrial applications as having distinct corrosion inhibition effects, particularly for iron alloys, but have been minimally explored for conservation applications. Oils and waxes that do not crosslink and are re-treatable remain appealing conservation coatings. Therefore, the goal of this research was to broadly explore the application parameters and corrosion inhibition potential of select plant extracts in combinations with waxes for outdoor steel sculpture.

The oil extracts of tea tree, clove, and a complex mixture of plant extracts including tea tree, rosemary and others in an almond carrier oil were tested with and without Trewax[®] paste wax on mild steel coupons. The steel coupons were previously corroded and then cleaned to simulate the complex surface topography and processes used for corrosion reduction prior to coating outdoor sculpture. Multiple experiments were done to characterise the corrosion inhibition properties including variables such as the presence of chlorides, hot versus cold waxing, and performance in different outdoor seasonal environments. Test coupons were compared to a variety of controls with sample replicates of three or more for each test.

Results from this study indicate that some of the selected plant extracts combined with or without wax could reduce corrosion of outdoor steel objects compared to samples without any coatings. Iterative experiments identified some initial parameters that impacted the corrosion inhibition efficacy of these coatings: different oil extracts had variable performance, and the temperature of wax application affected the corrosion inhibition efficacy of the combined plant oil and wax coating. The coatings of these oil-based plant extracts and waxes maintained their solubility profiles, allowing for removal with conventional methods without visible discolouration over the limited three-month duration of the tests.

Literature from different fields of study suggest that the active components of plant extracts driving corrosion inhibition effects include carboxylic acids and flavonoids. Suggested mechanisms of action from the literature include adsorption of organic compounds to the steel where they perform a mixed anodic and cathodic inhibition; the chelation of ferric and ferrous ions and free radical scavenging abilities; the reduction of available iron oxides through tannic acid components; biocidal activities of organic molecules, and the possibility of an improved wax film due to interactions between non-drying oils and the wax pore matrix. Both the literature from other fields and the data from this exploratory study of practical application indicate that these materials should continue to be researched and tested in both analytical and practical settings for their corrosion inhibition potential in the conservation of iron alloys. This research provides accessible materials and methodologies and adds to our knowledge of re-treatable corrosion coatings for the conservation of outdoor iron-alloy cultural heritage.

Conservation Interventions to Stabilize a Matte Painted Acrylic and Polystyrene Architectural Model

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The Heinz Architectural Center at the Carnegie Museum of Art (CMOA) houses a collection of nearly 6,000 architectural objects, models, and works on paper. A recent acquisition for the exhibition *The Fabricated Landscape* (2021) was the large-scale architectural model, *The Grand Interior* (2017), by Barcelona/New York based architectural collective MAIO. Fabricated for the 2017 Chicago Architecture Biennial, the 6 ½ x 5 ½ ft. model serves to illustrate the ways in which domestic spaces both interconnect and distinguish themselves by the objects that inhabit them, rather than the traditional architectural structures.

Inherent vice in the model's construction presented several impediments to its safe exhibition. Fabricated from a single sheet of mirrored (poly)methyl methacrylate-based plastic cradled in a softwood frame and onto which nearly 150 pink painted miniature objects were adhered, the model arrived with nearly half of these components completely or partially detached. Competing solvent sensitivities of the materials prevented a more straightforward approach to securing them: the miniatures—commercially-manufactured ceramic, metal, wood, and polystyrene based plastic forms airbrushed with powder-pink paint and affixed with cyanoacrylate-based adhesive—were sensitive to all solvents tested with the exception of water and mineral spirits (MS). The pink paint covering each of the miniatures was matte and weakly-bound both to itself and to most of the surfaces it was applied, also limiting the methods and materials that could be used for repair. Most challenging of all, the model's overall width exceeded that of any its potential pathways to the exhibition space, which meant that it would need to be transported by hand for several minutes while tilted at an angle.

The treatment approach began with materials analysis to guide decision-making in the fabrication of experimental mock-ups. Optical and digital microscopy (OM), Fourier-transform infrared spectroscopy (FTIR), and X-ray fluorescence spectroscopy (XRF) were used to identify the primary polymers in the paint, adhesives, and substrates of the synthetic materials present, as well as to better understand the initial mechanism of failure. The results of solubility testing and knowledge of Hildebrand solubility parameters led to a decision to use an adhesive system based on either water-deliverable/water-reversible and/or MS-deliverable/MS-reversible adhesives. As a result, several adhesives less commonly used for structural repairs—such as Aquazol, Jade[®] R, Regalrez, Ethulose 400, and Paraloids B-67 and F10—were tested, beginning with mock-ups, for their ability to withstand gravitational forces applied to the model's tallest, thinnest components when tilted. Criteria for evaluation included not only the system's strength, but also its ability to be reversed without major losses to the very fragile paint. In the end, a system combining an Aquazol 50 consolidation layer and a bonding layer of Jade[®] R water-reactivable adhesive, allowed the repaired model to be safely transported at a nearly 90-degree angle for installation. As *The Grand Interior* represents only some of the materials issues in the museum's growing collection of modern and contemporary architectural models and ephemera, the conservators' evolving approaches to the preservation of CMOA's architectural models in general will also be discussed.

Objects - May 16

Glazed Ceramics Placed Outdoors: Conservation Issues and Lacuna Integration Techniques – An Ecological Choice for the Future with a Return to the Origins?

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For the last few years, the research of the Laboratory for the Restoration of Ceramic and Vitreous Materials of the Opificio delle Pietre Dure has been oriented towards solving one of the most complex problems in the conservation of ceramic works placed outdoors: the compensation of the lacuna. Especially with regard to glazed surfaces, our goal, in addition to protecting the materials from the infiltration of water and other pollutants, is to restore the brightness and vividness of the original colors and, at the same time, ensure the reversibility of the restoration products.

In the past, materials such as epoxy or polyester resins and coatings that guaranteed the perception of brightness, which is typical of glazing, were chosen. However, this was at the expense of easy reversibility. These solutions, although realized with materials that seemed to be resistant to atmospheric agents, have proven to be unsatisfactory over the years, revealing a behavior that is harmful to the work as well as being aesthetically unappealing. These materials in fact tend to turn yellow and harden excessively, making their removal risky for the integrity of the original surface. Their disposal is also problematic since they are polluting materials of different nature and therefore cannot be differentiated.

The research to find an alternative to epoxy and polyester resins began in 2012

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with the restoration of the majolica of the Russian Orthodox Church in Florence and deepened in 2014 on the occasion of the restoration of the “Dieci Putti in fasce” by Andrea Della Robbia, placed on the facade of the Ospedale Degli Innocenti in Florence. On that occasion, the Opificio Delle Pietre Dure carried out some tests on different types of acrylic plasters.

Five years after the restoration, we wanted to perform a monitoring to study the actual behavior of the fillers used over time. We came to the conclusion that acrylic materials are far preferable to epoxy resins, because they are easily reversible but require constant maintenance. In fact, the surface is subject to deterioration and the pictorial retouching tends to change color. Moreover, the question of eco-sustainability was left unresolved.

These considerations drove us to test natural mineral fillers and colors, which in theory promised outdoor durability and eco-sustainability. But how could we achieve the brightness of the glazed surface with a lime mortar, which is opaque by nature?

We therefore started a comparative experiment. We wanted to compare the aging of acrylic plasters with fillers based on natural hydraulic lime and silicate colors. In order to restore the shiny appearance of these completely natural materials, we created a “porcelain mortar” inspired by the Roman *marmorino* already in use during the Imperial Era in Ancient Rome.

With this paper we would like to show you the results of the tests, the difficulties and the application solutions, for an aesthetically appealing, ecological and long-lasting result.

Restoration of the Memorial to Col. Robert Gould Shaw and the 54th Massachusetts Volunteer Infantry Regiment

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The Col. Robert Gould Shaw Memorial is one of America's most famous historic sites, memorializing Col Shaw and the 54th Massachusetts Volunteer Infantry Regiment. This regiment was among the first military units to be raised of all black soldiers, who volunteered to fight for the Union during the Civil War. The Memorial consists of a bronze relief of the figure of Col. Shaw on horseback in parade with the men of the 54th Massachusetts marching to war on Beacon Street across from the Massachusetts Capital building.

The relief was sculpted by Augustus Saint Gaudens between the years of 1884 and 1897 and is in all senses of the word, a masterpiece. The well-known firm of McKim, Meade and White were the architects of the pink Tennessee marble and granite memorial, that surrounds the relief. The deterioration of the brick foundation under the relief prompted the project of restoration of not only the memorial, but also the bronze relief between 2020 and 2021.

This was a highly collaborative and complex project. The owners of the monument were the Friends of the Public Garden, the National Park Service and the Museum of African American History in Boston. The project team specifying the work included the engineering company Silman, Ben Rosenberg as structural engineer and team leader, Barbara Mangum as metals conservator and Ivan Myjer as stone conservator. Allegrone Inc. was the general contractor and undertook the masonry restoration. SkyLight Studios with principal Robert Shure conserved the bronze relief. The project cost over \$3m and included dismantling of the stone and brick structure, removal of the bronze relief, which weighed about 14,000 lbs to Shure's offsite location for treatment and storage, rebuilding of the foundation, waterproofing, cathodic protection of the underground vault beneath the plaza, and restoration of the Memorial and plaza. The project took about 1.5 years to complete.

This presentation will briefly discuss the condition as we know it 50 years ago from photographs, then focus on the treatment that occurred in 2020-2021. Future considerations have prompted the extensive waterproofing of the Memorial.

Contested Care: Two Problematic Monuments at the Museum of Fine Arts, Boston

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Monuments play a significant role in how a society expresses its values, its priorities, its biases, and the context in which the majority wish to view their world. They serve as a constant catalyst for public interaction as a point of reference, a place for reflection, a site to learn about the world one inhabits, and to ascertain if one is welcome. Many communities, including the descendants of non-white immigrants and Native peoples, rarely see themselves appropriately depicted in such works. These sculptures can be classified under the umbrella term “contested monuments” when representing problematic historical figures or questionable portrayals of specific minority groups. When viewed in publicly accessible spaces, these monuments continue to perpetuate negative stereotypes and elevate troubling historical narratives. What is the role of cultural heritage institutions and conservators when tasked with the care of contested monuments? How can these responsibilities evolve as cultural contexts shift and how best can institutions navigate these changes?

This paper will explore the historical and contemporary contexts of two objects in the care of the Museum of Fine Arts, Boston (MFA): Appeal to the Great Spirit by Cyrus Dallin (cast 1908, installed 1913) and the John Endecott Memorial (1937) constructed by architect Ralph Gray and sculptor Carl P. Jennewein. Appeal to the Great Spirit, which has prominently stood in the forecourt of the Museum since its installation, has long been a source of controversy for its stereotypical and romanticized representation of Native peoples. Cyrus Dallin (1861-1944), an advocate for advancing Native rights, nevertheless contributed to the harmful representation of Native peoples. The public presence and polarizing interpretation of the sculpture led the MFA to engage in an ongoing effort to recontextualize the work. Contrarily, the John Endecott Memorial, despite its equally, if not more, problematic immortalization of John Endecott, has mostly escaped notice. John Endecott (1588-1665) was a Puritan leader who eventually served as the first governor of the Massachusetts Bay Colony. His brutal and inhumane treatment of Native peoples and Quaker settlers eventually led him to be rebuked by his contemporaries including King Charles II of England. This history leaves many questions as to why this sculpture was erected in the 1930s and why its presence has remained unchallenged. Though legally owned by the city of Boston, the pivotal role the Museum played in its creation and the possession of endowed funds for its care complicate the ethical responsibilities of the MFA to the memorial.

In the summer of 2021, MFA pre-program interns Pilar Brooks and Mayuli Santiesteban Quesada researched these two objects and devised theoretical approaches for their care and stewardship. Their research and proposals, presented here, will allow the MFA to engage with relevant stakeholders and the larger community to devise historically-grounded and contextualized action plans for the future of these sculptures at the MFA.

Changing Approaches to Monumental Plaster Casts at Weir Farm National Historic Site

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The “This Is the Place” Monument overlooks Salt Lake City and commemorates the city's origin story, the moment when Brigham Young and the Mormon pioneers he had led from Illinois emerged from a canyon pass into the Salt Lake Valley and proclaimed it their new home. The monument was designed by Mahonri Young, a social realist sculptor and Brigham Young's grandson. After winning the commission in 1941, Young made full-size plaster models in his Connecticut studio that were used to cast the monument's bronze reliefs and statues at the Roman Bronze Foundry in New York City. Today, the Young studio building—and six monumental plaster relief models—are part of Weir Farm National Historic Site, the farm, home, and studio of Young's father-in-law, the American Impressionist painter J. Alden Weir. Although park interpretation focuses on Weir's life and art it also memorializes Young's work and presents studio art as a dynamic living tradition through education programming and artist residencies.

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Young's plaster reliefs are particularly important in this context as they are among the few historic works of art in a park devoted to the concept. Original paintings and works on paper cannot be exhibited in Weir's rustic studio; although housed in a similar building the Young plasters do not have the same environmental requirements and convey the immediacy of the artist's hand, material, and process in a way that falls short in the Weir reproductions.

This presentation will examine the challenges that the conservation and contextualization of the reliefs—which were stored in a barn until the NPS acquired the site in 1992—present. Among these are questions of interpretive focus and of the appropriate degree of surface cleaning and loss compensation. Approaches to these issues have evolved over time; treatment of the last three reliefs was completed this year and was informed by the outcome of the first reliefs almost ten years earlier. The first reliefs were conserved as stand-alone artworks, their plaster surface cleaned to a gleaming white finish with all cracks and losses seamlessly filled. Although this restoration was visually compelling, the casts were produced to create the Salt Lake City bronzes and were never intended to be their surrogates. The Park agreed that the conservation of the remaining reliefs should reflect their function as intermediate artifacts in the monument's fabrication. Surface accretions related to the bronze casting process were retained during cleaning, and loss compensation was minimal. The result at once preserves the casts' status as working models while emphasizing their materiality and restoring their artistic legibility. The minimally restored reliefs have also changed the Park's interpretation of the works for visitors; they are now used to illustrate the processes of both plaster and bronze casting while conveying the technical and design complexity of Young's monumental Utah masterpiece.

A Lesson in Balance and Adaptation: The Conservation of Alexander Calder's *Man-Eater with Pennants*

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Man-Eater with Pennants, an early monumental sculpture in Alexander Calder's oeuvre, was commissioned by The Museum of Modern Art (MoMA) and installed in the Abby Aldrich Rockefeller Sculpture Garden from 1945-1949. Only a few brief showings of the standing mobile followed; it was then put into storage for 50 years. In preparation for the exhibition, *Alexander Calder: Modern from the Start* (2021) the standing mobile required conservation. The treatment program evolved from a simple plan to replace failed paint coatings on the steel sculpture, to a much larger conservation effort which included structural repairs, a considerable metal re-forming campaign, and custom color formulations — all to reproduce the artist's original intent.

Early modern painted outdoor sculpture often lacks documentation of the original color, gloss, and texture of the paint coat. Here, the original primer and paint choices of 1945 failed during outdoor exposure, prompting numerous repainting campaigns during *Man-Eater's* five-year exhibition history. The colors were derived from extant discolored topcoats and these frequent overpaintings were impermanent. The subsequent five decades of inattention had the fortuitous effect of retaining a physical record of the paint layers and working methods. This gave us the opportunity for analysis and provided valuable information about Calder's early color palette.

Development of Calder's early palette of red, blue, and yellow colors for repainting was a collaboration between MoMA's Conservators and Conservation Scientists, Monumenta Art Conservation & Finishing, MoMA curators, and the Calder Foundation. The colors were also compared to other examples of intact paint on indoor art from the 1940s. Custom colors that went through several modifications were produced by a commercial paint formulator. Each one of the color trials was vetted by all stakeholders until a consensus was reached. More in-depth description of the paint chemistry will be presented by Abed Haddad in *Reviving Alexander Calder's Man-Eater with Pennants: A Technical Examination of the Original Paint Palette*.

While half a dozen photographs exist of the standing mobile installed at MoMA, only two showed the sculpture before use and time deformed it. Research into MoMA's records and input from the Calder Foundation, coupled with new information that became apparent during the initial treatment phases, provided a more complete understanding of historic fabrication techniques, and identified patterns of wear.

It also became clear that the only way the original posture and balance could be determined was by undertaking a number of partial installs of separate mobile sections ending with a full in-treatment install with all stakeholders present to approve the alignment of the mobile. The actual repair and repainting work required not only balancing multiple viewpoints but a combination of expertises, which ranged from scientific analysis and formulation of high-performance coatings to traditional hammer and anvil style metalworking. The flexibility to adapt the work plan to new information was essential to completing a successful treatment and installation.

“Clove of Garlic Crushed and Boiled”: Paul Manship's Patinas

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Paul Manship (1885-1966) was an American sculptor whose influential work in the early decades of the 20th century was a major precursor to Art Deco in the United States. Known for monumental works like the Prometheus Fountain at Rockefeller Center, he worked prolifically in bronze, collaborating with American and European art foundries during a period of technical proficiency in, and great commercial enthusiasm for, the creation of cast bronzes. The names of many of these foundries, such as Roman Bronze Works, Rudier, and Valsuani, also appear often in the catalogs of other prominent sculptors of his time. Manship took full advantage of every step of the casting process and of the wide-ranging expertise available to him at these foundries to refine his artistic vision. The majority of Smithsonian American Art Museum's large and varied collection of Manship sculptures and medals arrived straight from the artist, never having passed through the hands of other collectors. During a twelve-month Lunder Fellowship, the presenter carried out technical studies of sixteen Paul Manship cast bronze sculptures in the SAAM collection. The production dates of the selected sculptures spanned from 1912 to the 1950s, originating from at least five different foundries from Italy, France, and the United States. All sixteen sculptures were bequests from the artist, entering the collection in the mid-1960s directly from his studio. Twelve had never undergone documented treatment at SAAM, providing an opportunity to study objects that align closely with the artist's original intentions. Patina recipes jotted down and saved by Manship in his personal archives were tested on metal coupons of three different copper alloys representing the range of metal types used in the production of the selected sculptures. Producing this array of patina samples, though by no means representative of the surfaces of all sixteen, provided further insight into a metalworking process in which Manship held particular interest and was often hands-on involved. These coupons remain in the SAAM Objects Conservation lab as a reference collection, to aid in future analysis and treatment of Manship bronzes and medals. This presentation will also cover an overview of the methods used to evaluate the selected sculptures, which may be a useful template for systematically examining cast bronzes in other collections, and will also share noteworthy discoveries made during the study. X-radiography, UV-induced visible luminescence, reflected UV imaging, and x-ray fluorescence spectrometry were conducted to document structural and surface features. Munsell color charts were used to refine terminology for the documentation and description of patina color. Though this study centered selections from one artist's oeuvre, the five-decade, international span of his work allowed a closer look at many of the historical techniques that underpin the living tradition of European and American bronze casting craftsmanship.

Objects - May 17

Magnetic Holder with Pressure Adjustment: The New Solution in Conservation and Displaying Works of Art and Artefacts

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Making their first appearance in the 1980s, strong rare earth permanent magnets have since been put to multifarious uses, which has been in evidence in not only technology but also many walks of life, including conservation and exposition of effectively all types of works of art (Braun T. 2001, Etre K. et al. 2014, Monjeau N. 2015, Taira K. 2011)). Such devices are characterized by remarkably high levels

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of magnetic energy density (reaching orders of magnitude as high as 500 kJ/m³, henceforth displaying very strong forces of attraction (exceeding kN) when interacting with ferromagnetics, such as iron or other magnets. As for conservation (Sterp Moga, E. 2019) as well as mounting systems for museums and cultural institutions (Spicer G. 2019), magnets are in extensive use. Their accumulation of high levels of energy makes for stable holding-strength profile in contact with ferromagnetic surfaces - a strong asset in conservation and exposition.

Characteristically, each magnet comprises two oppositely charged magnetic poles. In the case of strong magnets, these poles and the spaces surrounding them are centres of potent magnetic fields H. The creation of a mechanical force between a magnet and another ferromagnetic object is conditioned on the reverse magnetization of the ferromagnetic: a given magnet's N and S poles are cross-matched with S and N poles, respectively, which leads to the attractive behaviour typical of any two magnets. The forces of mutual attraction between magnets and iron elements reach significant values, which is an advantage, albeit entailing complicated separation. In the cases under consideration, we must reckon with limited control over objects' relative positioning, which is unstable and unpredictable. There is also another issue, whose salience used to be overlooked before 2020 (Szozda, Z. 2020, Szozda, Z. 2021), namely the interaction between magnetic fields and layers of paint or otherwise (e. g. graphite). This phenomenon has to be taken into consideration in all situations involving exposure to magnetic fields. Such a necessity arises from the fact that the ferromagnetic, paramagnetic, or diamagnetic properties of various substances lead to attraction or repulsion by a magnetic field.

So far, strong magnets used in conservation-related or magnetic-mounting practice have predominantly been in the form of either slim-coin or cube-shaped magnets, tightly pressing the canvas to another magnet or a ferromagnetic surface. But the removal of such magnets may entail some difficulty in separating them, as well as constituting the hazard of some unpredictable damage.

This paper undertakes to present a magnetic holder with pressure adjustment, which possesses the fundamental advantage of smooth attachment to ferromagnetic surfaces. Such a property opens up horizons for new advancements (e. g. an auxiliary stretcher or a stretcher with active magnets embedded in the design), as well as new magnetic mounting solutions for museums and cultural institutions. The primary objective of such a process of innovation focuses on new non-invasive methods, ultimately envisioning future abandonment of nails, staples, or buckles.

Replication of Fine Surface Details Through 3D Scanning and Printing: Current Capabilities and Limitations

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Many of the techniques used to conserve works of art have their roots in art making itself. Loss-compensation through filling and inpainting, for example, is directly rooted in the methods of painting and sculpture. Similarly, just as 3D scanning and printing have taken on an increasingly important role in the artist's studio, conservators have begun utilizing it for our own goals. Until now, much of the discussion around 3D scanning and printing has focused on the preservation of 3D printed artworks, rather than the use of these methods in conservation. Although there are numerous case-studies where 3D modeling and automated additive or subtractive manufacturing techniques have been incorporated into conservation treatments, the use of these techniques for replication or restorative purposes whereby the 3D printed model is intended to convincingly represent the object of conservation itself, either partially or entirely, has been limited.

Likely the result of high costs, limited access, and insufficient understanding of the technologies, as well as an understandable assumption that most conservation interventions can be done faster, less expensively, and to a higher standard by a trained conservator, 3D technologies remain underutilized and understudied. Setting aside the ethical and philosophical issues related to larger discussions of "replicas," "copies," and "refabrications," what does 3D scanning and printing make possible now? What level of surface detail can be accurately replicated and how much does it cost? Inescapable ethical questions included, what do these techniques mean for conservation and for art, and how do they fit into evolving philosophical frameworks supporting the conservation of time-based media and conceptual art, as well as the more traditional frameworks supporting the reception of multiples and works of art produced in series? Pushing the limits of 3D scanning

and printing, a recent project at the National Gallery of Art, Washington has been seeking answers to these questions and exploring what might be possible in the future.

Collaborative Documentation to Inform Future Reprinting: Acquiring Additively Manufactured Objects at Tate and Science Museum, London

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Over the past decade, additive manufacturing has become a popular method of production, most often referred to as 3D-printing. Unsurprisingly, the increased recognition and use of additive manufacturing techniques has resulted in the emergence of additively manufactured (AM) objects in the museums and cultural heritage sector. Within the conservation field, research has been done to understand some of the polymers being used to create these objects, but there is less material available on archiving of the related digital files, and re-printability of AM objects. All of these aspects need to be considered when acquiring AM objects and devising a conservation strategy with relevant stakeholders.

When printing an AM object, there are a large range of variables which can impact on the final object. Even with the same digital files and the same model of printer, decisions such as layer thickness, placement on the printing bed and location of supports can cause aesthetic changes. This is also compounded by a rapidly evolving industry where materials are trade secrets whose components may be modified by manufacturers, and processes and machines will evolve with available technology.

This paper will outline collaborative work done across Tate and the Science Museum in London to understand the information that different museums need to collect at the acquisition stage of an AM object. Having certain discussions and gathering technical information at this stage can be vital to the long-term care of an artwork or artefact. By speaking with AM specialists in the UK, a list of the controllable variables when fabricating using AM technologies was compiled. This was used to produce a documentation template which can be sent to fabricators and artists to ensure salient technical information about fabrication is captured, and can act as a prompt for discussions about care strategies such as future replication. This documentation also highlights the copyright complexities around reprinting, to ensure any future reprinting can be done ethically without infringing on copyright or the artist's wishes. Care was also taken to ensure the document is flexible for different types of artworks, objects and processes, and that it does not act to fix ideas around how the artwork should be cared for.

Using case studies of AM components from Tate and Science Museum, two museums with very distinct collections, the paper will illustrate how the documentation can be used, and where it can be problematic. This will demonstrate the complexity and scope of the knowledge required for the acquisition of additively manufactured objects, and the need to collaborate with relevant specialists. We hope that by sharing the methods developed, we can create a space for discussion around acquisition processes for AM works and open the documentation template to suggestions and collaboration.

Objects + Archaeological Discussion Group - May 17

Layers and Layers: An Overview of Treatment Approaches for Egyptian Cartonnage at the Penn Museum

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Egyptian cartonnage is a particularly complex material, creating unique challenges around treatment, display, and storage. Both flexible and rigid, it is built up of layers

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of linen or papyrus (or sometimes both), followed by gesso, and finally paint. Each of these layers has its own conservation challenges. These objects are funerary in nature and would have originally been part of an assemblage of burial material for a deceased mummified individual. All the pieces presented in this paper have been physically separated from the mummified individuals they originally belonged to. In most cases, this happened prior to entering the museum collection, though a few were separated after entering the museum. The separation and removal of these pieces from the mummified individuals they covered has caused some of the observed deterioration, as well as further improper storage. Observations also suggest that certain paint colors are more prone to deterioration and loss than others. Preliminary pigment characterization was conducted using non-invasive methods such as portable X-ray fluorescence and multi-modal photography.

Recently, a group of over 20 cartonnage objects has been treated at the Penn Museum, either as part of an IMLS grant-funded project to treat Egyptian funerary material, or as part of the preparation for the installation of new Ancient Egypt and Nubia galleries. This paper will examine deterioration trends associated with past handling and storage, the different types of cartonnage construction, as well as preferential flaking of specific paint colors. The prevalence of each issue and how it may relate to the manufacture and treatment/handling history of the object will be discussed. Current treatment approaches will also be presented with a focus on consolidation, humidification, and proper support for these complex objects both in storage and on display.

Sustainable Solutions: Water Based Consolidants for the Treatment of Low-Fired Ceramics

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This research is being conducted as a thesis project within the UCLA/Getty Master's Conservation Program. Low fired ceramics are ubiquitous in cultures around the world and yet little literature exists on consolidation options for treating their often-powdery surfaces. Using mock-ups, I am comparing water-based consolidants for their use in surface consolidation of such low-fired ceramics. The goals include evaluating more sustainable options for treatment not only for the benefit of the environment, but also for the health of conservators. Water-based consolidants may also benefit field work since solvent availability and hazardous material procedures are often limited. While controlled experiments give conservators an empirical framework for understanding aspects of the materiality of the heritage items we work with, such investigations are only one factor in the conservation decision-making process. The various cultural contexts of these ceramics are just as much, if not more, of a guiding factor in treatment decisions. To that end, I am working with Landis Smith, Projects Conservator at the Museums of New Mexico Conservation Lab/Museums of Indian Arts and Culture. She is introducing me to potters from two or three pueblos with whom I am beginning to engage in conversation about what is most important to them about their pottery as well as their thoughts on conservation intervention.

To learn about current use of consolidants for low-fired ceramics, I surveyed conservators in English, French, and Spanish. Current responses indicate prevalent use of Paraloid B-72 for consolidation. Few conservators currently choose to use water-based solutions.

Five consolidants were chosen for testing: Methylcellulose, Ethulose, Jade 403, Acrysol WS-24, and Aquazol 200. These were chosen based on a literature review and conversations with some archaeological conservators. Due to the COVID-19 pandemic, I pivoted the testing from the UCLA/Getty Program labs to my Los Angeles residence. Although it was not planned, the low technology set-up more closely replicates the archaeological field experience. To make the sample mock-ups, I used raw materials from New Mexico Clay and fired them in an electric kiln at approximately 730°C. I used easily accessible materials to roughen the ceramic sample surfaces and craft two aging chambers - one for high temperatures and one for high relative humidity - in attempts to recreate potential storage environments. Each consolidant was tested at two different concentrations and applied by brush. The samples were split into three groups; a control and one set for each of the aging chambers. They were photographed using a DSLR camera along with detail shots of the surface using a USB DinoLite Microscope. I performed a simplified tape test on

the surfaces and used a portable FieldSpec 3 fibre optic reflectance spectroradiometer to take color measurements. Preliminary results suggest a low concentration solution of methylcellulose as a possible alternative to solvent-based solutions. Initial discussions with potters underline the importance of collaboration and making a treatment plan that respects the community's desires and intended use for a pot.

This research is partially supported by the Foundation for Advancement in Conservation's Take a Chance Grant.

The Effect of Conservation Agents on Non-Destructive Dendrochronology

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Plants adapt to environmental conditions throughout their lives and store this information in their tissue. Prehistoric objects that were crafted from wood are preserved in the temperate zone mainly under waterlogged and anoxic conditions. Their analyses allow the reconstruction of the living conditions of the trees. Therefore, archaeological wood offers an archive for interdisciplinary research. Ecological, economic, vegetation-historical, climatic and cultural-historical questions can be addressed. The measurement of tree-ring widths permits dendrochronological dating making wood to a key material for archaeological research.

Without conservation, the finds disintegrate within a few hours after their recovery. Conservation measures are a prerequisite for the preservation of waterlogged organic materials. Written reports about conservation measures are proven already in the 19th century. Until today a plethora of methods with different conservation agents were applied to preserve archaeological waterlogged wood.

Several comparative studies aim to compare the efficiency of the treatment methods. For the conservation of wooden archaeological objects, the first priority is a long-term stabilization. Invasive dendrochronological analysis using destructive sampling practices, such as core drilling, are contrary to this principle. The establishment of non-destructive examination methods with micro computed tomography (μ CT) will make them more readily available in archaeology. Due to the difficulty of analysing wet archaeological wood, the question arises whether non-destructive examination of already conserved objects is still possible. Therefore, another requirement for conservation can be added: The historical information encoded in the wood structure should be still accessible and evaluable.

This study aims to clear which common conservation method allows non-destructive dating using μ CT. Therefore, conserved oak samples from the Roman period were available from the scientific reference collection of the Römisch Germanisches Zentralmuseum Mainz, Germany. The collection was built up by collecting large archaeological samples of different types of wood and degrees of degradation. These were then divided into several equal sized samples and each five were impregnated using the following methods: Kauramin 800, Saccharose, Lactitol/Trehalose, Silicone oil, Alcohol-Ether-Resin, polyethylene glycol (PEG) 2000 and freeze-drying, PEG 400, 4000 and freeze-drying, PEG 400, 1500, 4000 and freeze-drying.

Selected oak samples were analysed at the Lucerne School of Engineering and Architecture with a diodo d2 μ -CT system. Decisive criteria for dendrochronological dating are the visibility of the wood anatomy and the possibility to measure the ring widths. Therefore, the contrast in the μ CT images was compared to evaluate the influence of the different conservation agents on the visibility of the tree rings. The measurements in the μ CT data were evaluated with both, manual measurements with VGStudio MAX 3.4 and an automatic image processing approach which was recently developed. The results were also verified by the conventional measurement of the rings on the sample surface with a linear measuring table and a binocular. The results of those three methods are compared in terms of the number of rings measured and the mean ring widths of the sample radii.

First results confirm that visualisation of the wooden structure could be difficult in several cases: Influences are the size of the object, the conservation method and the condition of the wood. A major challenge in X-ray tomographic imaging of conserved archaeological wood is the quality of the data, which is determined by the contrast and the geometrical resolution of the measurement.

Going to Pieces for Conservation: Experiences Gained and Lessons Learned from Ten Years of Disassembling USS *Monitor* Composite Artifacts

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Having made the decision to disassemble composite artifacts into their subcomponents whenever possible for individual treatment, conservators undertaking the conservation of USS *Monitor* objects within the Batten Conservation Complex at The Mariners' Museum and Park have gained much experience and developed an array of techniques to successfully accomplish this task. From safely lifting and turning objects to pushing components apart, conservators have acquired insight into the strengths of various materials, identified where to apply force and direct loads, the fabrication of custom equipment, and when to start and/or stop a disassembly attempt; all while evaluating and reevaluating potential consequences to long-term artifact stability. This paper will provide an overview of techniques, methods, equipment developed, and lessons learned over the last ten-years in the disassembly USS *Monitor* artifacts. Several composite objects will be utilized as case studies.

Building Back Better: A Collaborative Approach to Reconstructing an Egyptian Palace

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The Penn Museum has a large collection of monumental architectural elements from the ceremonial palace of 19th Dynasty Egyptian Pharaoh Merenptah (reigned ca. 1213–1203 BCE). Elements from the Memphis site, including columns, doorways, and windows, were excavated for the Penn Museum by Clarence Fisher between 1915–1920 and transported to Philadelphia. A selection of the monumental objects were installed in the Museum for the opening of the Egyptian Galleries in 1926, while other elements remained in storage.

Beginning in 2019, a team of conservators at the Penn Museum established an off-site lab where treatment and reconstruction of many of these elements was addressed for the first time in over a hundred years. The ongoing work includes archival research and curatorial collaboration to better understand archaeological context, condition issues, and past interventions. Conservation treatment aims to stabilize fragments and address previous invasive reconstruction and installation efforts. In partnership with mountmakers, riggers, and engineers from the firm Simpson Gumpertz & Heger (SGH), the Penn Museum team is using recent advancements in the field to rebuild structures focusing on non-invasive and reversible techniques in combination with innovative mounting solutions to allow these monumental architectural fragments to be displayed in newly-designed Ancient Egypt and Nubia galleries.

Paintings - May 15

Wax-resin Extraction Trials for Lined Paintings

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Wax-resin linings and their effect on color saturation, canvas planarity, and responsiveness to moisture are often referred to as irreversible. Treatments of two paintings at the Menil Collection in Houston, Texas, and the experiments performed in preparation for those treatments, suggest wax-resin extraction treatments have promise in desaturating grounds and returning suppleness to canvases. As part of the Getty Conserving Canvas Initiative—and informed by Consultant and Treatment Teams from institutions across the US and Europe—the Menil has been undertaking research into the extraction of wax-resin lining adhesive from canvas through the treatment of mockups with the aim of informing the pending treatments of two wax-resin lined works: *The Green Stripe* (1955) by Mark Rothko and *Large Interior with Palette* (1942) by Georges Braque. The mockups tested fall into three broad categories: 1) sized, unpainted cotton duck 2) sized, lead-white painted cotton duck and linen and 3) a study collection painting. Treatment trials employing heat, solvents, suction, and Evolon®CR as a wicking material were systematically performed to isolate the effects of single variables. The efficacy of the trials is being assessed through several criteria, including visual assessment, weight change, comparison of colorimetry measurements taken at various stages, cross-section microscopy, and Time of Flight Secondary Imaging Mass Spectrometry (ToF-SIMS). Such analysis will enable the exploration of the following key questions: How much wax-resin can safely be removed during wax-resin extraction and what, if anything, is left behind? And how does wax-resin lining and its subsequent extraction affect color?

This paper will describe the range of protocols tested and share the research findings to date, focusing on the most successful trials as well as some less successful trials for context. At the time of submission, colorimetry readings have been taken of the painted mockups before and after wax-resin lining and 42 wax-resin-extraction trials have been performed. Analysis of samples from mockups and Evolon®CR has been performed throughout, both before and after treatment trials.

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

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American artist Franz Kline (1910–1962) is associated with the Abstract Expressionist movement and is best known for his large scale, abstract paintings. *Nijinsky* (1950), titled after the famous Russian dancer Vaslav Nijinsky, is an abstract composition with gestural strokes of carefully placed black and white oil paint on canvas. This painting was first seen in Kline's breakthrough exhibition at the Charles Egan Gallery in 1950 and is representative of his more mature style. Prior to this exhibition, Kline created more colorful, figurative artworks. *Nijinsky* is a unique example of his work since it is executed on top of an earlier, colorful composition. Kline would occasionally recycle canvases and other materials due to financial constraints. The reuse of this canvas, however, created a thick, complex paint film with a superficial bond between compositions, and resulted in ongoing cleaving and cracking paint.

Before entering The Met collection, *Nijinsky* was owned by Muriel Kallis Newman in Chicago, IL. There it was treated by private conservator Anton Konrad in 1960 to address its unstable paint film. The treatment, which included infusing the painting 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 attached to a new stretcher. This project focused on undoing the previous treatment and addressing the ongoing condition issues.

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. Other works by Kline in The Met collection were

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carefully studied to advance an understanding of his process. A range of wax-resin reduction methods were explored, taking into consideration the paint sensitivity, structural concerns, and artist signature on the verso. Aesthetic issues were also addressed including uncovering the original tacking edges, reducing the 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, 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. This paper explores the history, research, and treatment of *Nijinsky*, and provides a method for treating early wax-resin infused paintings that is an alternative to passive monitoring or full wax-resin extraction.

Minimalism in Context: The Courtauld Institute of Art and the Royal Museums Greenwich

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Courtauld Professor Caroline Villers states in her opening notes to *Lining Painting: Paper from the Greenwich Conference*, that although the post-prints were published three decades late in 2003, the papers formed "foundational texts" which shaped structural conservation practice in the late 20th century. Villers' assertion of the importance of the 1974 Greenwich Lining Conference was also based on trends observed in a series of surveys of conservators, first undertaken in 1973 and then repeated in the late 1980s and 2001. As gleaned from the questionnaire responses, this period saw the growth of what was termed 'minimalism' in the approach to the structural conservation of canvas paintings.

From the early 1970s, the National Maritime Museum (NMM), now Royal Museums Greenwich, and Courtauld Institute of Art (CIA) were amongst the leaders in development of new lining methods and the use of modern materials. The Maritime's Chief Conservator, Westby Percival-Prescott worked closely with Courtauld Professor Stephen Rees-Jones, Caroline Villers, Gerry Hedley and others at the Courtauld to undertake ground-breaking research. Percival-Prescott enthused about the "heady atmospheres" of the collaboration with the Courtauld, stating that it was "hard not to be intoxicated by the new ideas, and new technologies".

From 1970 to 1974, Percival-Prescott and others travelled throughout Europe, East-coast America, and Russia, to learn more about lining, meeting experts and filming them at work. Upon return to the UK studios the newly formed group experimented with the new techniques, adhesives and fabrics discovered abroad and extensive tests were undertaken in the Engineering Research Department at the Royal Naval College. At the Greenwich conference Percival-Prescott argued for a moratorium on lining, whilst new research aimed to find what Villers and Ackroyd referred to as 'gentler methods of treatment'. This moratorium was a decisive moment in the adoption of minimalism in structural treatment.

As part of the Getty Foundation's 'Conserving Canvas' Initiative, the Courtauld conservators came together with the conservators at the Royal Museums Greenwich to collaborate once again. The aims of the project were to revisit our joint structural history, and then to reflect on the impact treatments have had on the longevity and stability of the paintings. As part of this work, a large number of treatment reports from both institutions were analysed to observe broad trends in materials and methods used. We were able to compare these with the findings of the questionnaires to see whether the trend for minimalism could be found amongst the practice of our two institutions. A small group of paintings were identified that had been recommended for lining over the previous 50 years, but remained untreated thanks to operational constraints. We were able to reassess the condition of these paintings and reflect upon what the recommendation 'lining needed' really meant in the preceding decades to give us a more nuanced understanding of the term 'minimalism'.

One Room, a Pandora's Box of Complications: Resolving the Motley Concerns of a Set of Murals Painted by Elmer E. Garnsey

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A series of early 20th-century murals lavishly decorate one gallery at the Saint Louis Art Museum. Painted in 1915 by Elmer E. Garnsey (1862-1946), the space was originally designed as a grand entrance to the museum's art library. This gallery and its decoratively-painted walls, archways, dome, and pendentives were maintained using a diversity of methods and materials, executed by various trade professionals (e.g. building custodians, commercial painters, restorers, and conservators). By 2020, any signage referencing the murals had disappeared, leaving visitors guessing the what, why, and by whom answers to the murals' origins. The desire to draw more attention to the paintings, coupled with the need to address condition concerns, led to a complete conservation research and treatment project, executed during the summer of 2021. This paper will discuss the project through the lens of project management, specifically, the challenges of operating a large-scale conservation project – one that demanded difficult treatment decisions – under the confines of a tight timeline and public visibility.

Despite extensive research and planning, the conservation team encountered a Pandora's box of issues once the project scaffolding was in place. Many mural projects prove to be complex, illustrating the adage: the larger the painting, the larger the problems and this project was no exception. Despite the fact that initial testing indicated the surfaces would be cooperative, the murals proved quite rebellious to planned treatments. With the timeclock ticking, treatment methods and materials pivoted necessarily; each surface, from wall to wall, pendentive to pendentive, and dome to archway, presented unexpected challenges as determined by their differential, previous treatments. The oil-on-canvas paintings, decorated with pastiglia, glazes, and toning layers, as well as thin, marouflaged canvas additions, were treated with a variety of cleaning, consolidation, and coating materials in the past, including but not limited to: water (mop-method), Soilax, Butcher's wax, polyurethane, n-butyl methacrylate, and additional oil paint. Particularly complex condition concerns required swift decisions; for example, to remove or retain more tenacious coatings, such as n-butyl methacrylate or polyurethane, that would increasingly become more resistant to treatment in the future if not addressed. Beyond cleaning phases, the project also included aesthetic reintegration and reapplication of surface coatings.

This paper will also consider the balancing act of during-treatment field education and public programming. The purview of including current conservation graduate students, pre-program candidates within a challenging project added layers to the institutional objective of a swift timeline. Execution of the project during operational hours increased the sensitivity to what materials and noise pollution were deemed acceptable, not to mention the pressures of physically working under the public eye. Interdepartmental coordination, educational programming, and copious amounts of elbow grease ensured that the project met goals set by contemporary conservation ethics, institutional stakeholders, and re-cemented the Garnsey murals esteem within the museum's cultural fabric.

Fiberboard as Painting Support, Art Material and Medium for Conservation: Historical, Aesthetical, and Characteristic Aspects of an Engineered Wood Product in the Arts

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With the beginning of the industrial production of Masonite-Fiberboard during the mid-1920's, this wooden composite material soon became ubiquitous in the art world. The low cost and its generally as stable regarded properties led to a widespread application as paintings support for painters and other artists worldwide. The processed wood-fiberboards also established rapidly as material for repair and conservation, especially in the field of painting conservation.

Usually, artists and conservators used standard fiberboard with a smooth surface and a structured verso. The different appearance of the two sides is characteristic

and unique for this material. The artist's choice of using whether the flat or rough side of a panel, may not only be crucial for the aesthetic appearance of a painting. This decision also can have profound effects regarding measures of conservation, since both sides tend to differ significantly regarding their properties of absorption.

In present times, and especially since the turn of the millennium, the use of hardboard for artistic purposes and measures in conservation has decreased significantly. Meanwhile, its application in the field of conservation is regarded as inappropriate and outdated. During the 20th century, however, fiberboard was applied extensively as painting support and backing material – outnumbering by far other kinds of wooden composite materials.

Fiberboard is a significant component within the oeuvres of many modern and contemporary artists. At the same time, the wood fiber product can be found as lining support or constructive repair element on innumerable museum works throughout the world. In this way, the industrial board entered the art collections as original component, and also as an added material for repair, restoration and conservation.

A major focus of this contribution is set on the description of typical damages on fiberboard used as painting support. Another emphasis deals with challenges in the field of conservation, ranging from consolidation to the cleaning of paintings on the wood fiber product. Furthermore, the different physical and visual properties of each side of the standard fiberboard require addressing also ethical issues, particularly in regard of the characteristic double-sidedness and corresponding effects due to the dissimilar surfaces.

In relation to the topic of the conference, the notion towards fiberboard in the fields of art and conservation seems to have changed profoundly during the past few decades. On one hand their archival properties are regarded as inferior and inappropriate, and the product generally stands for a rather poor construction material, on the other hand there is an increase of the art technological and art historical awareness. Fiberboard as painting support stands as a material on its own, with its inherent historicity. This growing recognition already has led to comparative examinations, to approve questions of authenticity. A systematical classification of characteristic physical properties and damages may allow to derive and to generalize adequate treatment methodologies.

Structural Conservation of a 17th Century Strainer Using Carbon Fiber

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Structural conservation of compromised, original wooden strainers is traditionally addressed with invasive carpentry or by replacement. In the case of an original strainer on an early 17th century portrait of Philip the III, King of Spain, by the court painter Pantoja de la Cruz, we sought an alternative that would allow a non-invasive and reversible treatment to preserve the function of the original structure. The portrait in question is a remarkable artefact given its age, with all original elements intact: an unlined canvas, its original strainer, and the original frame. However, the strainer was badly warped which caused a pronounced draw in the canvas that could not be addressed by traditional means.

Previously published interventions using carbon fiber/epoxy resin for furniture and sculpture treatments inspired this foray into painting conservation. An armature was tested and ultimately used as it satisfied all treatment criteria: its rigidity and strength could hold the torqued strainer in plane while not adding excess bulk or weight to strain the frame. This allowed the original artefact group to function while providing adequate structural support to the painting. The resistance of the structure (original strainer and carbon fiber armature) was tested to provide measurements as guidance for future projects, as well as other considerations such weight and durability, cost efficiency, and time employed.

This project was a fruitful collaboration between painting, object, and frame conservators as the armature construction along with structural treatment of the wooden components fell outside the expertise of the painting's conservators responsible for the portrait.

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Treatment of a Water Drip on Mark Rothko's *Untitled* (1957) in the Menil Collection

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Mark Rothko's "classical" paintings are distinctly delicate paintings: grounds with a mixture of animal glue and dry pigments, and design layers executed with multiple, extremely thin layers of a wide range of paint materials, many of which are water-sensitive. These ephemeral surfaces also rely on the subtlest differentiation of surface reflectance, saturation, and paint film thickness to achieve the artist's intended sense of luminosity, space and movement. Rothko's *Untitled* from 1957 in the Menil Collection features a stack of vivid orange, purple and red rectangles ranging from velvety matte to highly glossy surfaces, aptly demonstrating this differentiation and sensitivity, both to its environment and to the variety of materials deployed in the course of its treatment.

A restoration of the painting in 2020 was preceded by extensive research into the artist's painting materials and practice, the conservation history of the painting, as well as an attempt to recreate the highly absorbent glue-pigment ground with mockups. The principal aim of the treatment was to reduce the visual impact of a long drip trail, which changed appearance along its path down the canvas through the fields of different color and materiality, ranging from a slight darkening of the paint to blanching and partial dislocation of the top layer and a redeposition of dissolved material. Due to the varying sensitivities to water of the materials in the painting, the treatment method had to be tailored to the specific needs of the individual sections of the painting in the process. A prior restoration campaign, including possible alterations to the original surface to an unknown extent with unspecified materials, further complicated the issue. In the red ground covering the tacking margin and top edge of the canvas, an extraction technique involving the nonwoven textile Evolon® CR was successfully employed to reduce the sharp outline of the tideline. For the drip trail in the bright orange field at the top of the painting, attempts to reverse the discoloration were unsuccessful, and a two-stage retouching method, featuring a barrier layer of Funori (algae-based gelling agent) to facilitate future removal of the retouching proved to be the best treatment option. In the central section, consisting of glossy, medium-rich brushy purple paint over matte orange-brown bordered by additional purple paint, the method used consisted of a partial dissolving and redeposition of a dislocated glaze and the addition of translucent medium to enhance gloss and reduce blanching. The final section of the drip, disrupting the lowermost red field as a dark, slightly glossy vertical line, was successfully reduced using a micro-aspirator tool, water and a highly diluted gum arabic solution to mitigate blanching effects. Upon completion of the treatment, the painting was prominently displayed in an exhibition at the Menil Collection celebrating the 50th anniversary of the nearby Rothko Chapel.

Conservation of Mary Corse White Light Paintings

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Since the mid 1960s, the Los Angeles-based artist Mary Corse has been creating a large body of work that explores the boundaries of light, space, abstract painting, and object. Her work includes both large and small-scale canvases, large-scale ceramic work, and light boxes that defy gravity and visible sources of illumination. The focus of this paper will be an introduction to Corse's work, and a discussion of the conservator's role in treatment and care of the canvas paintings. Prior to 2016, the majority of "restoration" of Corse's work fell to the artist herself or her long-time assistant. With increased national and international recognition of her work, Corse's gallery representation has recognized the importance of a conservator's perspective and input in the treatment, handling and installation of pieces, and discussions with the artist about troubleshooting materials and application methods.

In this role, the conservator is collaborating with the artist, the artist's assistant, preparators, and gallery stakeholders. One aspect of this work is treatment of historical works that have been removed from their stretchers and rolled, resulting

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in unique treatment concerns. This ongoing work has been a challenging and rewarding experience that has caused the conservator to reconsider her role and responsibility in the ongoing legacy of this (and other) artist(s).

Art at the Boundaries: Conservation of a 1930s black silk velvet painting

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Black velvet paintings, a popular art form often considered counter to good taste, nevertheless make up an important if traditionally “low-brow” part of the American canon. Originating in the 1930s with the work of Edgar Leteeg, an American expat who worked and lived in Tahiti, black velvet painting evokes images of smoky dark bars and kitsch iconography. Almost since its conception, American black velvet painting has fallen out of the cultural bounds of artworks traditionally considered worthy of conservation. As such, there is little literature or established practice for the treatment of these works. This paper looks to fill this lacuna, exploring the history and significance of American black velvet painting and addressing the practicalities of treating such works. A treatment of a c.1930s black velvet portrait of Hawaiian icon Duke Kahanamoku, undertaken at ArtCare Conservation Los Angeles, will be discussed and illustrate the need for creative thinking and cross-disciplinary approaches essential to contemporary conservation practice.

White on Black: Surprising Technical Imaging Results of Suprematist *Composition with Plane in Projection* (1915) by Kazimir Malevich

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This paper describes the results obtained from a non-invasive technical investigation of the painting *Suprematist Composition with Plane in Projection* (1915) by Kazimir Malevich (1878 - 1935). The artwork was recently investigated and treated at the conservation studio, Redivivus, in The Hague, The Netherlands.

Consisting of a yellow trapezoid intersected by a blue and a black rectangle set upon a white background: this artwork is emblematic of Malevich's Suprematist period and was very likely to have featured in the seminal exhibition *0.10 (Zero-Ten): The Last Futurist Exhibition of Painting*. Previous technical images of the painting published by Sotheby's implied the existence of an earlier composition below the uppermost paint layers. Because of this and the historical relevance of this artwork, further technical analysis was carried out. Through the obtained images, and the subsequent digital edition, a much clearer picture of the previous composition was disclosed. Methods of examination included high-definition photographic documentation, x-ray radiography, ultraviolet-visible fluorescence imaging, high-resolution 3-D microscopic examination (HIROX), as well as digital infrared reflectography.

By synthesizing observations made during the conservation process and the results of the technical investigation, the presence of a previously undocumented black paint layer beneath the white background was revealed. Although Malevich's 1915 composition *Black Square* is widely recognized and its revolutionary role understood by scholars of the modern abstractionists, black backgrounds are not typically observed in Malevich's painting practice. Evidence was found to support the theory that this black paint layer was planned as part of an earlier design. A sketch of the aforementioned underlying composition was sourced, in which Malevich denotes his intention to present the background as a black layer.

The results of this investigation deepen our understanding of Kazimir Malevich's creative process and color manipulation and add to the growing technical research on the artist's Suprematist period.

The Perception of Techniques Used for Retouching Wall Paintings in the Netherlands

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There are a wide variety of wall paintings in Western Europe which have survived the passage of time, in particular, in churches. Most have suffered some loss varying from damage that is almost unnoticeable to large lacunae that cannot be ignored. The expertise of conservators in the restoration and conservation of such objects is invaluable. However, how conservators approach these problems differs from case to case.

Until a century ago, it was common to reconstruct missing parts to bring back the original image. Modern conservation theory and codes of ethics have led to reconstruction becoming a less common choice for the reintegration of lacunae in favor of more subtle retouching/infilling techniques, or leaving lacunae untreated. The continued debate as to which techniques are appropriate revolves around the question of what one is supposed to see in the final result. It is not clear whether there is a consensus amongst conservators on which retouching/infilling techniques should be used and when. This also raises the question as to what the general viewing public actually sees and perceives of a retouched wall painting.

A study was therefore conducted on how professionals and the general public perceive lacunae in wall paintings. Originally, the use of so-called eye-tracking techniques was planned to determine what test subjects see and perceive of untreated and retouched wall paintings in historic churches in the Netherlands. However, the project timing fell within the corona pandemic. The decision was therefore made to conduct surveys of professional conservators on the one hand, and members of the general public on the other, in a manner simulating, to a limited degree, the use of eye-tracking.

Subjects were asked to consider possible solutions for retouching a wall painting of Maria Magdalena with the Vera icon in the Sint Agneskerk in Sint Truiden, Belgium. Professional conservators were shown a digital image of the untreated state of the painting and asked to select which retouching technique they would use for selected lacuna among a list of ten possible solutions, and then explain how and why. Members of the general public were shown the same image, and several of the retouching solutions simulated using Photoshop techniques. They were asked which solution they preferred and why. The questions posed to the conservators and to the general public were intentionally different, reflecting the reality that conservation decisions are not normally made in consultation with the public.

The results provide a limited but interesting view on how professionals and the general public perceive lacunae and their treatment. Although many conservators chose neutral retouching as a solution for the various lacunae, roughly half of the conservators chose one of the other nine options, thus demonstrating that there was not a clear consensus. The general public tended to prefer a reconstruction or the use of *tratteggio*. In all cases, the subject's background had an important influence on their selections. Possible implications of the results of this project are discussed and suggestions made for further research, especially regarding the perception of restoration treatments.

Projection Meets Perspective: Study on the Development of Chinese-European Painting Artworks in Imperial Court by Non-invasive Analysis

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Even though one of the most popular of the three types of classical Chinese antiquities, Chinese paintings have not been given the same attention by modern science and technology, compared with bronzes and ceramics. One possible reason is that ancient Chinese paintings are complex, made of papers, silk, and thin layers of pigment. The fragility of the paintings did not allow for sampling when scientific analyses was involved. However, there has been significant advancement and non-invasive scientific analyses have been successfully applied in the conservation laboratories of the Palace Museum (PM). In reference to the analytical methods applied to Western oil paintings, conservation scientists have explored specific characteristics of Chinese paintings. Scientists and conservators have applied some advanced and modified analytical methods, such as transmitted-light photography, hyperspectral imaging (HS) and XRF scanning that have been successfully carried out in the conservation laboratories of the PM.

In the conservation laboratories different methodologies for painting analysis

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have been designed and compared. The combined use of HS and XRF scanning becomes an effective technical patterner for simultaneously mapping organic and inorganic pigments. Furthermore, the pair of methods contribute to identifying the unknown pigments and exploring distinct techniques of ancient Chinese painting. However, when HS and XRF scanning are unavailable, transmitted-light photography, fiber optics reflectance spectroscopy (FORS), multi spectroscopy and portable XRF can also play important roles, which provides an alternative and flexible analytical methodology for painting analyses.

In recent years, with the aid of rapid-developing technology, we have focused on artworks of several Qing imperial painters and carried out a simulated painting-technique practice according to scientific analysis results. Those artists who lived in the imperial court applied European techniques with Chinese tradition, particularly seen in landscape and portrait artworks. Based on application of high accuracy microscopy, FORS, XRF scanning and a Hyper-spectroscopy scanning system, we learned how both of techniques were combined through the study of several landscape and portrait paintings, which were conducted by famous imperial painters including Leng Mei, Ding Guanpeng, etc. in chronological order. Those portrait pieces which included European elements increased the use of pigments' type and concentration over time, especially noticeable through the changing illumination seen on face. Meanwhile, European linear perspective began to gradually emerge in these Chinese landscape pieces as the classic Chinese projection system predominately applied, which is not based on optics but demonstrates strictly parallel pillars and beams. In addition, in order to accommodate for the translucent property of paper and silk, a standard and distinct traditional painting technique of Chinese painting, called reverse-ground color, has played an effective role when using heaving ground color. This mysterious technique was successfully identified and interpreted by microscopy and XRF scanning. Nevertheless, the combined use of both Chinese and European painting characteristics was significantly identified in these paintings, which lead to a deeply understanding of the origin and development of the Chinese-European painting techniques in the Chinese Imperial Court.

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Analytical Study of the Unique Icon of St. Joseph with the Child at Virgin Mary Church in Haret Zuwaila, Cairo, Egypt

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In the neighborhood of al-Qurunfish in the Fatimid section of Cairo, there remain the ruins of an old Monastery and some important churches. The ruins occupy the place where according to tradition the Holy Family sojourned and where a woman's Monastery is established today. One of the Churches is dedicated to the Holy Virgin.

And inside the Virgin Mary Church, there are many icons, but there is a unique icon representing YOUSSEF (Joseph the Carpenter) with the child dating back to the 19th century, painted by Anastasi Al-Romi (a Jerusalem painter living in Egypt).

The Study aims to evaluate the state of icon through characterization of the icon layers (Ground, paint, varnish layer) and to provide the tools for assessment the impact of aging and environment condition in order to produce some solution for conservation of the icon. Analysis techniques used in this study were attenuated total reflection – Fourier transform infrared spectroscopy (ATR-FTIR), field emission scanning electron microscope-energy dispersive XRY Spectroscopy (SEM-EDX) to identify of pigments and Binding Medium. The identification of pigments on painting Coptic is necessary to profoundly understand the material and technique used also.

Modern Life in the Museum: Nanoindentation Study of Soft and Dripping Oil Paints in Four Artworks by Karel Appel and Asger Jorn

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The presence of soft and dripping paint in modern and contemporary artworks increases the risks connected with handling, treatment, and display, all of which are actions necessary for making art available to the public. Understanding the behaviour of soft paints in the expected safe range of 40-60% relative humidity (RH) is crucial for elaborating risk assessments and safe preservation strategies. Furthermore, since soft and dripping paints have been widely reported in collections with modern paintings (Fig. 1), the problem is relevant for many museums collecting modern art.

This study was aimed at the acquisition of data on the effect of relative humidity on paints from works by Karel Appel (1921-2006) and Asger Jorn (1914-1973). The chosen paintings are part of a larger study on the cause and effect of soft and dripping paints in paintings dated between 1949-1972 (Bronken, upcoming Ph.D. thesis, 2022). Observations on an example of soft and dripping paint in different storage conditions indicated that the exudate became more fluid when RH increased. This raised questions about the possible adverse effects of high humidity on the integrity of paint layers and how this could be measured.

The minute size and softness of the available samples posed a challenge for the measurement of mechanical properties. This obstacle was addressed by the development of a novel nanoindentation technique that characterized the physical behaviour of extremely soft materials in an unembedded configuration. The method involves bringing an oscillating flat punch indenter into contact with the sample, continuously measuring the storage (elastic) and loss (viscous) components of dynamic stiffness, and evaluating the storage and loss moduli as the respective stiffnesses are normalized by the contact diameter. The novelty of the technique is in overcoming the inability of sharp indentation to accurately predict the contact area for a soft paint film through using the alternative indenter geometry along with a procedure to account for the effect of the underlying rigid substrate (Fujisawa *et al.*, under review).

Systematic measurements of loss moduli at different humidities showed that the soft paint became softer as RH increased. The obtained results allow for the prediction of environmental conditions at which specific paints become mechanically unstable. A small, but carefully curated sample set represented the typical paint properties observed while documenting examples of soft and dripping paints. Thus, the experimental results will be relevant to similar artworks, and implies that modern painting collections with soft paints might be more stable when stored and displayed at lower humidity values.

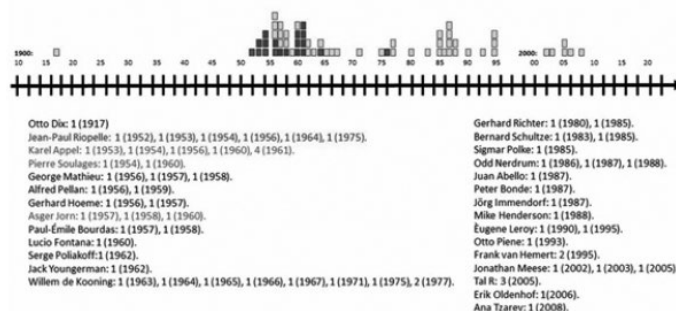


Figure 1: Soft and dripping paint in modern and contemporary artworks from case studies in conservation theses and publications. Illustration: Ida Bronken.

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A Step at a Time: Reconsidering the Look of Charles Willson Peale's 1795 Staircase Group

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The creation of new galleries of early American Art at the Philadelphia Museum of Art has meant revisiting how the museum presents many works in its collection. One of the most iconic is Charles Willson Peale's remarkable 1795 Staircase Group (Portrait of Raphaelle Peale and Titian Ramsay Peale), celebrated as a trompe l'oeil conceived to engage with its environment and confound the perception of viewers. The most recent treatment strove to restore the impact of the illusion for the viewers rather than a strictly historically accurate presentation. The goal of this project was to recreate that fleeting moment of deception in the artificial environment of a modern gallery.

From its conception, the life-size portrait is known to have startled and delighted visitors. George Washington reputedly bowed politely to the painted figures which he mistook for living people. Further proof of the painting's early appeal are the innumerable circular cracks present across the painted surface from the viewer's physical reaction to being optically deceived, where touch becomes a corrective response to their astonishment. Details of the original framing are now lost, but when it entered the museum collection in 1945 it was in a black and gold frame presented as a traditional portrait, destroying the trompe l'oeil effect. In the 1960s the painting was reframed in a green door jamb with a real step and riser, based on the narrative that Peale's original concept for the painting was to engage with its surroundings. While the 1960s presentation embraced the spirit of the original display, details such as the strident frame color and poorly sized protruding step competed with the illusion of the painted steps, prompting us to revisit the installation for the new galleries in 2021.

Retrieving a setting for a convincing illusion was achieved through cumulative incremental steps in treatment and installation design. Treatment of the painting included a series of subtle but impactful interventions. Structural work was carried out to correct a 19th century change in format when the painting was relined and secured to a smaller strainer slightly out of square, skewing the perspective of the painted steps. The network of circular cracks was well documented as historical evidence of viewer interaction through touching, however a decision was made to aesthetically reduce the cracks through inpainting to restore the illusion of recessed space. Other evidence of historical wear from rubbing was preserved as it did not disrupt the impact of the illusion. The framing and display was designed in collaboration with preservation architect John Milner, after exploring 18th century interiors around Philadelphia for inspiration. Period door frame moldings, steps and paint colors were chosen to amplify the illusionistic impact of the painting, and minimize the transitions between painted space, frame, and the gallery wall. Our interpretation may ultimately be reconsidered, but our decision-making rationale is well documented, which we hope can inform future custodians of where our research ended and our interpretation began.

Unravelling the Varnish Layers on Rembrandt's Portrait of Marten Soolmans Through Interdisciplinary Research

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The adoption of synthetic varnishes by conservators occurred much earlier in North America than in Europe. At the time, these newly manufactured synthetic resins were considered a more stable solution to the perceived discoloration and increasing insolubility of the traditional natural resin varnishes. This proved to be important in the research of Rembrandt's 1634 portraits of Marten Soolmans and Oopjen Coppit (jointly owned by the Rijksmuseum and the Musée du Louvre), which were treated between 2016 and 2018 in the Rijksmuseum in Amsterdam, in collaboration with Musée du Louvre and the Center for Research and Restoration of Museums of France (C2RMF). Before treatment was undertaken, archival research revealed much new information about the 1950s treatments of both paintings. Although the paintings had been in a French private collection since 1877, it was discovered that the pictures had been on display in the Cleveland Museum of Art from 1949–52, which explains why the portrait of Marten was treated in New York in 1952 by

the restorer William Suhr (1896–1984), while the portrait of Oopjen was restored four years later in the Rijksmuseum by Henricus Hubertus Mertens (1905–1981) in preparation for the 1956 Rembrandt exhibition. Both pictures were relined with wax-resin by Mertens in 1956. Both Suhr and Mertens were regarded as specialists in the treatment of Rembrandt paintings. Unfortunately, neither restorer left a written report, but black-and-white photographs of the portrait of Oopjen taken before- and during cleaning in 1956 in the Rijksmuseum conservation files, and numerous prints of various before treatment photographs of Marten taken in 1952 discovered in Suhr's archive at The Getty Research Institute, along with the dated entry in Suhr's conservation ledger at the Library Archives of the Frick Collection, made clear that the pictures were treated at this time. Although the nature of each treatment was not specified, archival research into the materials that both restorers employed in the treatment of other Rembrandt paintings revealed that Suhr basically used four different varnishes at this time: the commercially available Talens varnishes containing an early synthetic resin (cyclohexanone), a shellac-based French varnish *Soehnée frères vernis à tableaux*, and occasionally a mixture of dammar and copal resin. Suhr also regularly applied a final spray containing wax. In contrast, Mertens made his own varnishes, using mastic or dammar, or a combination of both. This information aided in the identification of the varnish layers on both portraits since organic analyses with gas chromatography–mass spectrometry, a highly sensitive technique, had identified a long list of components in the varnishes that included aged linseed oil, pine resin, cyclohexanone, acrylic, dammar, shellac, mastic, beeswax and starch.

Advanced analyses of paint cross-sections went on to identify old degraded egg white coatings on both portraits underneath the 1950s resin varnish layers. The research into their treatment history proved essential in understanding the condition of the pictures and aided in the interpretation of analytical data and choices regarding their treatment. This meant that cleaning methods with greater chemical specificity could be designed to remove/reduce the degraded coatings.

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

Julie Ribits¹

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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. Bradley, Jr. collection now spans four major areas that have impacted multiple 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

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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.

Dans les loges: Girodet's *Coriolanus Taking Leave of his Family and the Grand Prix Contest*

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A French Neoclassical history painting *Coriolanus Taking Leave of his Family* by Anne-Louis Girodet de Roussy-Trioson (French, 1767–1824), purchased in late 2019 by the National Gallery of Art, arrived at the museum in near-pristine condition. The 19-year-old Girodet painted the work for the Grand Prix contest of 1786 while a student of Jacques-Louis David. As the painting is unlined, on its original stretcher, and retains its original varnish, it appears never to have been treated previously. Conservation treatment was carried out to improve the painting's appearance prior to display, which allowed for a technical study, unimpeded by previous restorations, that explored the artist's materials and painting technique.

The results of the study, coupled with an in-depth review of primary and secondary literature, suggest that the choices Girodet made in creating this painting were not always his own. The *Académie Royale*, which hosted the annual Grand Prix competition, had a stringent set of rules and practices, many of which were intended to ensure a fair competition. These rules and practices either dictated or heavily influenced choices that an artist would typically make. For instance, it is likely that Girodet did not choose his canvas support or apply the priming. Instead, the canvas appears to have been a pre-primed and pre-stretched purchase, something that was increasingly available during the late eighteenth century in Paris. These commercially prepared canvases were likely supplied by the *Académie* to all the entrants. The varnishes, too, were likely applied by a designee of the *Académie* eight weeks following the competition, and not by the artists. The choice of resin and its application were beyond the artists' control, raising questions about what other materials might have been supplied by the *Académie* as well.

Académie regulations appear to have restricted the precise mode in which Girodet and his competitors planned out their compositions, first on paper working from live male (but not female) models, and perhaps with the use of mannequins to work out the draperies, before transferring the design to the canvas. Evidence of how Girodet carried out these preparatory steps are visible on the painting itself, such as pinholes on the painting's surface, which aided in the creation of accurate single-point perspective and circular forms. Using infrared reflectography, a grid to scale up the composition from smaller scale sketches was also revealed. Rules to prevent cheating, which was reportedly rampant at the time (Girodet himself was accused and disqualified from the competition in another year), also influenced Girodet's approach, restricting when and where the artists could work, and from whom they could solicit advice. Remnants of a pair of wax seals on the reverse of *Coriolanus*, which previously connected the canvas and stretcher with a strip of fabric, are a sign of the measures the *Académie* took in this regard.

This study, while it leaves certain questions unresolved, begins to clarify how young painters like Girodet worked in this important competition, and it helps to define the *Académie's* relationship with these emerging and ambitious artists.

Technical Examination of *Card Players* (1958) by Hale Woodruff

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This paper presents a novel technical study into *Card Players*, a 1958 oil on canvas painting by the American painter Hale Aspacio Woodruff (1900–1980). The painting is a recent acquisition by the Yale University Art Gallery and is one of at least three versions of the same composition that Hale Woodruff painted over the course of his artistic career.

Hale Woodruff is known for his easel paintings, for his murals, and for his contribution to art education in the United States, particularly through his work at Atlanta University and New York University. After growing up and studying in Nashville and Indianapolis, Woodruff travelled to France in the late 1920s, where he became interested in the art of Paul Cézanne, which provided the thematic inspiration for the *Card Players* paintings. Upon returning to the United States, Woodruff moved to Atlanta, where he painted life in the American South, helped establish a degree for fine arts, and worked to provide new exhibition opportunities for Black artists. Woodruff spent the latter part of his life working in New York, where he painted the 1958 *Card Players*. Despite art historical scholarship into this important artist, little has been published on Woodruff's technique and use of materials. The hope is that this paper can act as a resource for researchers carrying out further study into Woodruff's technique.

This investigation presents the chance to contribute to the scholarship on Woodruff's painting technique. *Card Players* (1958) was studied at the Institute for the Preservation of Cultural Heritage (IPCH) shared conservation lab at Yale. Technical analysis was performed in collaboration with IPCH's Technical Studies Laboratory while the painting underwent minimal conservation treatment. The painting was examined with technical imaging, close looking and microscopy, scanning macro x-ray fluorescence (MA-XRF), and portable Raman spectroscopy. These revealed interesting aspects of Woodruff's technique, for example his use of washy underpainting, the application of thin layers of overlapping paint, and the employment of a range of commercially available pigments – both inorganic and synthetic organic pigments. The modifications made during the process of painting are particularly interesting when considering the painting as the second iteration of a composition Woodruff had first realized almost three decades earlier in 1930.

Two other *Card Players* paintings by Woodruff date from 1930 and 1978, and respectively belong to the collections at the Metropolitan Museum of Art, New York, and the Harvey B. Gantt Center for African-American Arts + Culture, Charlotte, North Carolina. This paper compares the Yale University Art Gallery's painting to these other versions that Woodruff painted throughout his life. The three paintings exemplify Woodruff's process of reassessing and altering an idea, through reversing compositional elements, adjusting his use of colour and differing his brushwork. Through these paintings, the artist was reflecting on and revisiting an idea over the course of almost fifty years.

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Sustainable Solution for the Preservation of a Collection of Historical Glass Plate Negatives in Myanmar: The Use of Dry Cabinets and Locally Available Materials

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The need to gather documentation to assist in the conservation of the Bagan monuments following an earthquake in 2016 brought to light a collection of glass plate negatives held in the archive of the Department of Archaeology in Yangon, Myanmar. The collection contains over 5,500 negatives dating from ca. 1901–55. Many images depict the temples within the Bagan archaeological area in great detail, making the collection an important resource for the ongoing restoration of the monuments whilst preserving their authenticity. Such glass plate negatives are particularly sensitive to humidity, and after being stored decades in a hot and humid climate they were exhibiting damages. In order to implement a preservation strategy, it was necessary first to assess the condition of the collection, to improve the storage and finally to digitize the collection. ISO standards recommend a dry and cool to cold climatic environment for long term storage. In a tropical environment, the adoption of such conservation conditions requires the implementation of air conditioning, resulting in high-cost, reliability issues and a significant carbon footprint. Our goal was to implement local sustainable preservation solutions based on available resources. The choice was made to use dry cabinets. Boxes and envelopes for housing the plates were locally produced, the work was carried out by the local staff after short training courses. After the photographs housing completion and a year's monitoring, it is possible to draw an encouraging outcome for such an approach. This paper presents the context of this project and the importance of the collections, it describes the different stages of its implementation and the positive results obtained that may promote the use in such dry cabinets in other institutions where collections are stored in too humid environments.

Photo Conservation Surveys in Latin America: History, Progress & Evolution

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Since the end of the 1990s, in Latin America, there has been a growing interest in establishing methodological systems for the identification of the scope of photographic heritage, its state of conservation, and the problems faced by the institutions or individuals in charge of its protection and dissemination.

Starting with a national survey carried out in Chile in 1999, followed by a survey carried out in Lima, Peru in 2016, we also reviewed more recent experiences in Ecuador, Argentina, and Mexico. Each survey presented its own methodology, objectives, and context. But we found commonalities that allowed us to draw conclusions about the state of the art in Latin America.

Although Latin America has a robust photographic heritage, with collections in many museums, libraries, and archives, it was not until the 1970s and 80s that they began to be organized as documentary and artistic collections, with appropriate physical and intellectual controls.

The compilation of data about these photographic collections shows the evolution of our photographic heritage, helps to create cultural policies and develop conservation projects and facilitates professional collaboration networks and joint actions between all stakeholders.

Regional surveys such as these guide us to consolidate long-term conservation and access projects, tuned to the needs of each country, while at the same time propelling us to imagine our regional future.

Collection-scale Representation of the Visual Properties of Black and White Paper

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The Lens Media Lab is focused on characterizing key visual properties of photographic prints at scale and the effective representation of these data for conservators, art historians and other researchers in the humanities. A baseline for comparison is the lab's reference collection of black and white photographic papers which contains over 7,000 samples spanning the 20th century. The lab is in the process of measuring this collection, amassing data on the key expressive dimensions of paper: thickness, color, gloss, and texture. Together these data can be considered a sort of "genome" for gelatin silver paper - a full representation of the basic determinants governing the appearance of photographs. Put to practical use, these data provide ranges of variation over time and across manufacturers and offer ground truth for classifying single prints, a maker's entire oeuvre, or comparisons within and across collections. The presentation will cover measurement tools and techniques, with greater focus on visualization and access, introducing web-based tools for leveraging this work for print-based research and scholarship.

Reassembly of Deborah Bright's "Crow Agency" Panorama

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¹*West Lake Conservators, Skaneateles, NY, US*

As part of a focused 1988/89 investment in works by women photographers, Binghamton University Art Museum acquired Deborah Bright's Crow Agency: Battle of The Little Big Horn. This work is part of the artist's 1981-84 "Battlefield Panorama" series and references 19th-century panorama photography. The framed piece, 120 inches wide 28.5 high, comprises 7 silver gelatin prints adhered to a secondary board and assembled onto a backing, with a text label underneath. At some point, however, the piece was disassembled into individual prints, still bearing traces of the original adhesive. The original text label, backing and frame were all lost.

In 2020, the seven prints were brought to West Lake Conservators for reassembly and framing, in preparation for an upcoming exhibition. Working closely with the Museum's director, Diane Butler, and with the artist, Deborah Bright, the panel was reassembled and is now reframed. Under the mentorship of Lee Ann Daffner, Conservator of Photographs at The Museum of Modern Art in New York, a mounting method was devised that made it possible to complete several preparatory steps at West Lake Conservators' paper and photography lab, while the final assembly was carried out onsite at Binghamton University. A new custom-built frame was ordered by the museum, with advice from the artist and the conservator.

The presentation will expand on the practical steps of the reassembly, the difficulties of mounting oversized objects, and the challenges of a treatment done partly in a private lab and partly onsite. In addition, the presentation will consider the implications of the way the reassembly and framing changed the original object—using different mounting mechanisms, changing the color of the frame, and creating a new text label. It will also discuss the uniquely fruitful opportunity of working closely with a contemporary artist and highlight the importance of collaboration in devising a new mounting method.

The Photographs of Seydou Keïta

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Seydou Keïta is considered one of the most celebrated photographers of mid-twentieth-century Western Africa. His numerous studio portraits were made in the late 1940s and 1950s; however, they were discovered by the European and North American audiences in the 1990s through modern prints made from his original negatives and exhibited in New York and Paris. They since have been praised for the photographer's impeccable technical skills, allowing him to render the sitter's beauty in a way that transcends cultural sensitivities.

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Although most of Keita's known images have circulated thanks to blown-up gelatin silver prints made under the photographer's supervision in the 1990s and the 2000s, a small number of vintage prints from the 1940s and 1950s have survived. In 2019, The Art Institute of Chicago acquired five of them – an event that has instigated this research. Scholars have raised questions about Keita's work, his models of representation, his photography education in the 1930s, and the images' authorship, among other aspects. Unfortunately, however, since most of his original photographic prints have disappeared, most of the scholarship on his work draws from modern blown-up prints.

In this context, we aim to gain insights into the photographer's practice, in particular, his selection and use of photographic papers, by characterizing the types of photographic papers making up Keita's vintage prints and researching the availability of photographic papers in the 1940s-1950s AOF (Afrique Occidentale Française, corresponding to Western Africa under the French colonization).

This presentation will also reflect on the philosophical implications of conserving and preserving photographic artifacts made in Africa from a Western viewpoint. With recently raised awareness about cultural biases and inequities, numerous questions arise. Since the material condition of heritage objects reflects their biography, it seems then capital to understand which historical events the alteration or artifacts support in order to make informed decisions that will preserve not only the physical object but also its intangible value.

Laura Gilpin's book "The Pueblos, A Camera Chronicle," An Archive Story

Ariadna Rodriguez¹

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This talk will present the results of my research project as current Fellow in Photograph Conservation at the Amon Carter Museum of American Art (ACMAA). The project elucidates Laura Gilpin's working process for the creation and publication of her book "The Pueblos, A Camera Chronicle", through the study of her prints, negatives, transparencies, and documents preserved at the archives the ACMAA. The book "The Pueblos, A Camera Chronicle" was the culmination of a long time (two-decades) desired project to publish her photographs of the Southwest in a single volume. Captured between 1921 and 1940, the images published in this book reveal Gilpin's transition from Pictorialism to straight photography; the approach she embraced in the following decades.

Gilpin's process of creation of the book was investigated through an in-depth examination and technical comparison of certain images in the book with their precursors in the production of the final image (i.e., camera negatives, interpositives, duplicate negatives, glass slides, etc.). A timeline of her numerous trips to the Southwest during the 1920s and 1930s could be established, along with the photographic materials she used and the images she captured each time. Laura Gilpin's intention to find commercial venue for these images before publishing this book, becomes clear in the numerous glass slide copies of these preserved at the ACMAA. The glass slides were discovered to be the direct precursors of the images in the book.

The prolific work of Laura Gilpin, coupled with the numerous versions of the book's images in different photographic processes (glass plate negatives and positives, cellulose nitrate negatives and interpositives, gelatin silver prints, platinum prints, and photogravures), challenge the tracing of the original negative and the path she followed to create each image. It became clear that she printed and edited the images several times before publishing the book. The size and complexity of Laura Gilpin's archive (comprised by not only photographs from every decade of the 20th Century, but also by documents, cameras, and photographic materials) underline its potential as a resource for technical, material, and aesthetical research, like the one presented here.

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Dye Sublimation Prints on Aluminum: A Material Investigation of a New Process

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Heat has been used as a method of transferring image colorants onto a receiving layer since the 1950s. Dye sublimation printing on metal, introduced in 2005, is a recent addition to this group of printing techniques. In this two-step process, an image is first printed onto transfer paper and then by means of a heat press transferred onto an image receiving layer of an aluminum sheet. The print quality was first only suitable for consumer labs, however in recent years companies are producing high quality substrates, such as the ChromaLuxe line by Universal Woods Inc., that elevate dye sublimation prints on metal to fine art status.

This line of products offers a range of aesthetic and practical qualities, and artists are increasingly adopting this process for their work. Because dye sublimation prints on aluminum are entering institutional collections, best practice guidelines for storage, handling, and display are required to ensure their long-term preservation. The Photography Conservation division in the David Booth Conservation Center at The Museum of Modern Art (MoMA) undertook research of these considerations in a 12-month multi-faceted project.

The MoMA investigation centered on understanding the materials and printing process, evaluating the fragility of the surface (which is typically exhibited unglazed), and determining acceptable materials for storage. Our research focused on the ChromaLuxe materials, although there are several other substrate brands available. In addition to visual, ultra violet, and microscopic examination, FTIR-ATR and XRF analysis was also carried out to further discern the properties of these works.

Advertisements and product guidelines of dye sublimation prints on metal suggest that they are very durable. Other than these claims, there is limited information or published research, so our inquiry included evaluating surface cleaning and abrasion testing. Due to the high temperatures required for dye sublimation, reverse diffusion of the image dyes under a variety of conditions was a concern. Thus, an exploratory test was carried out in an elevated humidity and temperature environment. Finally, long-term natural aging tests were set-up in different storage conditions.

The pristine surfaces of these contemporary works of art are integral to the artistic intent and this study was the first step towards gaining a better understanding of their preservation needs. Even though the project pivoted to adapt to MoMA's closure in 2020 at the height of the pandemic, the findings from this study have already guided the museum's acquisition of an important series by Sarah VanDerBeek.

Potential Methods for Documenting and Monitoring Silver Mirroring on Photographs

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Silver mirroring, a degradation mechanism often seen with silver-based photographic processes, presents as a whitish or bluish metallic sheen on the surface of a photograph. Mirroring can be associated with the age and increased value of a photograph, but it is potentially disfiguring, obscuring image detail as it progresses, and a deterioration process that conservators may want to slow or stop altogether. This research aims to shed light on how silver mirroring behaves over time, an area of photograph conservation that is relatively unstudied, and introduce new research on preventive care. The project also focuses on addressing the difficulties of imaging and tracking silver mirroring with the goal to determine suitable methods for documenting this phenomenon.

While easily visible in specular light, the subtly reflective nature of mirroring is notoriously difficult to capture using current documentation protocols. This makes monitoring its development after exhibition or time spent in storage nearly impossible. Current research investigated the use of a glossmeter and spectrophotometer,

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alongside various imaging techniques, to track the accumulation of metallic silver particles on a photographic surface and progression of silver mirroring over time.

The results of this research project have the potential to improve the longevity and legibility of mirrored works in photographic collections by establishing repeatable documentation guidelines that can be implemented within the conservation workflow. This approach would involve comparison of measurements against a baseline, providing a data-driven basis for determining display parameters or lending guidelines.

A documentation workflow that is in use at The Met, which can be implemented at other institutions, as well, will be downloadable from the Photograph Conservation Department website. Documenting patterns of silver mirroring across collections will improve our understanding of this degradation phenomenon, contribute to the field of photograph conservation, and benefit numerous collections of photographic works.

Negotiating the Care of Complex Contemporary Works on Paper and Photographs with Artists and Curators: How Can We Realise an Artist's Vision?

Emily Williams¹, Jacqueline Moon¹, Marcin Zielinski¹
¹Tate, London, United Kingdom

Tate acquires approximately 600 works of art each year, 75% of which are works on paper and photographs. Acquisitions are subject to condition checks that assess display and storage needs and associated costs. The documentation process has changed over time to incorporate artist interviews, to advise artists and to involve curatorial. This helps us plan for future loans and displays, aids collaboration between conservation disciplines, and ensures that conservators play a greater role in the selection, shipping and presentation of artworks before purchase, as well as mitigate potential damage before these fragile artworks arrive on site. To conserve time and resources we assess what information to gather and what options to offer a curator, gallery or artist, and consider how the conservator influences the approach. In addition, we think carefully about how costs, resources and storage space impact our recommendations, and whether acquiring work by international artists will change our approach.

This talk will examine how we approach the care of contemporary photographs through three case studies. These illustrate our documentation methods as we gather information from artists, donors, galleries and curators, to assess display and care needs now and in the future. As well as artist interviews this includes use of the AIC's Photographic Information Record (PIR), visits to galleries and studios, and developing a preservation workflow for digital artwork files.

The first case study will illustrate the challenges of acquiring an artwork with physical and digital components; in this case, three chromogenic photographs on paper and a digital file to print a vinyl wall text for each display. The digital file was missing, but its importance came to light through the Photographic Information Record. By developing a new workflow for accessioning digital files, we were able to advise the gallery and curator.

The second case study will address the issues of displaying inherently fragile contemporary photographs in unconventional ways due to the artist's intent, for example unframed or unglazed, finding solutions which create a balance between maintaining the artist's wishes, curatorial vision, and safeguarding the artwork.

The last case study will look at a group of photographs which were to be purchased mounted and framed, but through the PIR we realised these framing materials were inappropriate for their long-term preservation. We were able to arrange for the works to be mounted on site by our conservation team, and for the bespoke frames to be commissioned externally. This example will look at the decision-making process and the discussions had between the curators, the gallery, and how we came to an agreement on how we should proceed with their storage and display.

Through this talk we will illustrate the importance of collaboration, visibility to colleagues across Tate, and current challenges as well as those brought to light by research. We'd like to share our approach, hear your feedback and prompt debate around negotiation and collaboration.

Evaluating the Potential for Freezing and Freeze Drying to Improve Water Emergency Outcomes for Inkjet Prints over Air Drying

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The safety and efficacy of various drying techniques for recovering fine art inkjet prints from water emergencies were examined. These techniques, air-drying, freezing then thawing, and freeze drying, are already in common use for salvage of many other collection object types but have not been fully evaluated for use with fine art inkjet prints. Also studied were blast freezing versus standard freezing as rapid freezing could reduce total wet time minimizing colorant bleed as well as reducing physical damage to prints by restricting ice crystal growth. A total of 16 inkjet print variations representing the entire history of fine art inkjet (dye and pigment inks as well as a range of paper support types) were immersed in room temperature tap water for 24 hours and then treated with one of the above drying techniques. The prints were measured for changes in moisture content, thickness, brittleness, bleed (color or line width change), paper yellowing, loss of optical brightening agents, and surface sheen changes using a digital moisture content analyzer, caliper, wedge brittleness tester, image analysis system, spectrophotometer, and a glossmeter, respectively. The prints were also visually assessed for bleed of the image; delamination, blistering, cracking, or flaking of the paper's ink receiver layer; and/or planar deformation of the support. Freeze-drying caused catastrophic damage for some inkjet print types and is therefore not recommended. Freezing and thawing can be used when there is inadequate space to air dry all prints at once, the humidity in potential drying areas is too high, or not enough staff are available to handle and care for all wet prints safely, though some damage may still occur. Air-drying is preferred for all inkjet print types. Blast freezing did not provide any additional benefit over standard freezing. Additional experiments compared inkjet prints that were wetted followed by drying individually, in stacks (directly in contact rectos to versos as when stored in groups in boxes) or in either paper or plastic enclosures. When air drying, inkjet prints should only be dried individually, so should be separated from stacks or removed from enclosure to prevent additional colorant bleed, blocking, or slow drying which increases risk for mold. Prints can be frozen in stacks or enclosures, but must be separated as soon as possible during the thawing process. A quick reference guide was developed to provide step-by-step instructions to aid water emergency responders dealing with inkjet prints in their collections. It is now available free on the Image Permanence Institute's DP3Project.org website.

The Impact of Early Photography and Electrotyping Media on the Creation of Images and Contemporary Art

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A new research project "PHELETYPIA" newly funded by the Austrian Academy of Sciences in the framework of the "Heritage Science Austria" program is reported. It examines original daguerreotypes from the early period of photography, produced according to specific Viennese methods, and asks what this research teaches us for the era of the digital image. The project uniquely combines photographic history, photochemistry, electrochemistry, conservation, and artistic research. An essential aspect of photomechanical reproduction involves the combination of photography and electrotyping. Very little is known about the properties of the early Viennese daguerreotypes, and even less about their transfer into electrodeposited printing plates for further photomechanical reproduction. Detailed research and comparison of the preserved daguerreotypes and photomechanical prints from Austrian and foreign collections will enable a detailed study of these pioneering methods from the early 1840s.

The starting point for PHELETYPIA is a sensational find in the collection of the Technisches Museum Wien: an etched daguerreotype with a view of the emperor Joseph monument on Vienna's Josefsplatz from the early 1840s. The scientific research carried out so far has shown that the surface properties of this unique silver-plated copper plate are very specific and its nanostructures highly complex,

differing from what has been observed so far in daguerreotypes [1]. Surface analysis showed that the photographic process involved the formation of colloidal silver nanoparticles with sizes of 30-120 nanometers with shell layers consisting of silver oxide, silver sulphide and some silver chloride. This breakthrough photographic technique provided a hitherto unachieved high sensitivity due to the use of halogenide mixtures. First reproduction methods for daguerreotypes invented in Vienna consisted in etching to enable printing. This technology of electrotyping was successfully applied for the reproduction of printing plates around 1840 in Vienna [2,3].

Another essential task of PHELETYPIA is to relate the findings on the early processes to reproduce photographic images to questions we are facing in the age of the digital. There, original and copy have become indistinguishable to a point that it no longer makes sense to apply these categories. These questions will be explored through artistic research: experiments will be undertaken to create a series of artworks.

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Research & Technical Studies - May 15

Graphs, Jargon, and Science: The Creation of the Research and Technical Studies Specialty Group

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Sitting around a table at the Getty Conservation Institute in late 1987, Eric Hansen, Chandra Reedy, and Mary Striegel were lamenting the less-than-optimal integration of conservation science in the day-to-day conservation activities that took place in studios around the country. What were the root causes for this disconnect? Was science not important to treatment or were other factors at play? From these ruminations arose the seed of an idea. What about a specialty group with the American Institute for Conservation that worked to find the shared pool of knowledge that would advance the role of science in conservation? Thus, the idea of the Research and Technical Studies Specialty Group was born.

This presentation will focus on the early beginnings of the specialty group and discuss everything from its tongue in cheek RATS logo to the serious mission of forging common ground and of increasing communications between conservators and conservation scientists. Why were there no RATS sessions in the early years? What was the RATS paper award? When did they host their first specialty group session? How did the group change over the years? Has the RATS group accomplished its mission? What are the new directions needed to lead science and technology in the field of art conservation? We look forward to sharing the stories and history of the group.

Current International Trends in The Use of Instrumental Analysis and Scientific Equipment in Conservation Practice and Research

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OBJECTIVE. The international survey discussed in this paper investigates the use of equipment and scientific instrumentation in conservation practice. The objective of this study is to see the patterns of use of technological solutions and scientific instrumentation for solving practical conservation issues and for advancing scientific knowledge. The survey explores which types of equipment and instrumentation are effectively used by conservation professionals when considering diverse work contexts. It also addresses the possibilities of technical exchange and sharing opportunities at a local and international scale.

DATA. Data are drawn from an online questionnaire translated into 7 languages to reach participants in diverse professional roles, all working in the conservation of tangible cultural heritage. After 3 months of field data collection (that ended on June 21st, 2021), 408 respondents originating from 65 countries on five continents had participated by providing feedback and opinions. Following the 5 sections of the questionnaire layout, the data documented respondents' workplace general characteristics (location, date of creation, legal status, number of employees), workplace type (e.g. museum, research infrastructure, university, firm, individual) and the services it provides (e.g. conservation, imaging, diagnosis, laboratory analysis, training). Information was also collected on the respondent's professional profile (education attainment, age, gender, job title). The survey asked about the accessibility to and the frequency of use of a wide variety of scientific instrumentation, methods, and equipment, chosen from a comprehensive list of 133 suggestions. The survey also provides a list of respondents' 5 most routinely used methods and analytical equipment.

RESULTS. The survey allows for a cluster analysis that identifies common features of similar users. Data is analyzed using factor and regression analysis. Inferential

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statistics are applied to the quantitative results, while open text analysis is used for qualitative results. Heterogeneity indicators help to measure either the narrowness or the span of the available instrumentation for users, with regards to pre-established cluster groups. Attitudes were identified regarding the acquisition of new equipment or technology that speak to the needs and the awareness of recent research applications in conservation practice. Analysis of the survey results points to the tendency of conservation professionals to use advanced methods of instrumental analysis that consume human resources, rather than use more modest and accessible methods when answering conservation questions. Indeed, according to the workplace scale, wealth, or collaboration trends, the accessibility to standard scientific equipment can be quite variable.

CONCLUSION. The unique contribution of this paper relies on a first-ever international survey that allows for a precise exploration and a deeper investigation of the trends in using a wide range of scientific equipment in the conservation field. Finally, the results can identify the trends in collaboration between practitioners who conserve works of cultural heritage and scientists who conduct research, either through access to external laboratory services or to services within programs of international cooperation. Analysis of the survey results also provides relevant information on the most essential and sustainable equipment to acquire for any established or emerging entity engaged in conservation practice and research.

Sharing Technical Art History: Past, Present, and Moving Forward

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On the 50-year anniversary of AIC, we reflect on the origins of Technical Art History and imagine what sharing and collaboration within this field can look like in the future.

Past: Technical Art History co-evolved with Art Conservation and Conservation Science through interdisciplinary collaborations. Some of the first collaborations began with Technical Studies in the Field of the Fine Arts, published by the Fogg Museum at Harvard from 1932-1942, the first journal dedicated to the technical study of art that featured publications by renowned research collaborators. Exploring the roots of this multidisciplinary field and discussing the work of its founders informs our vision for a more diverse and inclusive discipline. Technical Studies in the Field of the Fine Arts eventually became Studies in Conservation, and numerous prestigious journals around the world now publish articles on conservation, conservation science, and technical studies. However, few have been solely devoted to the ever-evolving and nebulous field of Technical Art History.

Present: We are in a period of growth and change. Technical Art History has become more prevalent within the greater Art History field, growing into a field of study in its own right, and technical studies and information are featured more often within museum exhibitions and literature. Technical Art History is necessarily having to expand into new mediums, including digital, time-, and web-based art. New technology allows for more dynamic engagement with cultural heritage, art, and research material. More recently, the Covid-19 global pandemic, which forced library, archive, and collection closures, changed the landscape of research with a forceful push toward greater online access to materials. It has also become clear that in order to achieve equity and inclusion within our fields, equal access to information and opportunity is paramount. This has all led to a growing need for open-access publications and information-sharing platforms in general, including the field of Technical Art History.

Moving Forward: This is a moment to reconsider how we create, share, and archive meaningful research. Which aspects of traditional publications still serve us in 2021, and which do not? Materia was created by academics and conservators using free digital tools and online communication, in their spare time, on the smallest budget. Yet it is open-access, user-friendly, sustainable, peer-reviewed, and searchable via major library databases. From our own experience, we've learned so much is now possible with new technology and mission-driven collaboration. We continue to ask: how can we leverage digital tools to share information and

collaborate better? How can we create scholarship that is easily accessed, used, cited, enjoyed by anyone? How can we ensure this scholarship is sustainably maintained and archived? How can we create communities around our shared goals? This is a moment to also reconsider what we prioritize in research and publication. As we consider issues of representation within collections, how can we best expand representation in artists and cultures we study and what merits publication? Materia wants to ask and help answer these questions for Technical Art History and many other areas of our field as well.

Optimizing Oddy! Streamlining the Implementation of the Metropolitan Museum of Art Oddy Testing Protocol in a Multi-User Work Environment: Tips and Troubleshooting

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In conjunction with major renovations and new construction of several exhibit halls at the American Museum of Natural History (AMNH), AMNH conservators working with Natural Science and Anthropology collections adopted the Oddy testing protocol recently developed at the Metropolitan Museum of Art (MMA) through the efforts of the Preventive Conservation Science Laboratory. The MMA protocol addresses sources of potential error in the Oddy test through its highly detailed specification of hardware to be used, and its well-defined procedures for washing hardware, preparing samples and metal coupons, assembling the test, and interpreting and documenting results. With its improved reliability, however, comes a more time-consuming workflow.

While testing over 450 samples using the MMA protocol, we sought and found opportunities to streamline its implementation in a multi-user environment without straying from its standard guidelines. This talk will describe simple time-saving tips for organizing equipment and lab space, particularly when conducting tests for multiple projects simultaneously; expediting the glassware cleaning process; making repetitive or delicate tasks easier by selecting the right tool for the job; easily cutting rigid samples to weight; tracking the reuse of components that have the potential to absorb contaminants from past tests; and preparing metal coupons more easily while avoiding pitfalls that complicate the evaluation of results. These complementary practices can be used to help reduce time spent preparing the Oddy test and further standardize implementation of the MMA protocol.

Meticulous though it may be, the MMA Oddy test protocol is not invulnerable to the impact of external factors. Over the course of our projects, we were required to develop solutions to manage the unavoidable use of metals damaged by improper packaging; difficulties opening test jars due to inconsistencies in lid manufacture; and a lab contamination event. These complications are not necessarily unique to the test protocol in use, and could affect any institution that performs Oddy testing. This talk will describe troubleshooting methods in the event that you are required to: mitigate irregularities in metal foils to enable consistent interpretation of results; compensate for irregularities in lids when sealing and opening jars; and perform a workflow to isolate and identify contaminated test assembly components.

Keywords: Oddy test, materials selection, tips, troubleshooting

Imaging Illuminated Manuscripts with Multi Light Reflectance and the Use in Conservation, Past and Future

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Art technical research on illuminated manuscripts has a long and broadly elaborated history. Visual inspection always stood central, but in more recent times an arsenal of additional analytic micro and macro technologies have been added to the spectrum of research methods. As such, manuscripts are the crossroad of information and during advanced conservation research, historical context,

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materiality, content, and technology are coming together. In the field of heritage science applied to manuscript and conservation studies, scholars and conservators deploy methodologies from the humanities and exact sciences to increase the understanding of heritage artefacts through the use of advanced technology and infrastructure. This evolution was initiated when digital involvement entered the conservation lab and beside advanced hands-on skills, treatments before and after conservation have to be more and more supported by detailed documentation.

One of the methods is a Multi Light Reflectance (MLR) imaging technology, a method to inspect and analyse the topography and spectral surface characteristics of paper, parchment and miniatures. The microdome module of the Portable Light Dome (PLD) system has been specially designed for the imaging manuscripts, i.e., facilitating stable and safe positioning of the acquisition device hovering above a manuscript opened up and laying in a book cradle, inside the binding. By combining MLR imaging with Multispectral (MS) imaging, this PLD system presents itself as a calibrated integrated tool that delivers the benefits of these both technologies.

In the presentation the focus is laid on three case studies revealing practical functionalities of the PLD system for the documentation and study of manuscripts during conservation (Illuminated Book of Hours, Flanders, 15th century (KU Leuven Libraries, Ms 283); Rijmbijbel, 13th century (KBR 15001); Illuminated Bible, Naples, 1340 (KU Leuven, Maurits Sabbe Library, Ms 1). The methods are interactive relightings & visualizations, measuring topography, analysing, characterising and identifying materials.

The implementation of the Pixel+ Viewer will give conservators and scholars the possibility to access the dynamic images of the studied and conserved object on an interactive way (<https://www.heritage-visualisation.org/pixelplusviewer.html>). The pixel+ viewer is an open-source tool to visually analyse the surface of artefacts. It goes beyond traditional photography as it allows the user to virtually interact with the surface of the object by manipulating the light and enhance specific characteristics of the surface.

In situ Hyperspectral Imaging of Monumental Oil Paintings: Practical Approaches within an Interdisciplinary Context

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In this contribution, the authors' collaborative work – between conservators, conservation scientists and imaging scientists – targeted the evaluation of hyperspectral imaging for the *in situ* documentation of previous cleaning treatments of the monumental University of Oslo (UiO) Aula unvarnished oil paintings on canvas by Edvard Munch (1909-1916). The project forms part of the pan-European CHANGE-ITN consortium which is implementing the integration of imaging technologies in conservation practice, by an interdisciplinary team of heritage and imaging researchers-in-training.

The imaging campaign in its own right presented several challenges, which required creative and adaptive thinking to resolve. This was especially since costly, specialised equipment for large-scale scanning (such as that used by the Rijksmuseum on Rembrandt's *Nightwatch*) was not available at either collaborating institution. The vast scale of the paintings required targeted solutions to work on scaffolding as closely as possible under standardised acquisition conditions, whereas the limited access to the paintings dictated laboratory preparations to account for the unpredicted conditions in the UiO Aula to maximise on the scarce time available for scanning.

This paper therefore presents the practical approaches adopted by the team that allowed for resource-sharing, cooperation on site and the ensuing focused interpretation of results. In particular, the talk presents the joint discussions from a conservation perspective between team members that gave rise to the protocols adopted for technical aspects such as corrections for distortion and for non-uniform lighting conditions. Adaptations for operation of the hyperspectral cameras used (Norsk Elektro Optik HySpex™ VNIR1800 and SWIR384 cameras) on scaffolding are shared, together with a proposed workflow for similar operations that can be used and modified in other acquisition campaigns for monumental paintings, where costly equipment such as robotic arms are not available to the heritage researcher.

Overall, by presenting unpublished details of the first ever hyperspectral acquisition campaign in the Aula, the paper aims to contribute to filling the paucity of

accessible literature for the conservation audience on practical working guidelines for the imaging of monumental paintings on site. This work will thus propose a collaborative-based guidance for improved non-contact identification of preparatory and pigmented material mixtures used in large-scale unvarnished oil paintings on canvas with exposed grounds. Ideally, this will serve to furnish a practical hyperspectral imaging toolkit, as part of the lead author's doctoral project, for adoption into conservation practice for the care and study by conservators of these and other related monumental unvarnished oil paintings.

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Permeation of Acetic Acid, Formic Acid and Water through PET: Implications for Encapsulation

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The permeation of vapors through PET was measured to determine the micro-environment within a PET enclosure. Since formic acid and acetic acid are by-products of paper on aging, these gases were studied. It is expected that the permeation of vapors varies according to the size of the diffusing molecule: smaller molecules such as water should diffuse faster than larger molecules such as acetic acid. The data shows that the permeation P of the vapors varies according to $P_{\text{water}} > P_{\text{formic}} > P_{\text{acetic acid}}$ through PET and the corresponding molecular diameters σ vary according to $\sigma_{\text{water}} < \sigma_{\text{formic acid}} < \sigma_{\text{acetic acid}}$. While the permeation of formic acid was approximately 20 times slower than the permeation of water, the permeation of acetic acid was too slow to be measured. The results show that the PET will trap acetic acid but allow the permeation of formic acid. The permeation of water vapor through 3 mil, 4 mil, and 5 mil was also measured. Implications of these results on encapsulated materials will be discussed.

Investigating Preservation Strategies for Cellulose Ester Objects

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Objects made of cellulose ester plastics - cellulose nitrate (CN) and acetate (CA) – are known for their extreme instability. Many iconic 20th century artworks and artifacts made with CA and CN have gained notoriety as examples of severe degradation, and some have been categorized as 'total loss'. Over the last thirty years studies have focused on the ageing behaviors of these materials, however research is still needed to better understand how to preserve this important part of our heritage. Therefore, part of the Preservation of Plastics Project at the Getty Conservation Institute (GCI) is dedicated to studying the deterioration of three-dimensional objects made of cellulose esters, as well as investigating strategies to preserve them by using reference materials and case studies. In 2017, in preparation for an exhibition organized by the Getty Research Institute (GRI), the GCI and GRI surveyed a collection of hair combs primarily made of CN. This survey provided an opportunity to study a large number of cellulose ester objects in varying conditions, investigate analytical methods to measure their stability and explore long-term storage solutions. Methods included ion chromatography (IC), size exclusion chromatography (SEC), gas chromatography/mass spectrometry (GC/MS), visual inspections, as well as acid detectors. Through the presentation of this case study, the paper aims to provide museum professionals with useful information and methodologies for approaching some of the challenges posed by these unstable materials.

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Investigations of the Binding Medium of Mark Tobey Paintings Using Pyrolysis-GC/MS

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Mark Tobey was a 20th c. painter working in the Pacific Northwest, New York and internationally, and a key founder of the Northwest School. A painter of calligraphic temperas inspired by his spirituality, his extensive travel and innovative style established his work in the collections of major museums around the world. He was known to experiment with paint mixtures and his works are usually described as painted with gouache or tempera. Analysis of these paints is absent from the literature, and the lack of technical information on Tobey's specific binding medium presents challenges to conservators wishing to perform treatments such as consolidation or retouching. Both the terms "gouache" and "tempera" have historically shifted in meaning and can refer to a range of paint mixtures. This study sought to understand the composition of Tobey's paints by utilizing Pyrolysis coupled to Gas Chromatography Mass Spectrometry (Py-GC/MS) to identify key components of both reference binders and paint microsamples taken from twelve paintings by Mark Tobey from the collections of the Seattle Art Museum and the Jordan Schnitzer Museum of Art in Eugene, Oregon.

A Py-GC/MS method utilizing a TMAH methylating agent was modified from a published method and used to characterize a range of reference binders including plant gums, egg yolk, animal glue, linseed oil, resins and waxes. High pigment-to-volume ratios reduced the detection limits for egg and animal glue markers, though increasing the methylating agent increased this limit in mock-up mixtures with zinc oxide and egg yolk. Analysis of the Tobey painting microsamples with the optimized method indicated the main binder component was a polysaccharide, matching most closely to the gum tragacanth reference binder. Wax was detected in two paint samples, indicating it may have been used either in a binder mixture or applied afterwards to modify surface properties. Triterpenes in the chromatograms may originate from a resin medium such as copal or from the particle board substrates which often contain wood pulp. Strong palmitic and stearic acid peaks may derive from linseed oil or from egg. Work is ongoing to verify the presence of a protein binder in Tobey's tempera paints while analysis of paper samples included with paints will determine the likelihood of wood pulp as the contributor of the triterpenes.

Accelerated Aging of Red Pigments in Bleach: Case Study Paintings of Cristobal Lozano

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Knowing the behavior of the deterioration agents on pigments is an essential step in proposing suitable conservation strategies in works of art, mainly when they are exposed to high humidity, radiation, and polluting agents' environment. The city of Lima presents particular conditions due to its geographic location and proximity to the sea. For this presentation in progress, we approach the work of Cristobal Lozano (1705-1776), an exponent of Peruvian Viceroyal painter, and focus, particularly on the red pigments present in his artistic production.

The Palacio Arzobispal de Lima Museum houses significant works of this artist. Studies were carried out about Lozano's work, and search on the techniques, and materials used during the 18th century in the Viceroyal territories. In addition, to those documented in the treatises of that time, it was possible to identify the pigments used by Lozano to achieve the red tones. Those were minium, hematite, and vermilion.

In this context, and with the collected information, an experiment -designed for this purpose with various samples of these three pigments- was prepared on linen support, bringing us as close as possible to the technical and material conditions of the original ones. The samples were exposed to UV light (399 nm), in a controlled chamber and a deterioration agent such as sodium hypochlorite. Physical and chemical degradation results were verified and measured using X-ray fluorescence

SEM EDX and colorimeter techniques. The results obtained indicated the occurrence of chlorides and a change in the visible wavelength spectrum reflected by the pigments. This study allows us to observe the different degradation of the three pigments in the presence of UV light and in the near future, in a controlled chamber.

A Manuscript and its Materials: A Cross-Disciplinary Analysis of the Materials Used in the Making of the 14th-Century Gaelic Manuscript, the Book of Uí Mhaine

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The Gaelic manuscript tradition is unique in Europe for its continuity and longevity, as well as its persistently scholar-driven emphasis. Manuscripts written in this tradition survive from 600 to 1900 AD. For a thousand years – down to 1600 - these manuscripts were written by religious and secular scribes on animal skin. These artefacts are invaluable sources for the history and literature of Gaelic Ireland.

While they continue to be mined for their literary, linguistic and palaeographical content, the study of the materiality of these books is still in its infancy. Beneath the text, the ink and the writing supports and the way they were employed inform us about the history of the book. Through analysis of the physical and chemical traits of these manuscript materials, we are able to understand more about the animal who gave its skin to make the page, the individual who created the parchment, the scribe who worked the page, and the many readers who have gazed on the book since it was created.

Under the aegis of the UCC Inks&Skins research project, this paper describes a humanistic and a scientific approach to the analysis of The Book of Uí Mhaine. This is a vellum manuscript written in Co. Galway, Ireland, for the O'Kelly clan in the late 14th-century, containing secular and devotional prose, poetry and genealogies. In format it is 44 x 27 cm, and now contains 161 folios.

This analysis was made with a view to presenting preliminary data on the materiality of this manuscript. Methodologies employed include the utilization of non-invasive and micro-invasive techniques: X-Ray fluorescence spectroscopy (XRF), proteomics, quantum cascade laser (QCL) mid-infrared spectrochemical imaging, and Raman micro-spectroscopy. The proteomic analysis of The Book of Uí Mhaine is the first to be carried out on a Gaelic manuscript, and this is the first time that the assumption that calfskin is the writing-support of choice in Gaelic manuscripts has been scientifically tested and confirmed. XRF analysis allows us to compare the presence and levels of different elements between different scribal inks. In The Book of Uí Mhaine, this is used to not only compare the inks of different scribes, but to analyse ink used by a single scribe within any given section. These inks are most often iron-based, but with some variations; including the possible use of carbon ink in finishing large initial letters.

XRF analysis has confirmed the use of vermilion and orpiment as the primary pigments in letter decoration in the manuscript, with some occasional variation including copper- and lead-based pigments, as well as possible organic pigments. Exhaustive observational analysis is used in conjunction with the aforementioned methods. This focuses on the preparation, the writing and the post-writing features of the manuscript. In addition to features such as scraping, ruling and pricking areas of particular interest are those containing rubrication, display text, pen-tests, colophons and marginalia. These features significantly alter the reader's experience of a text, and are vital to our understanding of the makeup of the Gaelic book.

Reviving Alexander Calder's *Man-Eater with Pennants*: A Technical Examination of the Original Paint Palette

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Man-Eater with Pennants, a rarely exhibited sculpture in Alexander Calder's oeuvre, was commissioned by The Museum of Modern Art (MoMA) and installed in 1945. This was Calder's largest sculpture to date, towering 4 meters tall with a wingspan of over 9 meters. In order to exhibit the large mobile in *Alexander Calder: Modern from the Start* (2021) the derelict state of the sculpture had to be remediated. This initiated an investigation into the original paint colors hidden beneath repaint layers of doubtful color accuracy and uncertain date, and led to a collaboration between conservation scientists, conservators, curators, and the Calder Foundation. Non-invasive X-ray fluorescence (XRF) analysis on both sculptures was first carried out to elucidate the paints' pigment composition, followed by sampling for analysis to assess the paint stratigraphy and binders. Scrapings were analyzed by both micro Fourier-transform infrared (μ -FTIR) and Raman spectroscopies, while cross-sections were examined with optical microscopy and analyzed with Raman spectroscopy and scanning electron microscopy coupled with energy-dispersive X-ray spectroscopy (SEM-EDS). This research identified pigments, colorants, extenders, and possible binders used in the original primary palette selected by Calder for *Man-Eater*. Analysis differentiated between the original paints, which contain Prussian blue, parachlor red, and chrome yellow, and the many layers of overpaint, which contained titanium white, molybdate orange, a variety of β -Naphthol reds, red lead and ultramarine. A model for *Man-Eater, Mobile with 14 Flags*, is also part of the museum's collection, and was first considered as a point of reference for the original colors. Similar analysis however indicates that the maquette was painted after the *Man-Eater* was first installed and therefore is not representative of the original colors. In addition to investigating an early primary palette for Calder's outdoor sculptures, this study helped develop the plan for the restoration of the original color scheme of *Man-Eater*. This talk will explore the scientific findings gained from employing this multi-analytical approach, and the treatment will be explored in a separate presentation by Lynda Zyberman and Abigail Mack titled "A Lesson in Balance and Adaptation: The Conservation of Alexander Calder's *Man-Eater with Pennants*."

Research & Technical Studies - May 17

Minimally Invasive, On-site Sampling by Portable Laser Ablation

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Elemental and/or isotope ratio analyses can provide insights in the authenticity, origin, age or manufacturing processes of ancient artifacts or pieces of art. Given the value and the irreplaceable character of the objects being examined, nondestructive analytical methods are generally preferred. However, they may lack specificity for the raised question due to a limited detection capability. Trace element and isotope ratio determinations, providing higher discrimination power, must therefore be carried out in specialized laboratories using various instrumental techniques such as inductively coupled plasma- or thermal ionization mass spectrometry after removing a representative amount of material from the object of interest. To minimize the damage through sampling, we developed a laser-based sampling method (portable laser ablation: pLA) that extracts a minute amount of material from the region of interest by focusing a laser beam to a spot of 40- 60 microns in diameter, leaving a barely visible crater at the surface after sampling. Compared to conventional sampling methods as microdrilling or scraping, the method can effectively reduce the amount of sample to the low microgram range,

minimize contamination through contact-less sampling and precise control of the sampled region by direct visual observation of the ablated region. The ablated material is then collected on clean filter disks, which are analyzed in the laboratory.

Its compact design allows it to be carried to remote sites to collect samples that cannot be brought into the laboratory directly. The system has already been successfully used in studies concerning archaeometry, conservation and art. In this presentation, we will discuss the characteristics of the pLA system, its operating principles and features for the analysis of major, minor and trace elements as well as isotope ratio determinations. For better control of the total mass removal, acoustic detection has been implemented recently. This new feature increases the reproducibility in sampling and allows for better positioning of the sampling unit relative to the sample surface.

Pushing the Limits – The Portable Laser Ablation Micro-Sampling Technique and its Application in Cultural Heritage

Alice Knaf¹, Pablo Londero^{1, 2}, Moritz Numrich^{3, 4}, James Nikkel⁵, Richard Hark¹, Ernst Pernicka³, Anikó Bezur¹

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Non-destructive, *in situ* elemental analysis using x-ray fluorescence spectroscopy (XRF), especially in the form of handheld instrumentation (pXRF), has made a great impact in the field of conservation and, more broadly, in the study of material culture. The use of this "gateway" analytical approach in collection settings quickly progresses from addressing qualitative questions about material identity and presence (e.g., is it brass or bronze; can we detect arsenic-based pesticide) to comparative studies requiring quantification. Increasing efforts in provenance research in collections will likely lead to greater demand for the geochemical grouping and sourcing of artifacts. For these studies some limitations of XRF – lack of sensitivity to low-atomic number elements, inability to distinguish isotopes, and attenuation of bulk signals by surface modifications – can only be overcome by shifting to other analytical techniques, including inductively-coupled plasma mass spectroscopy (ICP-MS), multi-collector ICP-MS (MC-ICPMS) and thermal ionization mass spectroscopy (TIMS). These methods, however, require sampling, including scraping, micro-drilling, scoring, and flaking, or the use of fine saws, which often leave visible lacunae and in the case of brittle materials, like glass, may lead to the initiation of microcracks and catastrophic failure.

The relatively recent development of portable laser-ablation (pLA) sampling modules overcomes these sampling-related challenges and makes trace element and isotope analysis of objects much more feasible and potentially more broadly accessible by decoupling the sample removal step from the subsequent (MC-)ICP-MS or TIMS analysis step. A pulsed laser beam is used to ablate microscopic amounts of material from an object while suction by a vacuum pump collects the particles onto pre-cleaned Teflon[®] filters, which are later processed in a clean laboratory with low blank (picogram sensitivity) geochemical protocols and then analyzed. The ablation pits created by the devices are less than 0.15 mm in diameter and barely notable by the unaided eye.

This paper introduces two pLA sampling devices, based on visible green (532 nm) and ultraviolet (213 nm) pulsed lasers, and details their implementation as part of a trace element analysis workflow for cultural heritage objects. While the green laser device is more compact and portable than the UV pLA module, it is primarily effective for the sampling of opaque and dark materials. Though a bit bulkier, the UV pLA is still portable and can successfully ablate materials regardless of colour and transparency, making it ideal for sampling glass and porcelain objects without the risk of introducing microcracks. The utility of the 532 nm pLA device will be illustrated through two case studies. The first involves the analysis of jade artifacts in European and US museums that allowed the reconstruction of vast pre-colonial exchange and mobility networks of jadeite – omphacite jade artifacts in the Caribbean. The second is an ongoing study of Mycenaean gold objects in museums across Europe, which highlights how pLA sampling can make feasible the study of artifacts that would have previously been considered off-limits. We showcase the

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potential of the newer UV pLA device through the analysis of reference materials and preliminary case studies.

Application of Laser-Induced Breakdown Spectroscopy (LIBS) for Micro-sampling-based Elemental Analysis of Cultural Heritage Objects

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When working with cultural heritage objects it is always preferable to utilize non-invasive, non-destructive analytical techniques to get essential data that informs conservation efforts or art historical and other material culture studies. While this is the preferred approach, conservation scientists and conservators are routinely required to consider if sampling or application of a destructive method is worth the potential information to be gained. This talk will highlight several examples that demonstrate the advantages of laser-induced breakdown spectroscopy (LIBS) as a micro-sampling-based elemental analysis tool that is minimally destructive.

LIBS has been used to examine cultural heritage objects for many years, yet it remains an underutilized approach, especially in the USA. The advent of commercially available handheld LIBS systems within the past five years offers a unique opportunity for scientists and conservators to utilize the instrument conveniently and safely in a laboratory or museum setting. LIBS is a laser-based form of atomic emission spectroscopy that has the advantage of being able to simultaneously detect all elements from hydrogen through uranium. It can be used to analyze any type of solid and is especially sensitive to light elements that cannot be measured with X-ray fluorescence spectroscopy. LIBS analysis takes only a few seconds and is well suited for objects with patinas or corrosion since sequential laser pulses effectively clean the surface and provide data on the underlying material. The amount of sample removed with each laser pulse is on the order of nanograms, leaving an ablation spot that is often undetectable with the unaided eye.

At Yale's Institute for the Preservation of Cultural Heritage, we have used laser-induced breakdown spectroscopy for a variety of applications. When appropriate, we have employed LIBS to try to answer questions posed by conservators and curators. Examples of short-term projects we have undertaken include the examination of the silver plating on a 20th-century Chinese bridal necklace, analysis of a handle on a modern coffee pot to determine if loaning the object to an institution in another country would constitute a violation of the Convention on International Trade in Endangered Species (CITES), and investigation of a textile reputed to have been woven with colored aluminum ribbon. This presentation will describe how LIBS and XRF are being applied to the study of the clay bodies and glazes found on over 100 Chinese ceramics. Data processing using machine learning tools is providing insight into the provenance of the objects. A library of over 400 samples of mahogany and mahogany look-alikes wood specimens have been analyzed using LIBS and pyrolysis gas chromatography-mass spectrometry to see if it is possible to identify the type of wood found in the collection of 18th and 19th-century furniture.

Isotope and Trace Element Analyses Using Portable Laser Ablation at the Field Museum: A Progress Report

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The study of museum anthropological collections needs to be undertaken with no or very limited damages to the objects. With this constraint in mind, the Elemental Analysis Facility at the Field Museum has developed applications with laser ablation – inductively coupled plasma – mass spectrometry (LA-ICP-MS) for the determination of the elemental composition of ancient materials including glass, ceramic, and copper-based alloys. However, objects must fit into the laser chamber which is a major limitation for larger objects, inducing sample selection bias. With portable laser, a relatively novel sampling technique, that leaves damages invisible to the naked eyes, micro sampling is possible virtually anywhere and on any type of objects without any

limitation of size. Aerosols produced via ablation are deposited onto a Teflon filter. The ablated material can then be directly analyzed for elemental composition via LA-ICP-MS but can also be subjected, after dissolution, to isotope analysis (Pb and Sr) via thermal ionization mass spectrometry or multicollector-ICP-MS. We have been exploring the capabilities of this approach for the elemental and isotope analysis of copper artifacts and for the isotope analysis of glass, bone, and ceramic objects to attempt the reconstruction of patterns of trade and migration.

Research & Technical Studies + Wooden Artifacts Joint Session - May 17

Identification of Mahogany and Look-Alike Woods in 18th- and 19th-Century Furniture Using Laser-Induced Breakdown Spectroscopy (LIBS) and Pyrolysis Gas Chromatography Mass Spectrometry (Py-GC/MS)

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Mahogany was a valuable commodity sourced from the Caribbean in the 18th and early 19th centuries that was used in high-end furniture made in Great Britain and North America. In addition to the three species of “true mahogany”, there are many tropical hardwoods that are known by the appellation “mahogany” and distinguishing between the various species is challenging, especially once the wood has been incorporated into a piece of furniture. Another source of potential confusion is North American wood components treated to look like mahogany. Wood identification is important to appreciate the connections between the raw material sources and furniture manufacturing centers, to understand the choices individual craftsmen made in constructing these objects, and it aids objects conservators when treating these pieces. In addition, this work has obvious applications in the study of other wooden objects such as carved statues, panel painting substrates, frames, and architectural elements.

Identification of wood in cultural heritage objects is typically done by a wood anatomist using a variety of physical characteristics coupled with a visual examination of anatomical features found in microscopic images of thin sections. However, it is not always possible or desirable to obtain an appropriate sample for microscopic examination. An alternative is to use a chemotaxonomic approach that takes advantage of the presence of varying abundances of organic and inorganic chemical species to distinguish wood types.

The goal of an ongoing collaborative project with the Yale University Art Gallery is to use a combination of laser-induced breakdown spectroscopy (LIBS), pyrolysis gas chromatography-mass spectrometry (Py-GC/MS), and machine learning techniques to see if it is possible to discriminate between the three species of mahogany (*Swietenia*) and between mahogany and wood species with a very similar appearance with a goal of being able to identify woods found in the furniture collection. This presentation will highlight details of the project and the very promising results that have been obtained after analysis of hundreds of samples of mahogany and look-alike woods as well as samples removed from the furniture.

Py-GC/MS is likely more familiar to conservators than LIBS. This powerful, laboratory-based technique has been used for the characterization of cultural heritage materials such as lacquers, resins, polysaccharides, and synthetic polymers. In the analysis of wood, Py-GC/MS targets the organic extractive components and requires only sub-milligram samples. It has been successfully used to distinguish between different species of ebony and rosewood. LIBS has been used to analyze a wide variety of cultural heritage objects and can provide elemental data on everything from paintings and statues to fossils and archeological artifacts. The

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method offers several attractive advantages such as the ability to simultaneously detect all elements, including light elements not accessible via X-ray fluorescence spectroscopy, high throughput in situ analysis (seconds), relatively low limits of detection (low ppm range), and the availability of robust, commercially available handheld instruments. LIBS is a micro-sampling technique, producing a small ablation spot (~100 microns) on the surface of the sample that is often not detectable without the aid of a microscope.

Study of the Mechanical Behavior of a Panel Painting Under the Constraints of Its Cradle, in Order to Establish an Equilibrium Point of the System: Between Interdisciplinarity and Serendipity

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The study carried out within the framework of a Master's thesis in conservation and restoration of panels paintings, tends to improve the understanding of the behavior of the panel facing its cradle. But more globally to improve the understanding of panels paintings by the complementarity science-experience. Indeed, the interdisciplinary study in several distinct phases and in partnership with the laboratory of mechanics and civil engineering of the University of Montpellier, the P' Institute of the University of Poitiers and the department of conservation-restoration of the ESA Saint-Luc Liège will allow us to understand the movements and deformations of the panel via specific optical methods: the correlation of digital images and the projection of moiré fringes. The results of the study were analyzed and interpreted in collaboration with the wood mechanics engineers. This allowed us to outline the most appropriate treatment protocol for the work, while respecting the ethical and deontological rules of the restoration profession. The results of the study will allow the restorer to guide the curator in a preventive conservation approach directly on the place of conservation of the work but also to act directly on the cradle and on the panel to establish a point of balance as precise as possible of the painted panel. The results of the first phases have also allowed us to highlight future perspectives, such as the importance of monitoring the panel during a phase of hygrometric changes or the taking into account of different factors intrinsic to the work that will influence the behavior of the panel.

Twins with Separate Lives: A Pair of Southeast Asian Side Tables with Different Treatment Histories Rooted in Different Cultures?

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In 2004 and 2015 respectively, the National Heritage Board Singapore acquired two early 20th century side tables that form a pair. It was discovered that both tables had initially belonged to the same household but got separated later. Over time, the tables underwent different surface treatments which altered their visual appearances. One of these tables will be displayed for the revamp of The Peranakan Museum's permanent galleries. The curator in charge asked the conservation department to select the table based on lesser treatment needs, as the opening date is set along a tight timeline.

The table acquired in 2004 (Table 2004) shows a black, matte to shiny, rather patchy and streaky surface. A visual examination indicates that the coating is black Asian lacquer with a very thin, modern synthetic coating on top. Something might have gone wrong during the last surface-refresher treatment. Especially the coating on the tabletop is very brittle and delaminates between its different layers which results in numerous losses.

The table received in 2015 (Table 2015) has a very smooth, semi-matte and dark surface which is heavily light-degraded in many areas. The appearance of those degraded areas has become rather dull and grey-greenish. In addition, these areas have become soft and almost powdery. The current coating is most likely a modern synthetic material.

Each of the two surfaces is in very bad condition and both tables would require a considerable amount of time for treatment. Table 2015 was chosen at first, because there was a possibility that an original, intact coating lies below the degraded synthetic layer. To aid the decision-making process, microscopic surface examination, cross section and chemical analysis were applied. Surprisingly, there was no evidence of an original coating system below the visible synthetic coating on Table 2015. Moreover, the conservation of this heavily degraded layer structure would be very difficult with possibly not very satisfying results. Therefore, Table 2004 was considered. However, further examination, analysis and eventual selection of one of the tables for display are still pending. All insights gained so far reveal an intriguing story of diversity of choices that have been made over time. What they have in common is the intention to preserve the characteristics of a black, semi-matte to shiny surface coating.

Technical Study and Conservation of Korean Late Joseon Dynasty Lacquerware

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Korean mother-of-pearl lacquerware, or the art of *najeon chilgi*, is richly decorated with an array of materials that fascinate: both the eye, with admiration for design, and the mind, wanting to know more about how these wares were made. The presentation describes the comprehensive conservation treatment and analysis of a group of four Korean mother-of-pearl lacquerware objects from the late nineteenth century that are in the collection of the Asian Art Museum, San Francisco. Examination of the manufacture and composition of two tables, a tray, and a folding screen revealed that lacquer artists used a mixture of traditional lacquerware techniques and materials together with new materials and methods. This project is the first to offer a layer-by-layer analysis of late Joseon dynasty lacquerware. Close collaboration between conservators and conservation scientists was key to interpreting the objects' manufacture.

The lacquered objects are decorated exuberantly with inlay materials. A thorough description of the inlay materials and mechanism of incorporation onto the objects, including mother-of-pearl, ray skin, tortoiseshell, possible horn, metal wires, and metallic flakes, will be provided. The presentation will include an overview of the treatment considerations and procedures.

Pyrolysis-gas chromatography-mass spectrometry with thermally assisted hydrolysis and methylation (THM-Py-GC-MS) was employed in the identification of organic material present in each layer (Schilling et al. 2016). The surprising discovery of shellac—not only as a decorative coating but at multiple phases—points to the complex nature of Korean objects from the period (O'Shea et al. 2021). Only the red layer (over the ground) contained Anacard lacquer (either laccol or ottchil, or in one case, both). SEM-EDX and FTIR analysis of the ground layers showed the presence of clay and siliceous minerals.

In presenting this work, it is hoped that others will also engage in close examination of Korean lacquerware from the period. It is also hoped the results from the study will facilitate the advancement of partnerships with Korean counterparts to further scholarship about the manufacture of lacquerware objects from the late Joseon dynasty in general, and in particular, regarding methods employed by lacquer artists to minimize the incompatibility of shellac and drying oil during their application. This study, treatment, and a related exhibition and symposium were funded by a grant from the Overseas Korean Cultural Heritage Foundation.

References:

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Colleen O'Shea, Mark Fenn, Kathy Z. Gillis, Herant Khanjian & Michael Schilling (2021) Korean Lacquerware from the Late Joseon Dynasty: Conservation and Analysis of Four Objects at the Asian Art Museum of San Francisco, *Studies in Conservation*, DOI: 10.1080/00393630.2021.1967551

Microscopic Examination of Asian Lacquer Surfaces Prior to Treatment

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Separating dirt from a degraded Asian lacquer surface can be one of the most challenging tasks in conservation. Miscalculation on the sensitivity of the surface can often cause additional damage. One aspect of this difficulty is that the surface characteristics can change in relation both the composition of the lacquer and the degree of degradation. How can the conservator assess the difficulty of that challenge?

Chemical analysis of the lacquer will give a good understanding of the nature of the individual composition; however, this tool is not universally available to conservators. Moreover, most objects contain several different lacquer formulations. Each material used in the object will contribute to the overall behaviour. Understanding the surface and how the appearance changes is key to a successful treatment.

Microscopy has always been beneficial but until the advent of small portable digital microscopes their usage has not been convenient. During the past year the author has had the opportunity to examine over 80 Asian lacquer objects with the use of the Dino-Lite Edge microscope using both ring and coaxial lighting. Viewing objects at 415X to 450X with a variety of lamps assists in identifying surface features such as microcracking as well as understanding the distribution of soil and particulate matter. This paper will describe these structures to improve the understanding of how dirt interacts with a variety of Asian lacquer surfaces.

Sustainability - May 16

It's Not Easy Being Green...but It's Worth It: Sustainability in Conservation's Greener Solvents Project

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This presentation will discuss the Greener Solvents Project, a collaborative initiative led by Sustainability in Conservation that aims to provide an online and open access resource about applying a greener solvent approach in cultural heritage conservation.

Solvent use is ubiquitous within the field of conservation. In selecting appropriate solvents, a conservator must consider not only how they will affect the conservation materials and potentially those in the original substrate, but also their impact on human health and the environment. Since any one of these aspects can be a complex issue in itself, incorporating greener solvent approaches in practice can be difficult. The Greener Solvents Project includes a digital platform and an expert-reviewed handbook to provide an overview of green chemistry, clarify the identification of greener solvents, and provide insights into how they may be safely applied within the conservation field.

This presentation will introduce the project, focusing on its impetus, project management, and global partnerships. A discussion of the handbook contents, which includes an overview of green chemistry and practical guidelines to help conservators eradicate the worst solvent offenders with regards to safety, health, and environment ratings, will be provided, and the digital platform and its current content will be explored.

The Greener Solvents Project is the first of its kind within the field and is currently in partnership with the Winterthur/University of Delaware Program in Art Conservation, La Cambre, The Getty, and the University of California, Los Angeles.

Wearing Gloves and Sustainability: A Practical Approach

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The Science Museum Group (SMG) has an unparalleled collection spanning science, technology, engineering, mathematics, and medicine with over five million visitors a year. We have over 425,000 objects in our galleries and stores and seven million items in our archives. SMG archives welcome around 1,500 archives a year. Our organisation is committed to sustainability, and we aim for a net zero target by 2033. However, we use thousands of nitrile gloves each year to handle our vast object and archive collections from day to day handling to large scale decants.

Due to the nature of our collection which is at time hazardous, we will always need to wear nitrile gloves for some activities. We have been researching sustainable options for glove use including biodegradable gloves and recycling schemes. As part of our research, we have surveyed the museum and private sector on a global scale to see how others have become more sustainable and we have also reached out to other organisations such as the Royal College of Nursing to understand their relationship with disposable gloves and sustainability. We are also pursuing scientific research using Oddy testing to re-examine the use of nitrile gloves and we are also comparing biodegradable and nitrile mediums to industrial standards.

But what is the point? What will we do with this information? We want to use this research in a pragmatic way to change the culture of a traditionally un-environmentally friendly profession (albeit a small carbon footprint) to one which is much more selective. For example, can we use recyclable packaging materials for shorter journeys, can we keep reusing transport crates and not destroy them due to lack

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of storage. Can we build a stronger relationship with the local museum community and local businesses to reduce the global footprint? The world knows we need to be more sustainable, but how is it practically implemented?

This talk will share our findings and offer information and advice on how more sustainable glove options may be implemented in your workplace. This is a work in progress, and we hope to continue our collaboration and information sharing. We also want to share how we have been unsustainable in the past and how we are practically trying to achieve a more sustainable approach today and for the future. We want to share the research we gathered and the effect it's had to allow for the collections care department to be more sustainable. We think it's an interesting topic and we hope to continue our research and to share that information with you.

Rethinking Museum Performance Indicators for Sustainable Development

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This paper introduces ongoing research within ICCROM's *Our Collections Matter* initiative. It looks at the indicators used to measure and communicate the outcomes of museum activities vis-à-vis the sustainable development goals of the UN 2030 Agenda (SDGs). It discusses different types of metrics typically used to assess the effectiveness of a museum, such as 'number of exhibitions' and 'number of visitors.' Are they meaningful to measure the impact of a museum on the community it serves? How best to assess the balance in museum activities between carbon footprint, working conditions, and cultural impact? How can the potential of museum collections be fully realized to reach and sustain an optimum balance?

These questions emerged as sustainability challenges and aspirations for a group of Italian museums participating in *Our Collections Matter* field studies. The approach is based on building up a constructive dialogue with the museums, which differ in size, institutional mission, and types of collections. The conversations revolve around the role of museums in sustainable development. ICCROM's *Our Collections Matter* online toolkit (<https://ocm.iccrom.org/>) is introduced to stimulate discussion, as a possible source of information, instruction, or inspiration. It contains over 230 open access resources, which can be used to support museums, libraries, and archives to make concrete contributions towards sustainable development through collections-based work.

Initial results indicate that, the main obstacles faced by museum professionals to diversify and expand their working approaches to embrace sustainable development are the lack of time and lack of financial and human resources. The expectations on museums coming from politicians or private companies supporting their activities, create significant pressure to 'perform' in terms of exhibition and acquisition numbers, which often does not leave space to explore alternative or additional working procedures that could improve the balance between working conditions, carbon footprint, and cultural impact. The SDGs are often perceived as a new activity to be implemented to make "greener choices" in working procedures, while maintaining the same type and amount of activities to be delivered within the same program's schedule. The issue of time pressure crosses the entire museum system, and needs to be addressed to allow for decision-making processes that integrate sustainable choices for the entire "work chain". Conservation should be promoted as a way of thinking that offers alternative narratives to the consumerist cultural tendencies. These narratives are embedded in collections and their materiality; they should be shared at large to promote a shift towards sustainability.

Re-considering the indicators used in museum's reports opens a reflection on which priorities each institution needs to address in order to play its fullest part in sustainable development, while considering and valuing the specificities of its context, its mission and its collections.

Sustainability - May 17

A Hand in the Past, a Repair for the Future? The Reuse and Recycling of Materials in Library and Archive Conservation

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Book production may be seen as the original recycling scheme: the reuse and repurposing of not only other written heritage materials but also ephemera and household articles is a constant constructional thread throughout the history of the codex. It is also a signifier of attitude, place and the economies of the book trade and those that collected and owned books, and may provide valuable insights into the values and expectations of not only the producer but also the consumer.

This short paper will explore the history of reuse through various case studies developed during the course of conservation and assessment of written heritage materials over a 25-year career. It will start with an overview of the repurposing of materials across western Europe in the late mediaeval and early modern period through to the present day and show how and why this changed over time. It will illustrate and hopefully answer the questions posed about the historical reuse of materials in book production using a specific case study of the glove repairs found in several religious archive collections, specifically relating to Jesuit institutional libraries. As an exemplar, these repairs form not only a charming example of amateur collections care but also inform written heritage professionals of today about the community they originate in: their attitude to thrift and economy, the use of the written material within the community and the significance and value these books held in these libraries. The changes in western European traditions will be contrasted and compared with a brief overview of approaches to repair seen in a small number of middle eastern and south Asian codices, and the differences and similarities in aesthetic values and the importance of the material beyond its physical form will be explored.

The paper will go on to investigate the use of repurposed materials in conservation today and their scope for a more sustainable future, looking at initiatives that originate with very different motivations, goals and social attitudes in mind. It will propose that, as written heritage users, conservators and consumers, we have come full circle in terms of our considerations towards the reuse of materials, and how the values we have now are in more line with a former constructional aesthetic.

Alternative for Toxic Chemical Timber Preservatives

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Timber heritage preserve traces of history of every tradition and becomes the gateway to gather information carried in the vast files of its rich cultural heritage. Timber heritage are decayed by the effects of adverse environmental conditions and the extent of damage depends on both the materials and the conditions. Timber in historic structures and artifacts if kept in neglect state provide specialized ecological niches and many organisms have evolved to use it as a food, hence timber structures are susceptible to biological attack and needs preservation treatments. The science of timber preservation is essentially, the treatment of wood to give longer span of service life. This involves the placement, within the wood microstructure, of preservative chemicals that are antagonistic to wood destroying agencies, which may not be always a sustainable practice. Timber is the healthiest of all naturally available building materials, and it is paradoxical to "poison" it in the name of modern preservation philosophy, especially when the traditional non-toxic preservation methods, which were absolutely environment friendly, are available as indigenous knowledge of many societies.

The technical paper explores the effects of carcinogenic, mutagenic, and acidifying agents present in the modern timber preservatives and highlights the availability of alternate indigenous preservatives which are not hazardous. The paper aims at reviving and addressing the possibilities of mainstreaming such knowledge

systems about the indigenous preservative oils available to safeguard the traditional practices

Reconciling and Honouring Intangible Values in Spaces of Negative Heritage: Identifying a sustainable conservation approach to fire-damaged New Cross and Grenfell

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The 439 New Cross Road and Grenfell Tower fires were two of the most impactful life-loss events in recent British History. As a result of the fires, these commonplace housing structures became sites of shared history. It is imperative for conservation of negative heritage sites – those interpreted as commemorating trauma or disaster and where intangible values outweigh tangible remnants – that the physical materials come second to social and cultural contexts. As a result, the authenticity then lies in the community-based memorial and the reactions experienced by visitors at these negative sites. Just as the traditional conservation and authenticity charters fit into the context for which they were written, modern conservation must make room for addressing and reconciling negative sites. Prior to the fires, New Cross and Grenfell had no public heritage past. The fires – the ‘change’ – created heritage sites and meaning out of these places, immediately assigning historical value to these spaces. Therefore, understanding what is valuable about these places is the main factor for creating spaces by the community for the community.

Sustainability is a crucial tool for heritage preservation. Urban social sustainability relies on the stability of the community, a sense of pride of the community and identification within that community. Through these case studies, this research follows the concept of embracing change over mitigating change as the conservation approach, through the lens of social and material sustainability. These factors directly correlate to not only what is conserved and memorialised, but also for whom. Specifically for New Cross and Grenfell, where fires left little to no physical material to manage or conserve, it is the ethical responsibility of the conservator to embrace the changing landscape, perception, and memorial needs of the site at the present time. The goal of this research is to examine and consider the changing role of the conservator as voice for navigating the social values of these two sites. The conservator can serve as a background liaison to bridge between memorial stakeholders and the directly affected community. Social sustainability fosters a positive sense of place, which aids in applying a peoples-based conservation approach.

The New Cross and Grenfell fires were both blazes that cannot be forgotten for the social history of London. Due to lack of accountability and closure for both sites – and with Grenfell tower still standing – they both serve as open wounds over London. This creates physical spaces for mourning, closure, and continued storytelling, more for progression and less about managing physical change. Conservation professionals have a voice for navigating the changes in modern conservation through sustainability as social activists. Heritage professionals are not responsible for pleasing future generations. Negative heritage memorialisation should be created first and foremost for the communities directly affected. Using conservation as a tool to help shift the focus to observing and embracing change and renewal through discussion, remembrance, healing and moving forward.

Textiles - May 15

The Relics of General Washington: A Synthesis of Conservation and Mount Design for George Washington's Coat

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An eighteenth-century broadcloth coat in the collection of the Mount Vernon Ladies' Association at George Washington's Mount Vernon is an iconic piece of American textile and fashion history. The garment, dating from the 1780s, has a history that presents unique challenges for its conservation and mounting in preparation for display at the Metropolitan Museum of Art in the spring of 2022. This presentation will describe an integrated treatment and mount design approach that is guided by specific aspects of this object's material condition, its museum context, and its significance as a historical artifact.

The coat may have been part of the plain brown suit of clothing said to have been worn by Washington at his 1789 inauguration as the first president of the United States. It is one of several garments in the collection that are thought to be constructed of American-made cloth, a patriotic sartorial choice made by Washington during his public career to promote the new nation's domestic industry. In 1802, after the deaths of George and Martha Washington, their clothing was divided among family members and the coat was passed down through several generations of Washington descendants. During this time, the nineteenth-century practice of “souveniring” considerably altered the coat with the removal of several of its components and materials by relic-seekers. It was further disfigured by the damage and decay common to organic materials in long-term storage without the current benefit of modern climate-controlled conditions. The coat returned to Mount Vernon in 1930, where it has been kept in storage for over 90 years. The 2022 Costume Institute exhibition entitled *In America: An Anthology of Fashion* is the first time the coat will be displayed on a three-dimensional form that features its historical silhouette. Future exhibition at Mount Vernon is also intended as part of this project.

The conservation treatment and mounting of Washington's coat considers the legendary status of its first owner, the subsequent history of the object as a relic and its significance as a well-documented example of early American clothing. The presentation will discuss the decision-making that prioritizes minimally interventionist conservation techniques in order to preserve visual access to the coat's original structure and materials for future study. It will also describe a custom display form that utilizes a dimensional passive support to provide visual compensation in tandem with traditional stabilization methods. This cohesive treatment and mount design concept balances both the structural and aesthetic considerations of the coat as a personal artifact of America's first president with the long-term preservation goals of the object.

Overcoming the Challenges of Mounting a 39-foot-long Painted Textile with a Magnetic Mounting System

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How does one mount a unique 39-foot-long (11.9 meters) painted textile from Tibet? The uniqueness of this painted textile is not just due to the type of artifact, but also its unusual dimensions. The textile was mounted for the exhibition, *Awaken: A Tibetan Buddhist Journey Toward Enlightenment*, in Richmond, VA. The length is a critical part of the piece's iconography, which shows side-by-side deities, all menacing in appearance, as allies not adversaries, facilitating the practitioner's spiritual progress. The painting on this 18th century textile was created with opaque watercolor on the cloth. The painting is surrounded with rows of silk damask, as well as a pleated, double-layer ruffle along the bottom. This textile likely hung on the walls of a monastery's main assembly hall.

Mounting this wonderful artifact had been a challenge for the museum. The entire

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textile needed to be fully viewed. Additionally, the curator wanted to have it installed where it would go around a corner, allowing the viewer to be surrounded by the textile. The obvious mounting system for the requirements of this exhibit was a magnetic slat with the magnetic system placed behind the textile, a system that needed to be on the object prior to delivery to the museum.

From the start, it was clear that the painted textile needed to be rolled onto two large-diameter tubes, supported vertically like a scroll. Rolling a textile and a painted one on the inside is not generally recommended, but was critical to its safe mounting. Due to the multiple media nature of this complex artifact, limited handling while mounting was necessary. Finding a flexible ferromagnetic material that could roll within a sleeve was required due to the long length of the textile, the need to be rolled for transport, and to bend at the corner for display. The installation would begin at the center of the mount installed on the wall, working each side out, one at a time. This ensured the proper positioning, another challenge for such a length. Textiles, even painted ones, are insufficiently stiff, requiring additional support along the upper edge when on the tube.

The many challenges of creating an appropriate and elegant solution using a magnetic mounting system, the ease of installation, and the joint relationship between conservators, installers and mountmakers at the VMFA was how the mounting was a success and will be discussed in this talk.

Highlighting Marian Anderson in the Costume and Textiles Collection at the Philadelphia Museum of Art: The treatment and mounting of a velvet 1940s dress

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The Philadelphia Museum of Art (PMA) has in its Costume and Textile Collection three evening dresses attributed to the internationally renowned contralto singer Marian Anderson (1987-1993). An African American Philadelphia-native and civil rights activist, Anderson is recognized as a remarkable figure in Philadelphia's – and America's – history. The dresses were acquired from Anderson's estate in 1995 and remained largely unstudied for the next twenty-five years. The aim of this project was to begin the process of exploring the history of these dresses and to make them accessible to the public through conservation treatment, mounting, and photography. One of the three dresses was focused on for this initial phase – a floor length maroon velvet dress dating to the first half Anderson's career in the late 1940s. To investigate Marian Anderson's story at the PMA, research was undertaken to identify the provenance of each dress and to analyze the velvet dress' materials and construction. Archival and primary resources provided details about Anderson's life as well as photographs and specifics about the events and performances at which she wore these dresses. The archival research and the construction of the dress also unearthed connections to Anderson's skills as a seamstress, to Anderson's performances at the PMA, and to other notable figures represented in the PMA's Costume and Textile Collection such as Princess of Monaco Grace Kelly. This project was emblematic of the PMA's and the international art world's drive for enhancing and highlighting underrepresented narratives in museum research and collections, an essential initiative for sustaining the relevance and inclusivity of museums in the future. It also demonstrated the value of archival research for conservation in informing the treatment and context of museum objects.

100 Years (Almost!) of Costume Mounting at the McCord Museum 1921-2021

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The McCord Museum celebrated its centennial in 2021. It has one of the largest historical collections in North America, featuring clothing in the COSTUME, FASHION & TEXTILES and INDIGENOUS CULTURES collections. With more than 20 years' experience creating mannequins to mount clothing from these two collections, my mind currently turns toward the transmission of this accumulated knowledge for future colleagues to work from, and so that the museum can continue its expertise in this area. This includes how mounts vary according to factors such as the collection,

the type of clothing, different styles of presentation, materials, suppliers, and the design of exhibitions, as well as the way mount-making has evolved over the years. The museum's centenary was the perfect context for taking action on this project. Realizing how little knowledge I had of previous practices in costume mounting at the museum, research was undertaken into the museum archives with the goal of learning about past mounting methods and compiling this information to make it accessible to the conservation team. The discovered articles, documents, and photographs paint a picture of past practices in mount and mannequin-making and the evolution of costume presentation styles and techniques since the foundation of the museum more than one hundred years ago. As well, information regarding the choices of presentation style for more recent exhibitions from the past two decades, through all stages of production to final costume assembly, was compiled for posterity before it was forgotten. Finally, after all this time, we are looking towards the future: ideas for a new mannequin that could be easily adjustable and allow for different styles of presentation took shape when a prototype was made by the conservation team.

Commemorating The Met's New Islamic Galleries Installation—Revisiting Textile Conservation Practices for the Culturally Diverse Collection

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As we celebrate the 50th anniversary of AIC, we also look forward to the golden anniversary of the Department of Textile Conservation at the Metropolitan Museum of Art, in 2023. These milestones provide a good occasion to reflect on the evolution of the textile conservation field, from craftsmanship to professional discipline.

This presentation will focus on the developments, transformations, and modifications of conservation practices and philosophy in the context of a large museum, using the redesign of the Islamic Galleries as an example. The new galleries, opened in 2011, reflect The Met's long-term vision for improvement and educational programming, cross-departmental collaboration, and continuous development of conservation practices, to present a culturally diverse collection of Islamic textiles.

For the new galleries, it was essential for conservators to incorporate new practices and display methods. The 1975 installation of these galleries showed us how far the technology, materials, and our thinking itself had advanced since those days. We will discuss the most significant changes that were incorporated to address the need for improved methods of textile installation, considering environmental guidelines as well as identifying practices that had become outdated – particularly for organic materials.

One of the challenges was finding an alternative solution for a system of sliding panels with small and medium-size carpets. Although the system seemed to offer many advantages due to their ability for easy and spontaneous rotations and space-saving storage, the panels became a place for the accumulation of dust. Their dark and warm spaces created a type of microclimate, with favorable conditions for pest development.

Oversized carpets presented another issue. Only part of the carpet was unrolled, and the excess was rolled on small-diameter tubes, which flattened the pile. In addition, their placement over crown moldings or partial display in floor boxes made rotations challenging. A new conservation concept, which supported the curators' goal to highlight the presence of carpets in the galleries, allowed the carpets to be displayed flat on modular platforms with the flexibility to display varying sizes and illuminate their pattern with minimal light levels.

Another example of conservation improvement focused on textiles hanging without any protective barrier. A unified system proposing the same thickness of stretchers, background fabrics in neutral colors, and Plexiglas bonnet provided a new type of design called a *gallery mount*. Mounting of oversize textiles in pressure mounts was also possible with advancement in materials and conservators' experience.

As a culmination of decades of conservation study, advancement in the field, and experience, conservators developed extensive long-term preventive conservation programs incorporating regular rotations, vacuuming, strict light requirements, and detailed recordkeeping of activities. Since the new galleries have been open,

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some adjustments have been required in order to fit the Museum's comprehensive exhibition schedule while maintaining standards for display and addressing environmental changes that prompt us to practice enhanced IPM monitoring and related conservation activities. The aforementioned anniversaries have allowed us to utilize our skills, reflect on our past practices, and look toward the future with anticipation of even greater advancements.

A Comparative Study of the Impact of Beva 371 and Nano Vinyl Acetate Derivatives on Egyptian Coptic Textiles (Tapestry)

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Egyptian textiles in museums are exposed to various processes of deterioration. Therefore, adhesives and polymers are used to fix and strengthen weak textiles. One the long term these adhesives are prone to stiffness, weakness, discoloration, and rigidity among other factors. Historical textiles exposed in the museum to processes of deterioration factors. Therefore, adhesives and polymers are used to fix and strengthen weak textiles. These adhesives are prone to stiffness, weakness, and color change, and rigid after long-term and other damage. Therefore, this research attempts to use nanomaterials to improve the properties of polymers used in historical textiles conservation. Results of the physical, chemical, and optical properties of the Beva 371 and Nano-Vinyl acetate derivatives and were applied to fix and strengthen historical textiles. The dyed wool fabrics by natural dyes treated with Beva 371 and Nano Vinyl acetate derivatives adhesive. Accelerated thermal ageing was done of treated wool fabrics. A close examination and tests were done by using SEM-EDX, FTIR, Tensile strength, Elongation, change of colors (CIE L*a*b*) coordinates. The final step is to apply the Nano-Vinyl acetate derivatives on Historical Coptic Textiles. Scientific examinations, the stability of dyes and fibers, mechanical and chemical cleaning processes, fixing and strengthening of historical textiles on new support by using NanoVinyl acetate derivatives was done. The article presents, for the first time, interesting and important results of Beva 371 and Nano-Vinyl acetate derivatives and their application on historical textiles.

Textiles - May 16

Mixing Solutions: Combining Paper and Textile Approaches to Treat Iron-mordanted Printed Cotton

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As part of their second-year curriculum at the Winterthur/University of Delaware Program in Art Conservation, the authors were tasked with the treatment of two printed cotton handkerchiefs commemorating the death of George Washington. The dye used for printing was iron-mordanted, and both textiles demonstrated characteristic iron-induced fall out in the printed areas. This degradation is commonly associated with iron inks on paper, so the authors researched and implemented an established paper conservation technique: the phytate treatment. This paper will present the research and testing of the phytate treatment on textiles, as well as the full treatment of the two historic handkerchiefs.

While it is known that just bathing an iron-mordanted printed textile is merely a "quick fix," and an antioxidant treatment is necessary to halt this deterioration mechanism, only one prior use of phytate treatment on historic textiles has been published (Castaneda and O'Connor 2019). There are no published accounts of combining common steps in textile bathing, such as the application of a surfactant, with phytate treatments.

One of the handkerchiefs is from the Winterthur collection, and the other, which is a pair of uncut handkerchiefs, is from the collection of the Historical Society of Haddonfield, New Jersey. While the staining and levels of degradation on the two

textiles varied, both displayed characteristic iron(II) driven deterioration. Based on discussions with conservation scientists and paper conservators, it was deemed necessary to complete a phytate treatment of these textiles. However, cleaning tests also suggested that a solution of 1% (w/v) Orvus (sodium lauryl sulfate) anionic surfactant and 1% (w/v) sodium citrate chelator successfully reduced discoloration and staining.

To determine the efficacy and safety of combining these two bathing techniques, the authors carried out a series of tests on a surrogate textile printed with iron-mordanted dyes. Four cleaning tests were conducted: 1) phytate treatment alone; 2) Orvus/citrate solution alone; 3) Phytate treatment followed by the Orvus/citrate solution; 4) Orvus/citrate solution followed by phytate treatment. The efficacy of these cleaning tests was determined by measuring the pH of the bath water and the textile surface before and after bathing, colorimetry before and after bathing, iron(II) detection with bathophenanthroline indicator paper before and after bathing, and qualitative analysis. Based on testing, the bathing proceeded by bathing first with the Orvus/citrate solution followed by the phytate treatment.

Following bathing, both handkerchiefs were lined with crepeline pre-coated with Klucel G (2-4% w/v) and reactivated using ethanol vapors. Losses were filled using cotton of a similar weight and thread count to the original and painted using PROfab Fabric and acrylic paints.

The treatments of both textiles were successful in not only chemically and physically stabilizing the handkerchiefs, but also in demonstrating the strengths of collaboration in conservation, especially across specializations.

A Sartorial Puzzle: Conserving a Worth & Bobergh Ensemble for Display

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¹FIDM Museum, Los Angeles, CA, US

In 2018 a rare surviving example of the early work of the "father of haute couture" Charles Frederick Worth was donated to Los Angeles' FIDM Museum, in more pieces than the ensemble's original five garments. This changeable silk ensemble's upcoming display has prompted a comprehensive conservation campaign, in order to restore the garments to a state mountable on a mannequin and legible to museum visitors. In this presentation, I will discuss the development of this treatment from proposal to execution. This process was transformed by the onset of the COVID-19 pandemic in early 2020, just as I had begun this project as an MA candidate at the Fashion Institute of Technology in New York. Pandemic-related delays have been both frustrating—as physical access to the garments was limited—and fruitful—as restrictions inspired more creative and more experimental approaches to analysis that will be incorporated into a future exhibition. As a microcosm of the conference's theme, this presentation will offer reflections on both past treatment decisions, many of which shifted once access was restored and treatment began in earnest, and this conservator's future career. In particular I hope to discuss some of the challenges and unexpected benefits of working outside of a more formal laboratory or studio.

Conservation of this ensemble has been informed by comparison to contemporaneous garments and fashion plates from the house of Worth & Bobergh, and I am now completing the final stages of treatment as the FIDM Museum's Conservation Fellow. Treatment has included stabilization of trim, localized cleaning, reattachment of sleeves that may have been unstitched to update the silhouette, creation of a custom-padded mannequin, and reproduction of a missing sleeve and some trim elements. Additionally, and with the support of curator Kevin Jones, I am devising what I have termed a "speculative reproduction" of the ensemble's highly fragmentary evening bodice, which will be mounted as a didactic tool in the gallery. In the course of this presentation, I plan to cite references for my treatment approach as well as precedents for the public exhibition of fashion and textile conservation.

Reuse and Repurpose: Two case studies of Japanese scroll conservation incorporating a Western textile conservation technique

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This paper discusses the treatment of two hanging scroll paintings by the 18th century artist Miyagawa Choshun, *Woman on a Veranda Gazing at the Moon and Courtesan and Attendant*, in the Museum of Fine Arts, Boston. One treatment involved adapting a crepline lining with a heat-set adhesive in order to reuse one section of the previous mounting. The second treatment created an entirely new mounting by repurposing fragments of an 18th century robe by incorporating the same technique. In both cases, the central textiles were fragments of historic *kimono* garments.

A balance of structural integrity and flexibility is essential to the preservation of hanging scrolls. Though curators and collectors in the U.S. and Europe may be less familiar with scroll mounting practices, and are therefore more likely to consider reusing an existing mounting for hanging scrolls in Western collections, it is important to acknowledge that scroll mountings are routinely replaced in Japan if they no longer protect and support the artwork. Recycling valuable textiles for Japanese scroll mountings is a practice that dates back centuries, and *nikuhitsu ukiyo-e* paintings of the 18th and 19th centuries in particular are known for mountings made of repurposed *kimono* fragments.

However, reusing sections of previously adhesive and paper backed mountings and fragile, historic garment remnants poses a unique set of challenges. The author sought guidance from a Western textile conservation colleague with the hope that different techniques, materials and ways of thinking could provide an alternative to traditional methods, and give added consideration to the textiles themselves. In both cases, the paintings and mountings were otherwise treated and assembled following standard Japanese scroll conservation and mounting techniques. The combination of Eastern and Western conservation techniques was not without its limitations, but it yielded overall positive results for the future stability, appearance and integrity of these objects.

Collaborative Investigation into Wool Dyeing Practices of Chilkat Textiles: Culture, Chemistry, and Conservation

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The cultural production and ceremonial use of indigenous Chilkat textiles in the Pacific Northwest dates back approximately 200 years. The textiles twine and braid stylized animal, human, and geometric designs to depict clan crests utilizing curvilinear “formline” motifs and circles rarely seen in other weaving technologies. The Chilkat Dye Project investigates the three iconic colors of dyes (blue/green, black/brown and yellow) used in the woolen wefts to define the designs. Today’s Chilkat weaving community is interested in learning about the innovations of their ancestors’ dye choices to inform their own artistry and benefit future weavers. A collaborative effort among the 25-member Chilkat Dye Working Group, conservator Ellen Carrlee at the Alaska State Museum (ASM), and chemists in the laboratory of Tami Lasseter Clare at Portland State University (PSU), aims to identify the dyestuffs used in historic Chilkat robes at the ASM. Over the past three years, the Alaskan working group has produced reference dyed fibers from both natural and synthetic sources collected and dyed locally, which were sent to PSU for analysis by Mass Spectroscopy (MS). Given the rich variety of natural dye types as well as the importance of minimally destructive analysis, the PSU lab utilized the reference collection to develop their analytical procedures and to compare the efficacy of dye identification by different MS methods, specifically comparing DART-MS, GCMS, py-GCMS and direct injection MS, across dye categories. Further analysis was done using LCUV and x-ray fluorescence spectroscopy (XRF). Subsequently, 117 fiber samples represented by 23 unique museum objects were analyzed, with the earliest textile likely from the early to mid-19th century. Results indicate that both natural and synthetic dyes were likely used, created from local flora or acquired by trade. The investigation supports some written and oral histories regarding ancestral weaving practices while lacking evidence for other common beliefs. These include positive evidence through MS analysis for the use of wolf lichen dyes for natural yellows, and negative evidence through XRF for the use of copper-ammonia dyes for blue/green fibers. This research has facilitated the analysis of samples from historic robes, provided display content for a current ASM exhibition *The Spirit Wraps Around You: Northern Northwest Coast Native Textiles*, and sparked science curriculum content for local schools. With this work, the Chilkat Dye Working Group seeks to create an open, collaborative dialogue among cultural experts,

museum conservators, and analytical chemists about Chilkat weaving, meaning, and technology. Ultimately, this collaboration will celebrate those from the past to the future that are involved in the Chilkat weaving tradition, while creating a model of research that foregrounds the priorities of indigenous people through a network of long-term relationships. In doing this, we hope to better understand the dye innovations of the past to allow more creative control for the future.

The Unknown Microscopic World of “The Peasants Strike”: A burlap embroidered by Violeta Parra

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Violeta Parra is one of the most internationally recognized Chilean artists, not only for her musical compositions, but also for her paintings and burlap embroidered pieces (tapestry of Chilean origin). In this context, Violeta in 1964 exhibited a collection of 45 art works at the Louvre Museum, Paris, considered the first solo exhibition by Latin American artist. Subsequently, the location of the works became lost, due to changes in the workshop and the itinerary of the exhibitions. A large piece (10.58 lbs. with an area of 10.49 ft x 6.23 ft), was discovered in Switzerland in 2019 and sent by the Swiss Embassy to the Violeta Parra Museum in Chile. It was in poor state of conservation with tears and missing areas in the support, contained external elements such as animal and human hair (probably from the artist herself because it is interwoven with the embroidery), paint, possible urine stains and soil. Some of the problems included the lack of information on the materials used in this piece, the disintegration of the fibers of the support, dehydration, acidity, and the microbiological contamination.

The main objective of the analysis and restoration work was to stabilize it in preparation for a first-time exhibition in Chile and later traveling to Europe. Therefore, the intervention criteria had to be designed according with the exhibition functionality and stability over time, environmental variations occurring both during the exhibition in Chile and in its transfer to Europe. An analysis “in situ” by means of digital microscopy identified the intrinsic and extrinsic deteriorations present, such as the loss of continuity of the fibers, oxidations, moth cocoons and stains, chemical analyzes resulted in acidity in the pH 4.0 range for the support, a humidity of 7-9% for the burlap and 3-4% for the embroidery. The microbiological analysis showed a contamination by fungi and bacteria of over 3,500 CFU, levels considered harmful both for the personnel handling the piece as well as the possible biodeterioration of the cellulosic and protein material of the object. The fibers of the entire piece, both for the primary support and the embroidery were identified with optical microscopy. A total of 65 samples were taken from the burlap and 25 from the external elements. The microscopic analysis revealed jute vegetable fiber as the raw material of the support, and 98% of the samples of animal wool (possibly sheep and camelids) and 2% cotton. Using solubility test the dyes in the fibers were characterized as colors of synthetic origin.

This study allowed us to make informed decisions for the intervention of the piece, such as controlled vacuum cleaning, disinfection, humidification, and chemical consolidation. Once the chemical and microbiological stability of the support was achieved, physical stabilization and restoration were implemented under textile conservation criteria for its exhibition. The importance of the specific identification of the materials used by the artist in this work is a first and critical step towards the understanding of the technique, projecting the future study of Violeta Parra’s collection and its conservation.

Reversibly Restoring Color: The Application of Toned Abaca and Mulberry Paper Overlays to a Discolored Surrogate Cloth

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The inspiration for this research is a Côte d’Ivoire man’s wrapper in the collection of the Metropolitan Museum of Art. This historic textile has blanched areas, which distract from its dynamic design and are not representative of the artist-weaver or the wearer’s original aesthetic intent. To mitigate the visual distraction of the

discoloration, reversible recoloring with abaca and mulberry paper overlays was explored via tests on a surrogate, handwoven cotton cloth with a similar structure to the Côte d'Ivoire man's wrapper.

Discoloration of a textile's surface due to chemical and/or environmental factors is a universal issue. Previous research at the Rijksmuseum explores the recoloring of contemporary rewoven sites on tapestries with Lascaux Sirius Primary Watercolour System paints in order to rejuvenate the colors and create a harmonious aesthetic. The colorfastness, lightfastness, dilutive properties, and transparency of this paint makes it an ideal candidate for recoloring.

When a historic textile is faded or blanched, ethical considerations about retouching the damaged sites become complex, since the original material would be altered during treatment.

In this article, methods of 'recoloring' are explored by intentionally blanching surrogate cloth to create patterns of discoloration similar to those present on the man's wrapper. Color recovery is then achieved via a novel use of toned abaca and mulberry paper overlays instead of a direct application of acrylic paints.

To test the properties of overlays, abaca, and mulberry paper (R-013, Sekishu thin; R-014, Sekishu extra thin; and HPR-W1, Tengucho) water-cut swatches were colored with diluted Lascaux Sirius Primary Watercolour System acrylic paint. Since this paint is miscible with water, it was possible to achieve tailored tonalities and to match the overlays to the undamaged color of the surrogate cloth. These test swatches were then coated with Lascaux acrylic adhesives 489hv and 303hv with dilutions of 8%, 12% and 17% w/v and ratios 1:1 and 2:1 (489hv to 303hv).

Test swatches were placed in rows on the prepared surrogate cloth and reactivated with compresses containing either ethanol or acetone; similar testing was also performed with thermo-reactivation. While the Lascaux acrylic adhesive was still pliable following reactivation, swatches were adhered with vacuum pressure or placed under weights.

Abaca and mulberry paper swatches reactivated on the surrogate cloth were assessed for adhesion strength, flexibility, reflectivity, transparency, and reversibility. Comparison of the surrogate tests samples indicated that Tengucho mulberry paper with a 17% w/v solution of 489hv and 303hv (2:1 ratio) Lascaux acrylic adhesive solution, reactivated with acetone yielded very good results.

Samples allowed to dry under weights were compared to those adhered with vacuum pressure. Although similar at first glance, the vacuum-pressure treated samples molded more readily to the handwoven structure of the surrogate cloth, allowing an increase in surface uniformity and visibility of the cloth's texture.

Based on the results of these tests, a conservation strategy is currently being assessed for the Côte d'Ivoire man's wrapper with the goal of creating a reversible solution that imitates the original aesthetic of the object by mitigating the visibility of the discolored sites.

Wooden Artifacts - May 16

A Limewood Lemon: Overhauling a 17th Century Grinling Gibbons Overmantel

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Grinling Gibbons (Rotterdam, Netherlands 1648 – London, England 1721) has been called the finest wood carver of time. His work decorated palaces, cathedrals and country estates across late 17th/early 18th century England. As the ancestral seat of the Earls of Essex, the embellishing of the redesigned house at Cassiobury Park in Hertfordshire, England, was one of the earliest large scale house commissions Gibbons received, between 1675-1680. Before the house was demolished in 1927, the limewood (*Tilia* spp.) foliage overmantel from the Inner Library was acquired by the Art Institute of Chicago. After being taken off view in the 1980s, it was put into storage, and more than three hundred years after its creation, the overmantel had suffered to the point of an unknown fate. The once beautiful carvings were covered in an unknown dark brown coating and in a fragmented state ranging from more than 160 recognizable pieces, down to mere shards and splinters. Damages and alterations occurred as the result of time and inherent vice; architects, art dealers and restorers; and handling and storage. Based on visual examination, comparative study with historic photographs, and analysis on the surface coating, a two-year treatment plan was formed with the goal of bringing the work of art back to an exhibitable condition through stabilizing and reassembling the fragments, removing the darkened surface coating, and replacing larger losses. However, as historical and physical evidence was interpreted, the previous arrangement of the composition, and validity of individual carved elements were called into question. After reflecting on the history of both the overmantel and the house, the future of the overmantel was reimagined and realized. The Grinling Gibbons overmantel treatment concluded during the tercentenary anniversary of his death.

Wood BONDS Wood

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Wooden panels and wooden reliefs are glued in many places. Adhesives and gluing devices are therefore available in heaps. But what do you do when the wood has warped so much or has not fit right from the start that only a few points are still touching and planing off a valuable original is out of the question? You can either apply an adhesive cement. This will introduce a lot of new material, the putty will shrink during imaging and thus not cover the entire adhesive surface. In addition, it will never have the strength of solid wood. A manual tapering, on the other hand, is usually much too time-consuming. We would like to present another way step by step and put it up for discussion for the future.

In our case study, we are dealing with a medieval and polychromed lime wood high relief, which was probably already originally not an exact fit and also had fewer points of contact due to old interventions. This was difficult to see from the outside. Obviously, the interfaces did not fit perfectly, but the exact extent was initially unknown. The cavity was created with simple means: Press-through papers, foils and plasticine as well as photogrammetrically visualized. Accurate photogrammetric imaging of both sides of the joint and subsequent virtual alignment of the two scans allowed the cavity to be calculated. This illustrated that more than three quarters of the joint had no points of contact. This calculated cavity was then fabricated in basswood using a CNC router. The subsequent bonding was to be done with wood-related, water-soluble materials as far as possible. In addition, a high concentration was aimed for so that shrinkage would be as low as possible. The adhesive formulations developed in the woodNANObonding research project were further adapted to the joint found and successfully executed. The medieval wood relief and some steps to as well as the adhesion itself can be seen in this short film <https://www.youtube.com/watch?v=t2mpjohaxPc>.

SPECIALTY SESSIONS: WOODEN ARTIFACTS

Revelation of Three Kinds of Traditional Chinese Gilding Technique Applied on Wooden Relics of Qing Dynasty Collected in the Forbidden City

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Gold has been used as a kind of decorative material for at least three or four thousand years in China. In order to meet the requirements of decoration work of different classes, different local customs and different substrates, ancient Chinese people have creatively invented a variety of gilding techniques. The study of gilding techniques applied on cultural relics, can not only provide strong scientific support for the restoration and protection of relics, but also can restore the development process of ancient Chinese handicraft, which is of positive significance for the research, inheritance, and development of traditional handicraft.

In present work, the gilding technique of three wooden relics collected in the Palace Museum has been disclosed with complementary modern analytical technologies including optical microscope, Fourier Transform Infrared Spectroscopy, Raman Spectroscopy, Pyrolysis-Gas Chromatography/Mass Spectrometry and Scanning Electron Microscope-Energy Dispersion Spectrum. Tie Jin (贴金) Technique was found to be applied on the throne in the shrine of Fengxian Palace, however, different gold foil and adhesive were used for different parts of the throne, Sa Jin (洒金) Technique was applied on the back surface of wooden table decorated with bamboo skin, and Ni Jin (泥金) Technique was applied on the whole surface of Zhan Tan Buddha statue with wood substrate. Characteristics of three kinds of gilding techniques were also discussed. The above-mentioned gilding techniques are all traditional Chinese gilding techniques. In the past time, ancient craftsmen creatively used gold foil, gold scraps and gold mud, which both made by gold foil, as well as lots of natural materials with rich resource in China, such as organic adhesive of Da qi lacquer and tung oil, mineral pigments of cinnabar and orpiment, etc., to decorate different objects.

All these gilding techniques fully reflect the wisdom, aesthetics, and consummate skill of working people in ancient China. The application of modern analytical techniques also provides strong scientific support for disclosing the traditional Chinese gilding techniques.

The Bridge: From Cultural Heritage to Culture of Conservation

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¹*TSJ Art Restoration, Tainan, Taiwan*

In 2013, TSJ Art Restoration was founded in Taiwan to conserving all forms of artworks and cultural heritage nationally and globally. Through preserving and conserving a wide range of historical assets and objects, TSJ is able to provide the latest technology, knowledge and skills in the world of restoration business and, most importantly, to promote the old time, lost cultural heritage back into public appreciation and attention.

In Taiwan, the challenge arises from the humidity and heat weather, inappropriate method and approaches for preserving and restoring of articles, and the common cultural practice such as burning incense stick and joss paper for worshipping inside the building. Moreover, both the public and government regard these precious cultural heritage and arts as folklore ornaments which makes the conserve process and future maintenance more difficult. As a pioneer in conservation and restoration business in Taiwan, we enable the government and private sectors to set the examination and inspection system, elaborate the standards and enhanced the whole biology of conservation.

We would like to present in AIC conference our latest project of grand historical site Daxiong Hall in Dasian Temple, Tainan (built in 1915, restored from 2017 to 2020). To demonstrate both the painting layers and the restoration methods and technique of the polychrome on wood panel, gold gilding, architectural paintings. TSJ also initiated the project management system that assisted conservators to coordinate with government, temple owners and collaborated with 4 professional teams (including conservation, conservation science, scientific inspection, and traditional paint experts) to solve different kinds of damages and various types of religious artworks in the whole building. TSJ teamed with scientists and a diverse

group of professionals from government, private investors and to religions in order to identify the causes and find the best approaches to restore them. Our conservation work is not only served as an evolving technique but as synchronizing culture, religion and aesthetic purpose in our society and community.

With our unique and broader restoration experience and resources from Europe to Asia, TSJ conservation team continues to be dedicated to training our conservators, providing more opportunities for trainee and apprentice program with schools and cooperate with a diverse group of conservators from the world.

A Survey of Lacquerware in the Collections of the Preservation Society of Newport County

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¹*Preservation Society of Newport County, Newport, RI, US*

The King and Wetmore families were prominent Newport residents trading extensively with East Asian merchants. They amassed an eclectic collection of objects and furnishings from China, Japan, and other Asian countries. Many of these objects are on view at the American Gilded Age mansions Kingscote and Chateau-sur-Mer. In 2014, a limited survey was performed by the Preservation Society of Newport County's Conservation Department. The survey focused on a detailed description of the current condition and provided recommendations for subsequent conservation work.

Recent research revealed a need to update this survey. Therefore, a 12-month fellowship was created to revise and expand the survey to further identify treatment needs and interpretation priorities. Due to on-site locations of collection items and internet limitation, a portable and convenient PDF version of the survey was created. It contains five parts: basic object information; results of a brief visual examination of the objects' substrate, ground layers, lacquer decoration and potential varnishes; current condition observations; cultural information reading of the iconography, depicted narratives, characters and marks; and recommendations for future study.

The collected data is entered into a Google Survey serving as a data analysis tool to quantify collection types, specific techniques, and types and degrees of damages. This will help to rank the risk of collections and prioritize future conservation projects.

See the RATS/WAG Joint Session on page 117

Poster Sessions

1 Assessing the Damage: Strategies for Approaching the Conservation of Fire-Damaged Stained Glass

Alexandra Wysopal¹

¹The Metropolitan Museum of Art

The aim of this poster is to open a dialogue amongst professionals regarding the conservation of fire-damaged stained glass. Structural fires and their often catastrophic results are an unfortunate reality that those in preservation related fields may confront in their careers. The building, objects housed within, and even the surrounding property can sustain a variety of chemical, physical, and mechanical damage that can make assessing and treating fire-damaged material an overwhelming task. In addition to being a functional component of the building envelope, decorative windows contribute to the overall character of a space and can hold their own significance. Therefore, aspects of functionality as well as the preservation of materials and aesthetics must be taken into consideration when formulating a treatment plan for stained glass. Damage caused by a fire can introduce conditions that present their own challenges to the conservation of decorative windows. Utilizing an American opalescent window by J&R Lamb Studios as an example, this poster will present different analysis tools and treatment options available for the conservation of fire-damaged stained glass. Analysis approaches covered will include the use of optical and scanning electron microscopy. Treatment approaches covered will include the use of adhesives, plating, and protective glazing.

2 Getting Back to Basics: Low-Tech Consolidant Testing on a Tight Schedule

Aliza Taft¹

¹Yale Peabody Museum of Natural History

A painted basketry mask from New Guinea in the Yale Peabody Museum Anthropology Collection was selected for a loan to a local art gallery. There is very little provenance information for the object, but stylistically it resembles an Abelam yam mask. If this attribution is correct, the mask might have been reused and repainted every year, to keep the decoration fresh for the annual yam ceremony. While the basketry is in good condition, the pigments are powdery with a tendency to crumble; they were likely applied with little to no binder since they were not expected to last.

In order to travel without significant pigment loss, the surface needed to be consolidated. Consolidation would be effectively irreversible, so we hope that in intervening with the deterioration of this object, we can avoid intervening with similar objects in the future by directing borrowers towards the treated object. The project therefore required a consolidant which would improve cohesion and adhesion without causing darkening or gloss. There were approximately three weeks in which to carry out the work, from research to installation.

A review of literature and previous treatments helped to narrow down options for consolidants; this was further narrowed to supplies already in the lab. Informal pre-test facsimiles eliminated certain concentrations of the selected adhesives. Six facsimiles for the final tests were created using toothpicks and rattan painted with powder pigments in water. The solutions selected for final testing were: Aquazol 50, 2.5% in ethanol; Funori, 1% in water; Klucel G, 2% and 1% in water; Klucel G, 1% in ethanol. Two coats were applied to the rattan facsimiles, which were examined and photographed after each coat. Funori was eventually selected - it was equal to 1% Klucel G in appearance and slightly more effective at reducing powdering. The Funori solution was applied by brush to the entire mask.

Given the very limited time frame, this was by necessity a "back to basics" project - there was no analysis done on pigments, binders, or the basketry; a limited selection of adhesives was chosen for testing; consolidation was assessed visually, without any absolute measure of color change or cohesion. The facsimiles were not perfect representations of the object, but they were sufficient to accomplish the goal. The treatment successfully prevented continued loss of pigment by powdering, and reduced loss of pigment by flaking. It did so with minimal color change, and without altering the interpretation of the object.

3 The Fault in Our Ions: A Preliminary Investigation into the Use of Bipolar Ionization for Museum Spaces

Austin Anderson¹

¹Glenstone Museum

In the face of the COVID-19 pandemic, concerns for the health and safety of staff members and visitors became a top priority for Glenstone Museum. Among some of the initiatives that were started in hopes of providing the safest environment possible, bipolar ionization air systems were installed in certain non-gallery spaces of the museum. Bipolar ionization units connect to an HVAC duct and work by producing positive and negative ions which are put out into the air. The ions purportedly decrease levels of airborne contaminants by (1) causing particulates to agglomerate and settle out of the air, (2) breaking down volatile organic compounds, and (3) inactivating bacteria, viruses, and mold spores. These claims make it an enticing disinfection option in the face of the pandemic. However, limited peer-reviewed literature has given rise to questions of the system's efficacy and concerns for potential byproducts, such as ozone. In addition, such systems have seldom been used or tested in museum environments due to valid concerns regarding the safety of artworks containing organic and proteinaceous components. In theory, the ions' ability to denature proteins and break down larger molecules will cause degradation in these materials over time.

A preliminary experiment was developed to evaluate bipolar ionization for use in museum spaces. Two complementary parts of the experiment were designed to (1) characterize the air produced by bipolar ionization, and (2) assess material coupons for changes after prolonged exposure to bipolar ionization air. For the first part, air was evaluated in spaces with and without bipolar ionization. An air-quality meter was used to determine concentrations of carbon monoxide, carbon dioxide, ozone, and low range volatile organic compounds, and an air ion counter was used to estimate the ion density. For the second part, nineteen material coupons of mostly proteinaceous and organic materials, meant to reflect those that may be found in modern and contemporary art, were set out in various spaces with and without bipolar ionization active. Digital microscopy, colorimetry, photography, visual and physical assessment, and comparison to control coupons were methods used to monitor for changes in the materials over the course of 12 months. Initial results have shown that there has been little noticeable change in air quality or ion density before and after bipolar ionization. Regarding the coupons, only slight color changes have occurred thus far in certain materials, although further information may be required to understand the exact causes of these changes and the rates at which they occur. Additional findings, some yet to come, will also be discussed in this poster.

4 Now You See It...

Barbara Rhodes¹

¹American Museum of Natural History

Writing in ink, especially with a pen which has to be dipped into an inkwell, can be messy. Accidental ink blots, as well as corrections, can obscure the intent of the writer, and mar the appearance of the document. The earliest means of removing unwanted writing ink were to sponge or scrape it from the surface of the writing material. These worked reasonably well with hard-surfaced writing materials such as parchment, and with carbon-based inks, which tend not to sink into the substrate. The nature of iron-gall ink, which forms its color within the fibers of the paper as well as on the surface, and the softer, more porous surface of the paper itself, makes physical removal more difficult.

As writing materials evolved, writers began to turn to chemical ink erasure. The most common types of chemicals used for erasure through the centuries have been acids, bleaching agents, and some alkali. This presentation will deal primarily with the history of the chemical removal of iron-gall ink, with some mention of other types, and a brief review of modern methods.

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5 Virtue of Text: The Tangible and Intangible of Tibetan Manuscripts

Basia Nosek¹, Mary Haude¹, Julie Biggs¹, Yasmeen Khan¹

¹Library of Congress

In Tibetan Buddhist culture, celebrating and maintaining custodianship of Sutra manuscripts are traditional customs as these religious scriptures convey Buddhist teachings. A Tibetan manuscript titled 'Phags pa shes rab kyi pha rol tu phyin pa rdo rje gcod pa (Diamond Sutra) came from the Tibetan Rare Book Collection at the Library of Congress to the Conservation Division for treatment. The unbound manuscript is comprised of 27 black-coated leaves inscribed in gold metallic ink which are wrapped in a sandstone colored silk textile. This poster focuses on the technical study of the aforementioned Sutra in conjunction with the inherent cultural values it represents to Tibetan Buddhists. Beyond research and visual examination, X-ray fluorescence (XRF) analysis identified the metallic manuscript ink. As the Sutra is a highly valued religious object for present-day Tibetan Buddhists, the conservation treatment was minimal to maintain current integrity of all components. For this reason, the exposed fibers around the handling edges were consolidated. Since the manuscript was missing its outer covers, new covers were made to sympathetically simulate traditional wooden covers. Finally, a custom-made drop-spine box was constructed to safely house the Sutra.

6 Monument and Social Space: Conservation Experiences in Monumental Urban Spaces of Historic Center of Lima

Boris Marquez¹

¹QHAPAQ NAN SAC

Since 2020, the Metropolitan Municipality of Lima started the restoration process of five emblematic monuments of the City. These are the most representative monumental urban spaces designed for the commemoration of the Independence of Peru, as well as the heroic deeds of 19th Century. (Plaza San Martín, Plaza Bolognesi, Plaza Miguel Grau, Plaza Jorge Chavez, Plaza Ramon Castilla)

These public spaces have become in meeting points for the most important social movements in the recent years in Peru, a common phenomenon in almost all the capitals of Latin America.

In this scenario, QHAPAQ NAN, an organization dedicated to Conservation and Restoration of cultural heritage, was in charge of intervention projects, and facilitated the participation in work spaces of students and former students of new conservation and restoration schools, including those from Fine Arts School of Lima.

This professional experience not only allowed dozens of young students to directly work on cultural goods, but it proved to be an interaction space with different specialists. These experiences renewed the workshops and the works on furniture collections, in urban areas with outdoors sculptures, with conservation problems ever met by specialists; likewise, it helped the students to develop their work in urban spaces with historic and artistic relevance, with a deep social meaning for them.

Living through this experience opens a debate on the conservation processes that should be carried out in monumental spaces, not only because of the commemoration subject, —which has the artistic element as a product— but for the collective memory built upon these urban areas that often transcend without being included in the preservation strategies. These types of experiences are necessary to bring the current scenario closer to the future conservation professionals.

https://www.youtube.com/watch?v=3va5jWyY_IA
<https://youtu.be/I90Ck3GMlKA>

7 Exploring the Past: An Ongoing Research Project about the Development of Conservation in Austria

Catherine Bouvier¹, Magdalena Schindler¹, Sigrid Eyb-Green¹, Wolfgang Baatz¹

¹Academy of Fine Arts, Institute for Conservation-Restoration

In our presentation we would like to introduce to you our ongoing research project titled The History of Conservation in the years 1950-2000 in Austria: Tacit Knowledge and Disciplinary Professionalization at the Institute of Conservation and Restoration at the Academy of Fine Arts in Vienna, Austria. As the title suggests, the key objective of our research is the history of conservation in the second half of the 20th century.

For our project we chose two sub-areas -Paper and Wall paintings Conservation. This focus was set in order to reflect the growing diversification in conservation during this period, which also shaped conservation practice. At the same time, the comparison allows to observe and incorporate general developments and trends.

Drawing inspiration from AIC's Oral history Project, we conducted interviews with former and current protagonists in our field to unearth, process and preserve knowledge that otherwise would vanish eventually.

In our talk we will describe our sources: interviews, a survey, written sources, the methods of conduction and analysis thereof and discuss limitations and unforeseen obstacles we faced: The research design is based on a mixed-methods design frequently used in social sciences. The interview format is the so-called Problem centered expert interview. By design it is very open - the structure is mainly defined by the narrator. The interviews were recorded either as an audio or video file. The interview partners had the opportunity to read the transcript, make corrections or annotations and withdraw passages they are not comfortable with. This was usually followed by a meeting where unanswered questions and uncertainties could be addressed (communicative validation). For the examination of the interviews we performed qualitative content analysis.

The results from these interviews were the basis for the second quantitative phase: an extensive questionnaire survey was conducted last winter. The aim was to reach as many protagonists as possible who were active within the time frame (1950-2000) and specializations of interest (paper and wall paintings conservation) and to gather more "comparable" information.

Methodically, the combination of qualitative and quantitative approaches compensates the weaknesses of the one by the strengths of the other method and vice versa. Since memories are not very reliable, it is crucial to verify statements, retrieved from either interviews or survey, with the help of literature, archival documents, accidental sources like diaries and journals, recipe books, documentations, annual reports from institutions, but also statements by other contemporary witnesses. In general, the method of triangulation was employed throughout the entire research process. Ethical aspects play an important role in our study: in the field of sociology, absolute anonymity must be guaranteed to the interview partners. In our case this is not possible due to the small professional community. Nevertheless, we try to respect two important principles: the principle of non-damage and the principle of informed consent. After the introduction to our methods we will present some of our findings and give an outlook on how this project aims to lay the foundations for further research in the history of conservation.

8 From Empirical Practice to Interdisciplinary Task: The Evolution of the Cultural Heritage Conservation

Damasia Gallegos¹, Romina Gatti¹, Dolores González Pondal¹, Mariana Bini¹, Ana Morales¹, Fernando Marte¹

¹Centro TAREA, Escuela de Arte y Patrimonio of the Universidad Nacional de San Martín

Art works conservation is a discipline that is practiced, as we know it today, about one hundred and fifty years ago. Towards the end of the nineteenth century the figure of the conservator-restorer emerged in Europe with a role that was distinguished and completely separated from the painter. In this way, he reached a professional specialization hitherto unknown.

Nevertheless, it is important to know throughout the conservation history, there have been a series of events that, at present, we would consider inadmissible. In the not-so-distant past, there have been conservation criteria with a strong romantic bent that respected historicity over aesthetics and exalted the sublime and picturesque value of a ruin. On the other hand, in other periods, the discipline has focused on returning the lost splendour of a piece, through the search for the "original" based on assumptions and, in that recuperating eagerness, it was

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invented, modified or replaced parts, in order to achieve a stylistic unity, but with a serious historical false.

Currently, treatments seek to reverse modifications generated by time, deterioration processes or wrong interventions while trying to recover the correct reading of the work. In that sense, it is worth asking what is its correct reading? Undoubtedly, this concept has undergone changes over time, as the conservation has evolved towards a methodological practice with rules that systematized the activity. During a painting restoration it is common for a large number of details and relevant elements to appear, which can involve iconographic variants of an image and even lead to a change of attribution. In this way, the conservation of the South American artistic heritage confronts us with pieces that, in many cases, have been intervened on numerous occasions and, the successive treatments, have generated decisive changes, both in its structure and in its image.

Today, conservators work with the help of natural sciences and art history, investigates materiality, contributing to the understanding of techniques and evolution of artistic productions, as well as to the processes of deterioration that affect them. This complete approach allows to face in a finished way the different problems that may arise not only from the technical point of view but also facilitates the explanation of errors in the historical and iconographic interpretations generated by previous interventions.

In this context, this project proposes to investigate the conservation and restoration processes carried out on a limited corpus of paintings, using the current criteria and tools of the discipline. In this way, it is planned to evaluate possible alterations that these works could have suffered, trying to reverse possible mistakes of the past that masked or eliminated some of the original aspects of the images in a search to understand the complicated processes that guided these procedures and recover the original message of the work.

9 Planning for Future Storage of Architectural Materials, Tips from Rehousing Richard Neutra's Collection

Devin Mattlin¹

¹*UCLA Library*

In 1998 UCLA Library received an accrual to Richard Neutra's collection, and to quickly process the 1,410 individual rolls of architectural materials they were rolled as tightly as possible, covered with kraft paper, and packed into 207 boxes. Neutra was a prominent modernist architect who lived and predominately worked in Los Angeles from 1925 to his death in 1970. His buildings and influence can still be seen throughout Los Angeles, thus his work is often requested for viewing and research, but the way the materials were stored were not the best for them or the user. This poster outlines the process and workflow for rehousing Neutra's collection, in which sustainability of the collection and the environment were prioritized. The project includes rerolling the collection's rolls around archival tubes, utilizing the space of the original boxes, as well as a newly built custom rolled storage structure which doubled capacity by placing items rolled around smaller tubes inside the tubes of larger rolled items. This new storage greatly improves the physical control of the materials increasing the accessibility of the collection, and provides a template and location for other large rolled collections.

10 The Dutch Method Unfolded: A Masterclass to Revisit the Wax-Resin Lining Method and Facilitate the Future Conservation of Wax-Resin Lined Paintings

Emilie Froment¹

¹*University of Amsterdam*

In 2019, the Getty Foundation awarded the University of Amsterdam (UvA) a grant to organize a masterclass on wax-resin lining as part of its Conserving Canvas initiative. Wax-Resin lining, also known as the Dutch Method, is a treatment that aims to consolidate canvas paintings. It was invented in the Netherlands in the mid-19th century and extensively used worldwide until the 1970s. Since then, the use of the method has diminished to the extent that it is rarely used, since research showed that it was no longer compatible with modern attitudes towards conservation. The main drawback of the lining technique is its invasive

character, leading to irreversible changes in the painting's materials and physical characteristics. However, numerous museum collections around the world, still house wax-resin lined paintings that require further conservation treatment. Furthermore, a few conservation institutes and practitioners still carry out this treatment on a regular basis.

Generally, the conservation field is well aware of the criticisms of the method that led to the 1975 moratorium called by Westby Percival-Prescott. However, the abandonment of the method has resulted in mid-career conservators who have no first-hand experience of wax-resin lining and who therefore miss a comprehensive understanding of its unwanted side-effects. This lack of knowledge may hinder their ability to provide a proper conservation assessment. Furthermore, conservators throughout the world notice linings that fail in different ways but hesitate in the actions to take because of the lack of scientific knowledge currently available on the durability of wax-resin linings and the effects of the treatment to paintings' materials. The future conservation of wax-lined paintings is therefore a global concern.

The Amsterdam Wax-Resin Project (AWRP) developed the masterclass, The Dutch Method Unfolded, to help professionals in the fields of art history and conservation to understand the physical condition of wax-resin lined paintings. In doing so, the masterclass builds professional capacity that influences the future conservation and preservation of wax-resin lined paintings. To this end, the masterclass gives a chance to revisit the Dutch Method through hands-on practice on reconstructions and close examination of paintings from museums across the Netherlands. Furthermore, the masterclass offers the opportunity for professionals to share knowledge and experience on the conservation of wax-resin lined paintings. These exchanges contribute to improving professional practice and increasing the current body of knowledge on the topic of wax-resin lining by inspiring research and triggering collaborations. This contribution reports the first session of the masterclass. It also reflects on the achievements reached and shares future perspectives.

11 Creating Simulated, Graphitized Archaeological Cast Iron Samples for Testing Conservation Treatments

Erik Farrell¹

¹*The Mariners' Museum and Park*

When conserving marine-archaeological objects, it is often challenging to obtain analogous sample material for treatment testing. In particular this is true of heavily graphitized grey cast iron, wherein the physical properties of the graphite layer and the metal/graphite boundary may be of interest. In order to test treatments for iron from the wreck of USS *Monitor* (1862), a way to generate samples which are physically analogous to graphitized cast iron was necessary. So that this method could be broadly applicable, it was desired to create these test samples using widely available equipment and materials. As part of a course funded with assistance from an FAIC/Tru Vue professional development grant, several modern and historic cast iron alloys underwent metallographic comparisons to determine initial suitability for use in test tokens. Samples from one of these raw materials – ASTM A48 Class 40 Grey Cast Iron – were subjected to acidic and electrochemical methods of degradation, attempting to create samples with a distinct exterior graphite layer around a metal core. These simulated archaeological materials were analyzed and compared to archaeologically-recovered material from USS *Monitor* to determine their suitability for use in treatment testing, and the best method used to create a set of 240 graphitized cast iron test tokens for preliminary treatment tests.

12 Portable Protocols: Safe Conservation in Temporary Labs

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During the 2021 joint AIC/SPNHC meeting, a talk titled "Arsenic and Old Feathers: A Survey of Detection, Mitigation and Treatment Approaches for Pesticide-Affected Objects and Proposal of a Treatment Protocol for SUNY Buffalo State" discussed the need for written guidelines in handling and treatment of objects with residual pesticides. While the particular impetus for this project focused on arsenic-containing taxidermy, the resulting research endeavored to provide

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practical tools for collection holding institutions and cultural heritage caretakers in dealing with hazardous materials. Among the resources provided in the report was a Handling and Treatment Consideration Flowchart; this tool was intended for the use by collection staff, conservators, researchers, and others working with affected materials to help inform their actions and protect themselves and their surroundings. In the summer of 2021, the flowchart was successfully enacted during a two-week onsite treatment blitz at Yellowstone National Park. Two conservators from Harpers Ferry Center set up a temporary conservation lab to treat over 50 avian taxidermy specimens from the historically significant Fishing Bridge Museum collection. Past examination established the presence of arsenic on all the specimens. Using the workflow as a guideline, a conference room was converted into a temporary treatment space where conservators carried out skin tear repairs, feather fills, and structural stabilization on the objects. The implementation of these measures demonstrates the feasibility for treating important pieces of scientific and artistic material while enacting necessary measures for human safety.

13 Mist Consolidation: Future Treatment Potential for Deteriorated Iron-Dyed Yarns

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¹Winterthur Museum, Garden, and Library

Mist consolidation as a treatment for deteriorated nineteenth century iron-dyed silk yarns was evaluated and performed on a needlework map sampler in The Colonial Williamsburg Foundation's collection. The sampler depicts the eastern United States and was made by Ann E. Colson in 1809 when a student at the Pleasant Valley School in Dutchess County, New York. Map features are illustrated using silk and chenille yarns, paint, and ink on a silk ground. The sampler shows the effects of water events with distortions overall, migration of acidic cellulose degradation products from previous framing, aged brown tidelines, and tears and losses around the edges. The greatest concern was the fine, dark-colored, iron-dyed silk yarns used throughout to denote latitude and longitude lines, rivers, place names, and the border scale, which were now friable and brittle from light-induced degradation. The condition of the yarns meant handling, exhibition, and any treatment to the sampler would likely result in further damage and loss.

Due to the sensitivity and the fine diameter of the silk yarns, as well as how they are integrated within the sampler via embroidery, typical textile treatments such as a stitched or adhesive stabilization were not structurally or aesthetically viable. Therefore, consolidation to retain these fibers and prevent future loss was explored, specifically via mist, as the gentlest method of application. Based on publications of mist consolidation on textile and other organic materials, two cellulose ethers, two protein adhesives, and Aquazol were investigated. Testing using a nebulizer was performed on threads pulled from a shattered silk sample. After thorough visual and analytical examination of the consolidated shattered silk threads, mist consolidation on the sampler yarns proceeded using a 0.5% Methocel A4C in deionized water solution. The consolidation provided more structural integrity to these yarns overall, which allows for more ease of handling, display, and potential further treatments of this object. As these iron-dyed yarns are commonplace in collections with eighteenth and nineteenth century textile materials, continued exploration of mist consolidation may prove a successful treatment possibility when navigating these materials with inherent vice in the future.

14 Recovering the Missing Aura: A Conservation Study on the Feasibility of Fire-Damaged Manuscript Books Rebinding and the Strength of Paper Changing

Hsuan-Yu Chen¹

¹National Museum of Taiwan Literature

Paper is one of the materials that is highly flammable and difficult to be left in fire. In recent years, there have been world-shaking fire disasters, such as the fire at the National Museum of Brazil in 2018 and Notre-Dame de Paris fire in 2019, which directly impacted those cultural artifacts. In Taiwan, the average number of fire accidents is about 22,000 per year. In other words, fire would break out every 4 hours. It is challenging to know how many precious objects were burnt under those known or unknown circumstances. In June 2019, a series of

manuscripts, written by an indigenous writer, Sakinu Yalonglong, was delivered to the National Museum of Taiwan Literature (abbr., NMTL) beforehand due to a fire hazard. These were originally expected to be donated to the museum. Instead of intact items, the residual ones rescued after the fire were shown. Compared with printed books, handwritten manuscripts can be seen as a kind of "aura" that communicates writers' unique creation track and authentic emotion behind the final artworks. Therefore, collecting literary manuscripts is relatively crucial for a literary museum, NMTL. These manuscripts from ashes are bound to be conserved.

In this case, salvage at that time without controlled environment and standard procedures as museums do in general, the fire left smoke damage and local charring; used water to extinguish fire caused stains remained, and furthermore let the mold grow. Although these manuscripts were burnt, only the surrounding area was damaged. Fortunately, the central part of the paper was preserved. Approximately 60% to 70% of the contents were retained on most pages. If these manuscripts can be treated by conservators appropriately, they will obtain the chance to recover well.

Typically, dry cleaning and hydrophilic treatment are often applied to moderately reduce water stains on paper and the harmful substances deposited by smoke damage. However, the growth of mold on the damaged manuscripts led to more challenges. It is difficult to avoid mold problems appearing again after hydrophilic treatment, and it might affect the future preservation approaches. Thus, to challenge the typical conservation methods becomes a necessary evil. According to previous studies, low-dose γ -radiation is feasible to completely eliminate fungal activity. Nevertheless, it may slightly decrease the paper's folding endurance. In contrast, the hydrophilic treatment can benefit paper fibers' strength. This study is divided into two parts by using the same sketchbook paper as a test. Firstly, it assesses the changes of paper strength after the fire damage and the treatments combined with aforementioned ways, followed by the discussions of the methods to recover book binding. Fires, which threaten the safety of people and cultural artifacts all the time, can be described as a pity that recurs every day no matter in the past or the future. It warns us about the issue of the need to conserve fire-damaged objects.

15 More than a Burnt Stick: A Visual Glossary of Charcoal Products

Dominic Clay¹, Jan Burandt¹

¹The Menil Collection

Perhaps the first artwork appeared at the end of a burnt stick. A ubiquitous artist's material, charcoal is valued both for its ephemeral qualities and its ability to produce marks of great intensity. Charcoal is currently presented on the market in many forms, both natural and processed. This poster provides visual comparisons of a range of charcoal form and technique, on a variety of substrates. It illustrates the medium alone, in mixtures and with fixatives. Photomicrographs and photomicrographs taken with an extended depth of field microscope provide samples, that due to software stitching, are in focus edge to edge - at a variety of magnifications. The poster serves as a reference illustrating the degree of subtle differentiation possible with visual examination.

16 Accessibility in the F/AIC: Our Membership, Our Strengths, Our Challenges

Sally Gunhee Kim¹, Ronel Namde², Jennifer Teper³

¹National Museum of the American Indian ²J. Paul Getty Museum
³University of Illinois Libraries

In early 2021 a group of conservators in partnership with the AIC Equity & Inclusion Committee opened a survey on disabilities and accessibility in the field of conservation. The impetus behind the survey was to gather data so that we may better understand the needs of the conservation and collections care community, prospective conservation students, and users of programming and materials produced by both the AIC and the Foundation for the Advancement of Conservation (FAIC). To our knowledge, there is no data on accessibility in the field of American conservation. We hoped to collect this information for three reasons: (1) to raise awareness of issues our community is facing; (2) to provide pertinent resources; and (3) to better meet the needs of our community.

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The survey, which closed in February of 2021, had an excellent response rate (558 total respondents, of which 162 self-identified as having a disability). The majority of those who self-identified as having a disability reported invisible disabilities. See chart, below, for a summary view of disabilities reported (where respondents can choose multiple options per survey response).

Additional information on challenges conservation professionals have faced (e.g., ADA compliance of workplaces, support for accommodations, difficulties in accessibility, perceived stigmas within the profession, and challenges and successes in virtual and in-person conservation conferences, events, and materials) was also collected.

The information we have gathered will provide informed suggestions to the Equity and Inclusion Committee and the AIC in how to make the AIC more accessible and inclusive for all members of the conservation and collections care communities. The authors are currently working on a report of our findings to the AIC membership and hope to present our data in an annual meeting session in addition to simply sharing the report electronically.

17 No Longer Original: The Conservation Challenges of Raymond Loewy's Personal 1963 Studebaker Avanti in LACMA's Collection

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¹Lucas Museum of Narrative Art ²Los Angeles County Museum of Art

The field of automobile preservation and restoration poses complex challenges for cultural heritage professionals. Collections managers and conservators working with historically significant motor vehicles often have to contend with deterioration issues related to a lifetime of wear from use on the road, exposure to the elements, and poor storage conditions. In addition, vehicles often undergo changes in appearance and mechanical configuration well before they become part of a museum's collection, both in response to deterioration and as a result of the perception of automobiles as primarily utilitarian objects easily modified to reflect an owners' personal taste. These facts, combined with a collecting culture that, until recently, tended to value over-restored cars, has often led to the loss of original materials important to the story of significant automobiles. Furthermore, the paucity of conservators focused on automobile preservation and restoration can result in the involvement of automotive professionals and workshops from outside the Museum field unused to working within the confines of Museum and Conservation Best Practices.

Many of these automobile conservation issues and challenges are embodied in a 1963 Studebaker Avanti, originally owned and modified by the industrial designer Raymond Loewy, which is now in the collection of the Los Angeles County Museum of Art (LACMA). The discovery of undocumented changes to the exterior paint and interior of the car since the period of Loewy's ownership, as well as serious condition issues with these surfaces, have led to questions about the vehicle's original configuration and how to best preserve it. Any treatment must also address the historical significance of the vehicle, its purpose within LACMA's collection, and its narrative in an upcoming exhibit. An inter-departmental team representing Conservation, Curatorial and Collections Management has convened to determine how to proceed with the preservation of the car, which will include research into historic documentation of the object's appearance and mechanical configuration while it was owned by Mr. Loewy, scientific analysis of the composition of the paint layers to identify the original color of the car, and investigation into suitable restoration facilities willing to work within the confines of Conservation Ethics. This talk will explore the challenges posed by these tasks and include comments on the treatment of the vehicle.

18 Preliminary Research into Curricula in Sustainability for Cultural Heritage Conservation

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This poster illustrates the development of models for embedding sustainable practices into conservation education and producing scalable curricula for broad dissemination. We describe the first phase, NEH supported grant for the UCLA/

Getty Program in the Conservation of Cultural Heritage, presenting preliminary research in developing and field testing curricula in sustainability for cultural heritage conservation. While this phase runs from March 2021 to 2022, the subsequent phase of the initiative, if funded, will involve the full implementation of an educational curriculum.

In researching applicable models and exercises, we acknowledge a broader definition of sustainability as a holistic future-oriented mindset, which critically examines environmental, economic, cultural and social disparities that impact the profession and our communities. Drawing upon scholarship, practices, and pedagogy from a range of fields, we explore non-traditional methods of teaching and learning and consider opportunities for students to conduct interactive sustainability projects in community-based organizations and institutions. The nature of conservation has shifted and evolved over the course of its history and education must address changes to our climate and the challenges they pose.

The results of this enhanced education will include adapting to issues such as pay equity, representation, and peer advocacy. The field is moving toward prioritizing intersectional environmentalism, including equity and justice, into cultural heritage conservation practices and this research and development of educational models and materials is a crucial step towards greater integration. The next generation of conservators support this need for cultural shift, so our programs must remain relevant and be prepared to cultivate their inclination for working collaboratively and sustainably with a mindful understanding of system complexity.

Our research reveals the need for more rigorously produced publications, curricular materials and exercises where students and professionals can learn firsthand tools for embedding sustainability into their conservation decision making. The curricular materials that will be disseminated at the culmination of the initiative include teaching tools, case studies, exercises, bibliographies, and research topics to build on. Our aim is for these materials to be adapted by conservation and preservation educators worldwide in graduate programs and professional workshops and courses focusing on art conservation, built heritage, libraries, archives, archaeology, and historic preservation programs.

19 Rehousing Pothi Format Books from the Harvard-Yenching Library: Considering Materiality and Spirituality

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¹Harvard Library ²Library of Congress

Harvard-Yenching Library is the largest collection of East Asian materials outside of Asia, and has been very proactive in digitizing their holdings to make them available to the world. Harvard Yenching Library holds over 1000 volumes of Tibetan and Mongolian pothi-format texts, which primarily contain sacred text. The earliest pothi texts were written on palm leaves, and later paper based pothi retained a similar narrow and long format. The collection discussed in this paper are all paper-based textblocks. These pothi books are not bound in the Western sense, but instead consist of stacks of loose leaves, which are held together by two boards. These stacks are wrapped in cloth and fastened with a strap or buckle, often referred to as bundles.

Preservation issues include improper stacking, disassociation of the boards from the text block, damage from handling and storage, improper handling, manipulating heavy and awkward objects. Harvard Library Preservation Services is embarking on a large-scale project to conserve and rehouse these books so that they are more accessible. The rehousing protocol developed for this project addresses the material/physical needs of the objects, but is also sensitive to the spiritual and cultural needs of the books.

In the religiously observant Buddhist world, books are addressed and handled in the same way as icons and relics, however when Buddhist texts entered Western collecting institutions they were often divorced from their sacred context. Too often conservators have focused only on caring for the materiality of these books. The field of conservation is evolving to consider the preservation of intangible qualities of these objects and Harvard Library Preservation Services took this into consideration when developing their preservation plan for this collection.

In this presentation, we will address these challenges by exploring three case studies. One, a rare, luxury Mongolian Kangyur with multiple fragile wrappings. Harvard faculty, community stakeholders, and conservators from other

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specialties were consulted to better inform treatment decisions and preservation recommendations for this object.

A set of the Peking Kangyur composed of 106 wrapped volumes posed a different challenge. Due to the degrading wool straps, removal from the shelf and unwrapping exacerbated the fragile wool and left fibers and debris all over the bundles and stacks. In order to address this problem, the volumes were kept in their original wrappings, the deteriorating straps were separated from the wraps and retained in the box, and new straps were attached. A collaborative conservation treatment and rehousing of an oversized Tibetan Kangyur. This volume weighed over 100 pounds and due to its size, needed to be stored off-site. The housing included a custom textile wrapper and crate for safe storage and transport.

Each case study highlights some of the challenges and considerations associated with caring for the collection at Harvard while seeking to address both the material and intangible aspects of the collection.

20 Brain Tanned Leather for Bookbinding: History, Use, and Identification

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¹Library of Congress ²Conservation Center for Art & Historic Artifacts ³The Morgan Library & Museum

Brain tanning and other fat tanning methods are among the oldest leather preparation techniques. Although brain tanned leather is widely documented in ethnographic and archaeological collections, its use in bookbinding has been either overlooked or too broadly identified. The misidentification of brain tanned leather is often due to a lack of familiarity with its history and use in bookbindings. Materials as variable as deerskin, alum tawed leather, and vegetable tanned leather, as well as certain binding elements, like chemises, are sometimes described as having been brain tanned. Conversely, descriptions of these same elements ascribe different means of production. As a result of this confusion of terminology, brain tanned elements are under-identified in bookbinding descriptions and library catalogs. This under-identification is compounded by their rarity, and the fact that many binding elements made of brain tanned leather are fragmentary or no longer extant, such as chemises and temporary field journal wrappers, or hidden, such as sewing supports.

Through the examination of examples of confirmed or suspected brain tanned or fat tanned animal skins used in bookbinding, this study will seek to establish the historical and geographic circumstances of their use, to define physical characteristics, and to establish identification techniques. Preliminary recommendations for preservation and suggestions for further research will be provided. The authors hope that, by raising awareness of the use of this material in bookbindings, custodians of book collections will gain a better understanding of brain tanned leather

21 FORMETAL: Aluminum Mesh for Mount-Making and Supports

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Two shoulder flaps from a Qing Dynasty ceremonial uniform in the collection of the Cleveland Museum of Art needed support forms for long term storage, as the upper curved edge had begun to deform under the weight of the metal decoration. Polyethylene foams such as Ethafoam are a popular choice for creating lightweight supports, but production can be wasteful and any major mistakes may mean starting over. Instead, a material relatively unknown to American conservators was explored for this project as part of a summer internship. FORMETAL-Varius is a tensile-extended aluminum metal mesh with predetermined breaking points, which allows it to easily expand and contract along both major axes. An earlier iteration of the material, called FORMETAL-Ypsilon, has been used for select textile mounts by the Victoria & Albert Museum, London, but this version is no longer available for purchase. The current FORMETAL-Varius can be easily cut with tin snips, and it is flexible enough to be molded into three-dimensional shapes by hand. The shaped mesh has sufficient strength and structure to maintain the desired form, even after expansion and contraction of the network. The material can be re-shaped as needed and reasonably re-used, and the aluminum is stable in standard museum storage conditions. From an environmental

standpoint, this material can produce less waste during support fabrication than other mount-making materials, and any waste can be safely and efficiently recycled. One caveat is that once cut, FORMETAL edges are sharp. A component of this project involved determining which readily accessible materials could successfully cover and protect artifacts from the sharp metal. Mockups were created using various thicknesses of polyester batting and woven cotton flannel, as well as washed Tyvek, which were glued with hot-melt around the edges. Custom FORMETAL forms were then fabricated for the shoulder flaps, and the objects now have adequate structural support to be safely stored. FORMETAL-Varius is an excellent base structure for creating lightweight, sturdy, and adaptable forms, and shows significant promise as a support material for objects and textiles of all shapes and sizes.

22 Iron Stain Reduction on Painted Surfaces: Treatment of a Korean War Era Missile

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¹National Air and Space Museum

Painted metal is ubiquitous on the composite aerospace objects in the collection of the National Air and Space Museum (NASM), Smithsonian Institution. Within this corpus we have found condition and aesthetic issues caused by ferrous corrosion staining on painted surfaces. This poster presents a case study detailing the removal of disfiguring iron and organic staining from an alkyd paint film on a Korean-war-era missile. The object, made of an aluminum alloy with white alkyd paint, had been stored in a severely rusted crate in contact with acidified foam, elements that caused brown-orange staining to the painted surface.

Limited research is available on the chelation of iron stains from within painted surfaces. As such, the authors of this study relied on existing literature and procedures used for chelating iron from marble, fabrics, ceramics, and archaeological wood. To investigate the issue of contact-iron-stain removal from within an alkyd film, two experiments were carried out. The first aimed to replicate iron staining on alkyd-painted surfaces, and the second tested stain removal.

Test coupons were produced using an historic alkyd formulation painted onto coupons of 2024 aluminum alloy. To achieve an even coloration of the coupons consistent with the surface appearance of the object, various staining methods were evaluated, including delivery of iron ions in a foaming oxidizer, a developed dye, and rusted iron filings. A seven-day bath in a corrosive and ion-rich slurry of acetic acid, hydrogen peroxide, and low-quality steel wool achieved the most faithful result. Analyses before and after staining reflected the introduction of iron salts into the paint film. These coupons were then used to test three different stain-removal modalities—and combinations thereof: iron-specific chelators, such as EDTA; reduction or de-coloration agents, such as sodium hydrosulfite; and protonation using acids, such as oxalic acid.

Oxalic acid in DI water (7%), applied on both Tek-wipe blotter and in a cellulose-powder poultice, was most effective when applied to the missile's surface. Colorimetry and glossimetry of the surface before and after treatment was performed to describe changes following poulticing. Additional analysis of the poultices before and after application detected iron species removed during the treatment. Using the prepared coupons, refinements to reagent concentration, pH, and clearance procedures were made for the treatment of the object.

23 Leather Use in Treatment: A Comparison of European and U.S. Trends

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Leatherworkers face many choices regarding leather treatment and there is little guidance regarding the ways these choices and subsequent actions could affect leather's longevity. Regional trends have embraced continued leather use in various ways, with observable differences between European and United States trends.

The Leather Discussion Group, formed in 2016, wants to continue the discussion among leather users and conservators. How do conservators across disciplines, regions, and countries use leather in conservation? The primary focus of this poster discussion will be on the treatment of leather added to the object during

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treatment, rather than conservation of deteriorated leather. A related lunchtime panel discussion will also take place during the 2022 AIC annual meeting.

Leather was a stable, reliable material in common use for many generations. However, leather production, including tanning practices, animal husbandry, and available tannins, dyes, and fatliquors have all changed since the Industrial Revolution. The available materials to treat leather and underlying philosophy behind leather use have also changed. Conservation techniques are regularly reevaluated and leather use is no exception. Some historic and modern leather treatments differ significantly, and naturally aged samples indicate some treatments may affect leather's longevity more than others.

In some conservation practices, the lines between tradition and science are blurred. Approaches to leather use in conservation vary widely, with more regular leather use in Europe than in the U.S. Why is this and how does leather use fit into the future of conservation?

Tanners and research scientists in the US and Europe are willing to work with conservators to achieve ideal leather qualities. To consider how leather users may also have an impact on a skin's longevity, we must ask how conservators are affecting the leather with our choices regarding water, adhesives, dyes, dressings, and finishing techniques. Are these choices regional? Generational?

The Leather Discussion Group would like to continue investigating these activities globally and welcomes further input to the conversation. Do you have input? Please share it by filling out this survey which is available on the AIC wiki's Leather Research page.

24 COVID-19 Cleaning Programme of the Parliamentary Historic Working Collection

Loredana Mannina¹

¹UK Parliament

The World Health Organization declared the outbreak of COVID-19 to be a Public Health Emergency of International Concern and a pandemic on 11 March 2020. In the United Kingdom, the announcement was soon followed by the absolute must "Stay at home", resulting in the national lock. As many other professionals in the field, the Heritage team devoted to the safekeeping of the UK Parliamentary Collections set up an improvised home-office and started working remotely.

The Heritage Collections in the Palace of Westminster are of national and international significance with many of items specifically designed to complement the interiors of the new Palace of Westminster, a Grade 1 listed building and UNESCO World Heritage site. The collections form a fundamental part of the Palace's heritage, not just of the building's significance, but of its identity. They are the material culture of Parliament, invested with meaning through their association and continued use in the democratic process, both ceremonial and in daily use.

When lockdown was declared, unlikely other Museums and Heritage sites, Parliament never closed its doors to the core activity that enables the efficient government of the Country. The Historic Furniture and Decorative Arts (HFDA) collections contain over 10,000 objects, including chairs, tables, desks, mirrors, silver, ceramics, lighting, stationery, etc. Mainly consistent of objects designed in the gothic revival style by A.W.N. Pugin for the rebuilding of the new Palace of Westminster after the fire of 1835. There is also a large collection of items designed by Gilbert Scott for the House of Commons in 1950 after the Second World War bombings. These working collections support the work of Parliament: many of these are in daily use across the Parliamentary estate in offices, meeting rooms, dining spaces and the ceremonial areas of the palace such as the House of Commons and House of Lords chambers. Much of their value lies in their continued use for the purpose for which they were created, and as such their care and management is paramount, and often challenging.

Following the COVID19 outbreak, Parliament required an accessible and safe environment to carry out its functions. To prevent extensive damage caused by inappropriate common household disinfecting agents on historic furniture in daily use by both houses, the HFDA team promptly published a custom policy to mitigate these risks. Suitable conservation grade solutions were designed for the sanitization of the historic surfaces exposed to handling, touching and use, enabled by a preventive study of available literature on SARS-CoV-2, the approval on effectiveness from Public Health England and the delivery of custom training to the cleaning teams.

This presentation will discuss the efforts of the HFDA team to provide guidance to assist those involved with the daily cleaning and sanitizing of the Palace of Westminster's Historic fabric and furniture during the outbreak of the pandemic, the challenges the team faced in protecting the historic furniture in the Palace from the harmful effects of household disinfecting agents, and how the COVID19 sanitizing regime came into being.

25 History of Ethical Documents and Charters

Madeline Hagerman¹

¹ University of Delaware

Though the delineated consideration of conservation ethics might seem relatively new to conservation practice, conundrums about ethics have been around since humans began to preserve their historical relics and heirlooms. Every choice a conservator makes is guided by conservation ethics, whether they write them down or not. This paper will trace the Western approach to conservation ethical theory from intellectual musings by Victorian architects to codified ethics in charters and other legislation.

Throughout history, legislation has evolved to match the changing definitions of cultural property from fully tangible to intangible, beginning with William Morris and his contemporaries' "Society for the Protection of Ancient Buildings" to legislation inspired by the phenomenal destruction of the two World Wars to the Burra Charter (revised 2013). Legislation explored will include: the Athens Charter (1931); Venice Charter (1964); UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property (1970); Vermillion Accord (1989); the Native American Grave Protection and Repatriation Act (1990); and the Burra Charter (revised 2013). Conservation Codes of Ethics will include: the International Institute for Conservation (IIC) (1950); American Institute for Conservation (1967, revised 1994); United Kingdom Institute for Conservation (UKIC) (1982, revised 1996); the Australian Institute for the Conservation of Cultural Material (AICCM) (1986, revised 2002); the Canadian Association of Conservators (CAC) (1986, revised 2009); and the International Council of Museums (ICOM) Code of Ethics for Museums (2017). By tracing these historical charters, pieces of legislation, and codes of ethics, I hope to show how far we have come and where we go from here.

26 Theresienstadt Toys: Creating Custom Housing for Concentration Camp Items

Maren Rozumalsk

Standardized boxes are not always appropriate when housing items held within specialized collections and creative solutions are called for to keep objects safe, while facilitating safe access for classes and research. This poster illustrates the design and building processes of housing created for children's toys recovered from the Theresienstadt concentration camp at the end of World War Two. These historically significant items needed boxes to keep them safe during storage and transportation, but that also limit direct handling of the items when they are wanted for consultation. The boxes utilize foam padded walls, sliding base trays, and specially fitted built-in supports. The sliding trays and supports allow the items to be removed from the boxes without putting any strain on the items themselves. Proper housing was particularly important for these items to keep them accessible for future generations, as they are physical reminders of the atrocities these toys and the children who played with them witnessed.

27 Ethical Considerations for Judaica in Collections

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Traditional Jewish ritual objects carry with them intangible sanctity, a complex and beautiful love between people and their heritage. Understood by the Jewish people, there is an unspoken but universally understood hierarchy of holiness when it comes to Judaica. Objects that carry on them the written name of G-d are considered more holy than other objects. These perceived differences dictate handling guidelines and ritual practice. For example, the written surface of the Torah scroll is considered so precious, that a yad, a pointing stick often in the

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shape of a hand, is used as an extension of the user's arm while reading to avoid marring the surface. While these traditional practices and nuanced qualities may be unknown to a collection manager or conservator, they are certainly known to the people who create and use the objects. To truly conserve these objects, one must involve the knowledge of the community, who should be considered as experts in the field of their own culture. The purpose of this presentation is to introduce traditional and contemporary classifications for Jewish holy objects and suggest ways that their cultural significance may be recognized and respected in tandem with modern preservation practices.

As a conservator, I recognize that this expanding approach to Judaica has many parallels to the shifts seen in the care of indigenous objects and contemporary art objects, both of which have included the active participation of multiple stakeholders. If this communal approach can apply to indigenous cultures and to Judaica, what other collections require the same sort of cultural insight and collaboration?

The maintenance of stories, meanings, values, and traditions that collection objects embody is the core of what museum professionals should strive to achieve. A fundamental responsibility of collection managers is to ensure that objects' stories remain accessible through our care. This presentation is not determined to find a single answer, but rather aims to convey how complex this topic can be.

28 Challenges in Radiocarbon Dating Leather

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Leather is present in archaeological, historic and museum settings but is a difficult material to radiocarbon date. This difficulty is due to the different radiocarbon content of materials used to make leather, potential for contamination after the leather is made, and the lack of research into the best pretreatment methods for radiocarbon dating leather. Accelerator Mass Spectrometry (AMS) radiocarbon measurement typically has a precision of ± 15 to 30 years within 10kya, potentially allowing objects to be dated within the timespan of a human generations. The accuracy of those dates depends upon isolating the original animal proteins and removing exogenous carbon. Preliminary radiocarbon measurements from the Penn State Radiocarbon Lab (PSUAMS) on leather demonstrated statistically significant differences between dates obtained from different pretreatments of the same leather sample. This poster will investigate different pretreatments for radiocarbon dating vegetable-tanned leather samples. Should leather be pretreated like a parchment or textile sample, i.e., with acid and base washes, bleaching, and solvent washes? Or should leather be pretreated like bone samples, with collagen extracted from the leather and purified? Fourier Transform Infrared Spectroscopy (FT IR) and Gas Chromatography Mass Spectrometry (GC-MS) will then be used to provide insight into the chemical composition of carbon reservoirs contributing to age differences between different pretreatments of the same leather sample. The utility of FT IR in determining quickly whether contaminants have been removed from leather will also be discussed. Also unstudied is the effect leather conservation techniques have on the apparent radiocarbon age of leather. Conservation treatments may introduce carbon with an unknown radiocarbon content, contaminating the leather sample and making future radiocarbon dating impossible. Until research investigating these effects is carried out, a sample of unconserved leather should be preserved to allow future radiocarbon dating.

29 Consequences and Perspectives of Brazilian Conservation Associations in COVID-19 context

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This abstract intends to reflect on the possible consequences of the new forms of contact, which were accelerated by the context of the COVID19 pandemic, which leads to the reduction of borders and ends up providing a closer relationship between peers. Among this case, we will address the role of professional associations in Brazil, which have a fundamental and active role in conservation class representation and the establishment of a professional identity as a group.

In the 1980s, a few years after the first Minas Gerais's Lato Sensus postgraduate training, the Brazilian Association of Conservators (Abracor) was created, based in Rio de Janeiro State. Its activities ranged, from the representation of professionals in different organs, entities, and councils, to the organization of congresses and various that events took place between 1988 and 2009. Unfortunately, this association is experiencing serious problems; its continuity is threatened by the existence of large debts and management mistakes. In an attempt to eliminate this lack of national representation, it was possible to see an ever-growing approximation between the regional associations of conservators. Since 2017, with the I Meeting of Associations in the South Region, it was possible to see the development of unified projects which seek to mitigate gaps in specific training and social exchanges in the area.

There are currently seven associations in Brazil that represent and aim to protect the profession of Heritage Conservator they are: the Brazilian Association of Conservators and Restorers (Abracor), the Santa Catarina Association of Conservators of Cultural Heritage (ACCR), the Brazilian Association of Conservators and Restorers of Cultural Heritage (APCR), the Association of Conservators and Restorers of Cultural Heritage of Rio Grande do Sul (AcorRS), the Association of Restorers and Conservators of Cultural Heritage of Paraná (ARCOit) and the Minas Gerais Association of Conservators-Restorers (Amcor). In Brazil, one of the aspects that most legitimizes the professional of conservation is their search for the regulation of the profession in the legal sphere. In this sense, some important steps have already been taken, but major obstacles still need to be overcome in an attempt to fortify a profession, mainly because it is within the area of culture, in a country with so many economic and social problems.

Keywords: Associations, Professional identity, Conservation.

30 Project for Personal Training of Services and Historical Conservation for Historical and Heritage Buildings Online Educational Platform

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One of the most frequent problems in the collections stability or safety lies in the damage to historical objects caused by mishandling from the maintenance personnel once the restoration and enhancement of the heritage have been completed. The lack of a common language between the two parties, conservators and maintenance people, contributes to this problem (or the problem mentioned above).

The Preservation Training Assistants Program has provided the tools necessary to train General Service Personnel at Heritage Buildings to serve as assistants in this field for the past seven consecutive years. This new novel project seeks to offer simple but practical information and basic online training so that it can be taken by anyone anywhere in the world.

Attendees to the program will learn the basic notions for the preservation of the materials of the Heritage Buildings, as well as the real criteria of conservation and daily maintenance of the organizations that keep and safeguard the works of art. Thus, they will be able to recognize the general aspects of the different media and the causes of their deterioration.

They will be educated on the importance of implementing maintenance protocols and their application for conservation. Finally, students will receive training in rescue procedures in emergency preparedness and disaster recovery planning. In this online training, the attendee will be presented with the principles of conservation and advanced knowledge of constitution of objects, proper handling of objects when performing daily maintenance tasks, basic notions of chemistry to understand the products to be applied in daily conservation and performing cleaning as well as the daily maintenance protocol.

Finally, students will be trained in rescue procedures in preparation for emergencies and disaster recovery planning. The curriculum has 80 teaching hours per materials to learn about the different materials that make up the historic building and its objects, including floors, furniture, moldings, among others.

Currently the project is developed in seven different supports, each one is independent of the other. Each support has supported bibliographic material and an

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independent evaluation system. The student will be able to choose the support of their choice. They need to have approved the preventive conservation module, course they will be handled the support instruction and the rescue management module in by the end the course they will be able to do the rescue emergencies module. This programme is just the beginning, over time new supports will be added as well as professionals that specialized on those specific materials.

31 Flags and Pigments: The Conservation Treatment and Analysis of Two Flags from Costa Rica, 1921

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Two flags, located at the Costa Rican National Archive, are the first textile objects to enter their collection. Flags are important symbols that represent our national identity. These flags tell the story of borderline disputes between Costa Rica and Panamá during the first half of the 20th century. This poster describes the successful treatment and instrumental analysis of the two flags. Both were stored in a wooden box for around 100 years and had visible signs of photo-oxidation, soil stains, dry fibers, and creases. A wet-cleaning treatment was performed to reduce yellowness, stains, and neutralize acidity. Parallel to the conservation treatment, researchers wondered about the origins of the dyes as the red and blue colors in the flags did not seem affected by the passage of time. Fiber samples were analyzed using optical microscopy, infrared spectroscopy (IR), ultraviolet-visible (UV-Visible), and RAMAN spectroscopy to identify the fibers and dyestuff components, including pigments and mordants. By analyzing the fiber samples and the dyestuffs, we can determine whether a synthetic dye was used and therefore contextualize the technology available in the country during the 1920s. Our analysis of these flags with innovative methods allows us to look back on past practices and changes in textile manufacturing technology of the 1920s and the new ways that contribute to the scholarship of the Costa Rican National Archive and conservation in general.

32 Non-invasive Technical Analysis of Illuminated Manuscript Leaves from the W.D. Jordan Rare Book and Special Collections, Queen's University: A Collaborative Project

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In recent years there has been a surge of technical analyses applied to the understanding and evaluation of illuminated manuscripts. Illuminated manuscripts are complex objects made from multiple materials that include the support, binder, dyes as well as pigments. Due to the sheer volume and lack of exposure to the elements or human intervention, illuminated manuscripts make excellent sources of artists' materials and techniques.

This research was a collaboration of the second-year paper conservation students at Queen's University to examine eight manuscript leaves from the W.D. Jordan Rare Book and Special Collections at Queen's University. The manuscript leaves were donated to the Special Collections in 2016 from one donor. Although part of the same collection, these double-sided delicate leaves, created between the 13th and 16th centuries, originate from different manuscript sources including several different books of hours, a legal document and an antiphony. As these richly decorated miniatures are often consulted and may be the only surviving remains of the manuscripts they were once part of, and thus highly valuable objects, the maintenance of their original structural integrity during scientific examination is of most importance. One of the main questions that this study answers is whether the pigments, binders, and techniques used are consistent with the time frame to which they are attributed.

The leaves were analyzed using only non-invasive techniques including x-ray fluorescence (XRF), external reflectance infrared spectroscopy (ER-IR), and multi-spectral imaging with the VSC 8000. These analytical techniques complement one another well with XRF providing elemental data, ER-IR giving more

information on functional groups and organic materials, and finally multispectral imaging showcasing underdrawings as well as the overall distribution of pigments. Instrumental analysis was supplemented with historical research into materials and methods of application that were commonly used for manuscripts during the medieval period, and the art historical context of illuminated manuscript. In addition, standards were prepared using materials and techniques consistent with the Late Medieval period for comparison during analysis and bolstered the existing ER-IR library. Furthermore, a new mounting system for ER-IR was created which ensured the safety of the leaves as well as the best spectra possible. This project not only expanded the understanding of manuscript materials and techniques, but also gave the Jordan Special Collections valuable information about the objects in their collections that they can now share with future researchers. The artists' materials identified were vermilion, azurite, iron gall ink, malachite, verdigris, lead tin yellow, lead white and perhaps some organic colorants, which are all consistent with the late medieval period.

33 Feather Fills and Recoloring of Faded Parrot Taxidermy

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¹American Museum of Natural History

Within the scope of a more expansive IMLS-funded research project, conservators at the American Museum of Natural History (AMNH) investigated methods of compensation for fading and loss in feathers, and then applied them in the restoration of twenty taxidermy parrots from the museum's Ornithology collection. The birds, chosen for permanent display in the upcoming Collection Core exhibit at AMNH, were generally mounted in the early 1900s and show varying degrees of damage. Conservators consulted curators and referenced study skins – which are prepared and stored very differently from their taxidermy counterparts – from the research collection to reintegrate areas of feather loss with replacement feather fills, and to restore accurate, naturalistic color with direct recoloration of original, faded feathers.

Fill feathers were constructed using commercial feathers from a variety of donor species, cut and colored to simulate lost parrot feathers. In many cases, fill feathers could be inserted and secured mechanically in simple reversible ways while others required backings and adhesives. These methods expand upon earlier approaches previously presented by AMNH conservators in 2016.

Potential materials for direct recoloring of original feathers were tested extensively in the course of research. In treating the parrots, the authors selected Golden's QOR colors, composed of Aquazol and dry pigments. Their compatibility with non-aqueous solvents allowed the sensitive keratin of the aged parrot feathers to be colored without using water. Other criteria for selection included a wide palette of available colors, intuitive handling to control blending, coverage and translucency, and the possibility of future retreatment if needed. The approach presented has not yet been used alone to successfully cover stubbornly soiled areas or replicate the velvety texture of some body feathers, but is compatible with other materials that can provide more complete coverage and texture (ex. dry pigments and pastels).

This poster will present an overview of the decision making, procedures, and outcomes for the loss compensation methods used in the treatment of this suite of 20 parrots.

34 Accurate Non-invasive Analyses of Paintings' Primings – Is It Possible?

Possibilities and limitations of identification of composition and structure of grounds using portable XRF and FTIR –ATR methods applied to the 19th century paintings

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¹Nicolaus Copernicus University

The composition and structure of primings especially in the case of commercially available, ready made purchased primed supports after preliminary research

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proved to be an important tool broadening dating and authentication of the 19th century paintings. The materials were changing in time and producers were exchanging or broadening the range of used fillers and admixtures, following availability of the sources and lowering prices of materials. The composition of grounds can be as characteristic indicator of time of execution and sometimes of attribution as are pigments. Yet the problem was the invasiveness of the analyses and necessity of the sampling.

Novel attitude toward the use XRF and FTIR ATR enables new approach. In the case of 19th century paintings when researched by XRF from the backside and on accessible tacking margins it enabled – cross-checked with the SEM EDX analyses – recognition not only single layer but also of double layered priming without taking sample and proper recognition of composition both of top and bottom layer (the latter measured through canvas from the backside).

The possibilities of further identification was checked using optical probe enabling use of the FTIR-ATR facility for the in-situ research when access to the tacking margin was possible. Assessment of distinction for example between chalk and gypsum was conducted, as well as of barium sulphate with zinc white and lithopone, first using model samples and later on historical original samples. Possibilities of both techniques were compared to the results gained with other techniques like SEM-EDX, when sampling was possible. Case studies shown exact same priming of paintings of one painter originating from the same year, as well as main tendencies of composition evolution of primings in 19th c painting.

Number of paintings representing whole century enabled to propose chronological database of typical common presence of characteristic composition of priming evolving in time for the East European painters. It serves new strong and non-invasive tool supporting dating. To some degree it can be more objective source of information on the origin and time of creation of the work of art than pigments for the reason of lack of consciousness or knowledge on the composition of the ground of the artist, especially when executed on available commercial supports being majority in the 19th c.

35 Biodegradable Ability of Two Microbial Strains Isolated from Historical Parchment Manuscript

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¹Egyptian Museum ²Cairo University ³National Research Centre, Egypt

One fungal and one bacterial strain were isolated from historical parchment manuscript dated back to the third century AH (9TH Century AD) and hosted in Al-Azhar library, Cairo, Egypt. The strains were molecularly identified using PCR-based 18s rDNA gene assay, and their ability to grow on and deteriorate collagen fibers the main component of the parchment were examined on new parchment samples. The mechanical properties (elongation and tensile strength) of microbial treated parchment samples were examined. FTIR analysis were although conducted to stand on their hydrolytic activity on collagen fibers. SEM examination was utilized to investigate any morphological changes of the fibers. Their ability to change the color of the degraded parchment was determined using UV-photo spectrometry. According to the results, the molecular identification resulted in identifying the fungal strain as *Cladosporium xanthochromaticum* and the bacterial strain as *Streptomyces albidoflavus*. *S. albidoflavus* was more aggressive in deteriorating the parchment. The two microbial strains have the ability to hydrolyse collagen fibers and induce color and morphological changes.

36 A Preliminary Investigation into the Effects of Chelators on Accretion Removal from Historic Archaeological Glaze

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In 2014, a rare *bleu persan* ceramic urn (OBJ-16JA-00008) was excavated by the Colonial Williamsburg Foundation's (CWF) Archaeology Department on the campus of the College of William & Mary in Williamsburg, Virginia. The conservation treatment of this urn was the focus of a recent Kress Fellowship. This vessel emerged fragmented and severely delaminated with 2,500+ glaze shards

excavated along with almost 60 ceramic sherds. After an initial cleaning of the glaze shards, several exhibited thick grey-brown accretions concentrated on the interior surface preventing a flush fit between the glaze and the ceramic body. In this case, the accretion removal was vital for detached glaze fragments to be adhered to the ceramic body. Sample glaze shards were selected from the more than 2,500. Criteria for sample selection consisted of adequate accretions and small enough size for micro-analysis.

Previous applications of chelators in cultural heritage focus mainly on iron stain and surface dirt removal. Within archaeological conservation, chelators are used to remove unwanted accretions acquired during burial. Archaeological accretions usually consist of calcareous and/or siliceous deposits. The soil from where the urn was excavated had considerable amounts of calcium and elevated levels of magnesium from a large cache of oyster shells found nearby. Recent research on using chelators on archaeological glass focus on their efficacy on more highly deteriorated and older examples. The goals of this research were to amalgamate previous research findings and provide more insight into the use of chelators on archaeological glass and glaze. EDTA and ammonium citrate are chelators that are commonly used and more widely available in cultural heritage conservation to remove metallic staining or metallic salt-based materials and are the focus of this study.

Experimental samples were characterized with optical microscopy (OM) and scanning electron microscopy coupled with energy dispersive spectroscopy (SEM-EDS) before and after treatment. The glaze, accretion, and ceramic body were characterized with these methods. Experimental samples were evaluated throughout the study for optical and chemical changes. Focus was given to the chelator effect on the glaze as well as the ease of accretion removal. Ammonium citrate and disodium EDTA chelators were individually tested each at two different concentrations with three different application times. Preliminary research and results indicate that EDTA at 7% concentration with an application time of approximately 12.5 minutes was sufficient in tandem with mechanical removal of the accretion.

This research plays an important role in providing more information about the effects of chelating agents on historical archaeological glaze and glass. With additional testing, this data can potentially be applied to other glazed ceramics outside of historical archaeology.

37 Diving into the Intricacies of Brass-Based Paint on Gilded Wood: From Binder to Metal Particles

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¹Library of Congress ²Getty Conservation Institute

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 surfaces, found on a variety of artifacts such as frames, furniture, sculpture or architectural elements. Information on the project can be found at: https://www.getty.edu/conservation/our_projects/education/cleaning_wooden_gilded/.

This poster will present an aspect of this project, specifically the study of brass-based paints - often referred to as "bronze paint" - used as part of a restoration campaign. It will include a brief overview of brass-based paints encountered on wooden gilded surfaces, covering the nature of the binders as well as types of metal particles from powders to flakes.

The study will include the results of organic and inorganic analyses of paint samples collected from a group of objects selected for the project, mainly frames, as well as a selection of brass-based paints representing a variety of binding media. Binders will be characterized by Gas chromatography-mass spectrometry (GC-MS) and/or Fourier-transformed infrared spectroscopy (FTIR). Metal 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 binder and morphology of the metal particles (powder versus flakes) may affect the cleaning process when attempting to remove such a layer from a gilded surface (water or mordant gilding). Observations from cleaning tests will be shared.

38 Explore and Imagine Our Next Half Century. Out of the Ashes: The Conservation Trials on the Clandon Park State Bed

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¹National Trust

In April 2015 Clandon Park, in England, suffered a devastating fire. When the next day dawned, through one of the downstairs windows the state bed could be seen, covered in ash and debris but still standing. This early 18th century bed had been on this site for over 300 years, playing a central part in the social and political life of the Onslow family whose home had been Clandon Park since 1641. The bed is regarded as one of the most lavish in England, hung in highly decorative polychrome silk and wool embroidery externally and with a yellow and crimson silk scheme in the interior.

Although the bed had survived, it was marooned in a sea of debris for a year before the archaeological excavation reached the State Bedroom. In 2016 the room was finally made safe so that it could be retrieved. On site, conservators worked in full PPE to identify the surviving elements of the bed and clean them before being placed in storage. This work was crucial as a first stage in the process and at this point, samples were taken to identify contamination levels. Lead contamination was found to be high on the textile elements but the report did not specify from where the samples had been taken.

In 2019, discussions on the future conservation of the bed were started but it was not until 2021 that trials could be undertaken. The nine surviving valances were brought to the National Trust Textile Conservation Studio for assessment and trials. There was substantial staining, dirt and scorching masking the design of the embroidery and the opulence and lustre of the silk. With polychrome embroidery on a linen ground, yellow silk satin and elaborate and lavish crimson silk tasselled passementerie, wet cleaning would only be possible if the dyes were fast and the various elements could be separated and cleaned appropriately. The stiffened linen backing was found to be blackened, cockled and very brittle, providing one of the first challenges of the project. Although the passementerie had largely survived, it was very badly damaged with staining in some places and lost in others. Building on the experience of conserving James II's state bed and the Spangled bed, the team began to develop the methodology for the trials. Over a 3-week period, the valances were documented and photographed, numerous XRF readings were taken to gauge the level of contaminants and cleaning options developed by a team of conservators.

This poster will outline the contamination levels found, the implications for the health and safety of undertaking the trials, the development of the trials for surface, solvent and wet cleaning these textiles and finally the outcome of the trials. This information has helped to develop options for the representation of the bed and the stories it might tell, imagining a new future for the bed whilst reflecting its important past for the next 50 years or more.

39 Imag(in)ing the Future: The AIC Imaging Working Group

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Recognizing that imaging is important to the ethical and evolving practices of conservation, the AIC Imaging Working Group was established in 2020. The Group is working to identify and address the challenges conservators encounter related to imaging applications and objectives, rapidly shifting technologies and evolving best practice, and it hopes that by developing a nimble online platform and accessible resources, the community can feel empowered to actively seek solutions that will benefit the field.

In its inaugural year, the AIC Imaging Working Group created opportunities for cross-disciplinary exchange and discussions, including online lectures and discussions centered around emerging technologies in the field. One major effort was the compilation of a Wiki on the AIC platform which offers a resource for the community and will serve as an accessible knowledge repository and platform for resource distribution.

Looking forward, the group hopes to further develop the Wiki platform and encourage the community to share and discuss imaging resources, projects, and solutions. The Group will also facilitate community research projects such as developing and promoting imaging standards and best practices and testing new and developing technologies. The AIC Imaging Working Group hopes to establish a sustainable, community-supported resource that can support inter- and intra-disciplinary communications centered around the ever-broadening scope of imaging technologies in the field of cultural heritage documentation.

40 Elsa Schiaparelli's Pressing Buttons: The Scientific Assessment and Material Study of Synthetic Fasteners

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¹Metropolitan Museum of Art

Plastic artifacts are found in contemporary art and design collections, however fashion collections often house the largest variety of polymers produced in various forms, such as laminates, foams, coatings, paints, fibers, and molded objects. In the late 19th and early 20th centuries, cellulose nitrate was a common material used to imitate precious materials like horn, tortoiseshell, and ivory. The mid-20th century experienced an industrial boom in plastic development and manufacturing processes. Thermoplastics like acrylic and polyester could be produced at high volume with low-cost, making these materials ideal for mass produced garments. Polyurethane and plasticized PVC appear in costume collections as films, coatings, and imitation leathers.

The Costume Institute recently completed one of the largest plastic surveys in its history. However, this survey is part of a larger on-going effort by the department to prioritize research on plastic materials and to develop long-term storage and housing solutions. During our survey, we analyzed objects using scientific analysis including FTIR-IT and ATR attachments, GC-MS, and EGA. Non-invasive FTIR was complemented with selective sampling and analysis by benchtop FTIR, attenuated total reflection-FTIR (ATR-FTIR) and separation techniques of gas chromatography-mass spectrometry (GC-MS). The various techniques used during the survey allowed us to identify the chemical composition of each plastic and to study the aging behaviors and degradation patterns to make informed decisions on long-term storage.

Once plastic degradation begins, there is little to be done to correct it, so it's important that fashion collections focus on correctly identifying plastics to determine the best preventative measures to take. During our plastic survey, we focused on a smaller group of objects designed by Elsa Schiaparelli, an Italian fashion designer who collaborated with surrealist artists such as Salvador Dali, Man Ray, and Jean Cocteau. Schiaparelli used plastics, such as cellulose acetate and cellulose nitrate, throughout her collections, especially in fasteners such as buttons, belts, zippers, and surface embellishments. Though seemingly small components of some clothing, the fasteners are essential to the visual and structural integrity of those garments. These fasteners and belts are often composite objects made of metal, wood, leather, coatings, plastics, and fibers, and are at risk of becoming unstable or are currently degrading. This can cause damage and staining to garments, as the objects off-gas and secrete chemicals onto the fabric or simply self-destruct. Additionally, as many of the fasteners are bespoke items, they are art objects themselves, and it is important that they be documented and preserved as such.

41 A Technical Study and Treatment of a Tibetan Ritual Crown

Leila Saboun, Ainslie Harrison¹

¹Virginia Museum of Fine Arts

In 2018, a group of objects were bequeathed to the Virginia Museum of Fine Arts by the estate of Dr. Mary Shepherd Slusser, one of the foremost Western scholars of Himalayan art. These objects were purchased during her time in Nepal in the 1960s and on subsequent trips to the region. Among the group of 54 objects are the fragments of a red, gold, and black Tibetan ritual crown (VMFA #2018.112). This type of headdress is composed of five flat panels tied together at their corners and joined by a long ribbon along the panel bases. The panels can be made of leather, wood, paper board, or fabric, and are frequently decorated with paint, lacquer, and gilding. The ribbon and ties holding the panels together on

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the VMFA's crown had been broken and the object mounted flat with hot melt adhesive onto a paper board in a frame for display.

The crown came to the VMFA's Sculpture and Decorative Arts Conservation lab in 2021 for examination and treatment prior to display. During initial examination under magnification, several observations about the materials and questions about treatment prompted further technical investigation. While the acquisition records indicated that the crown was made of leather, examination revealed the panels to be made instead of laminated fabric. The gilt surfaces on the panels were covered with a dark orange reticulated coating which is disfiguring and it was hoped that it could be removed. Additionally, examination under high magnification revealed bright blues, greens, yellows and purples peeking out from under the black paint borders around the seated figures, indicating the possibility of a vibrant original color scheme. While this was unexpected, comparison with similar flat-paneled crowns in other museum collections turned up other examples with bright polychrome decoration. A literature review found that detailed technical and material information was lacking for this category of object, however, some insights could be gleaned from the many publications on Tibetan Thangka painting.

Analysis was therefore carried out to identify the materials used in each of the layers of the headdress panels to aid in treatment decisions as well as interpretation for museum visitors. Results from Fourier transform infrared spectroscopy (FTIR) indicated that the reticulated coating was consistent with coatings traditionally used on Tibetan ritual objects and therefore not appropriate to remove. Scanning X-Ray Fluorescence spectroscopy was used to map the pigments, including the bright colors that were obscured due to subsequent alterations. Microscopy and elemental analysis provided the evidence needed to create a digital reconstruction of the original color scheme, which can be used to provide greater insight into the current appearance of the crown in the gallery and as an online supplemental resource. Careful removal of the panels from the backing board not only revealed additional embellishment on the reverse, but allowed for reconfiguration of the crown in a format more consistent with its original use.

42 Building a Time-Based Media Conservation Workstation from (Almost) Scratch

Madeline Smith¹

¹*Yale University Art Gallery*

The Yale University Art Gallery is the oldest university art museum in America. It has an art collection numbering nearly 300,000 objects spanning all regions of the globe and time periods. At present, there are approximately 70 time-based media artworks in the collection, ranging from early film artworks to internet-based pieces, and each year sees increasingly more complex artworks enter the collection. Pulling from the detailed and comprehensive resources shared and published by larger institutions, some with established time-based media conservation labs, the Yale University Art Gallery has established a TBM conservation workstation that is customized to the current and potential future needs of the Gallery's TBM collection. The workstation also leverages the resources available to the Gallery through Yale University's unique position as an educational and research institution and the accessibility and availability to collaborate with other departments throughout the University.

As the Gallery's inaugural Postgraduate Fellow in time-based media conservation, I was tasked with establishing and building the Gallery's time-based media conservation workstation, which entailed thinking both backward and forward in time, as I considered the technologies and equipment needed to conserve the artworks already present in the Gallery's collection and those works yet to be acquired (or created). Building the workstation involved assessing the current needs of the collection, determining potential future needs, researching, cost-comparing, and sourcing equipment, much of which was obsolete or available only through re-sellers, determining what equipment would be prudent to stock-pile, and installing each element of the workstation. As a final step in establishing the workstation, it was essential to ensure that the workstation could be used by personnel with varying degrees of expertise and experience. Step-by-step instructions for the use, care, and maintenance of each piece of equipment were created so that future staff can continue to use the workstation and understand the importance of each element of the workstation and why each piece was chosen. It is the hope that these instructions and rationales will also aid future decisions about updates and additions to the workstation.

This presentation outlines the process of establishing and building the Gallery's first time-based media conservation workstation. The presentation provides a detailed breakdown and explanation of the four sections of the workstation: a general conservation needs and supplies station; a film-based artworks station; a tape-based artworks station; and a digital artworks station. The presentation and the process of building a TBM workstation from the ground-up also serves as a template for other institutions looking to establish a TBM conservation workstation centered around their specific collection and needs.

43 Piecing It Together: Analysis and Treatment of a Painted Silk Flag

Fiona Beckett¹, Katya Zinsli¹

¹*SUNY Buffalo State*

A painted Civil War battle flag of the 37th New York Volunteer Infantry Regiment from the Cattaraugus County Museum presented challenges and advantages of bridging both paintings and textiles conservation, providing an opportunity to study past techniques and experiment with new methods. The 5 by 6 foot, two-sided flag was brought to the Patricia H. and Richard E. Garman Art Conservation Department at SUNY Buffalo State College in a severely deteriorated condition with the painted elements fragmented and unrecognizable as an emblematic New York battle flag. The flag was documented with multi-modal imaging (MMI) and cross-sections were mounted. Analytical methods included x-ray fluorescence spectroscopy (XRF), scanning electron microscopy (SEM), Fourier-transform infrared (FTIR) spectroscopy, Raman spectroscopy and pyrolysis gas chromatography mass spectrometry (py-GC-MS). The analysis provided a better understanding of the materials and degradation products present in the painted Civil War flag, and informed the subsequent treatment.

Humidification was a critical component of the treatment as the neighboring painted elements and the unpainted blue silk exhibited drastic differences in their mechanical properties, requiring careful consideration of treatment approaches. Several humidification approaches were tested to incorporate the interface between the brittle painted components and the unpainted silk. Ultimately a humidification system sympathetic to the requirement of varying moisture exposure was developed to unfurl and detangle the painted areas of the flag, while minimizing tidelines in the unpainted silk. Additional treatments included spot and solubility testing, surface cleaning, stain reduction, efflorescence reduction, flattening and two methods of consolidation. The conservation treatment of the flag was successful and though the flag initially arrived in a box, the treatment allows the flag to be seen in its much larger, flattened state, with the central emblem depicting the New York State Shield of Arms once again visible.

44 Hard Hats Required - Rehousing a Basketry Collection During the Yale Peabody Museum's Renovation

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¹*Yale Peabody Museum of Natural History*

The Yale Peabody Museum's ongoing renovation project required the complete evacuation of all items from the museum during 2018-2021, which presented a unique opportunity to assess the condition of the entire collection. This work considers a case study of 813 basketry artifacts from the Anthropology collections, housed in an overflow storage area with limited accessibility. This collection had not undergone an audit in decades and was slated for upgraded rehousing at Yale's West Campus.

The basket collection consisted primarily of material collected by Yale scholars from Southeast Asia and Oceania, including folded and rolled mats, containers, and hats. The overflow room was a metal-floored mezzanine accessible only via a narrow metal stairway in the security closet, with a total headroom of less than 6 feet. Concrete beams crossed the ceiling with a headroom of about 5 feet, marked with red fluorescent tape. The room had no temperature or relative humidity controls. As the mezzanine directly abutted the Great Hall, many items had been hastily moved weeks prior during emergency work for the deinstallation of an oversized fossil slab containing a skeleton of *Xiphactinus* bolted to the opposite side of the East wall, and some database locations were thus inaccurate.

A general assessment was conducted by the head conservator prior to removal,

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who determined items were treated with pesticides and required handling with gloves and mask. A hard hat was provided to prevent head injury due to the low height of the ceiling. A database list with historical locations was created. The room was evacuated tier by tier following geographic provenance, and objects audited and tagged with barcodes. All items were surface HEPA vacuumed before removal. Working in a pair, technicians moved items down the narrow stairs, through the security closet, and towards a temporary assessment area in a former exhibit gallery. Staff had to safely maneuver items between construction workers and other deinstallation sites. As physical evacuation was the topmost priority, on-the-fly artifact triage was required to evaluate items stable enough to move at present but requiring treatment in the future. Items were stabilized with ethafoam and volara wedge supports, peanut pillows, and “snakes” of HDPE-wrapped cotton batting. Blue board trays were made for items requiring additional support. Items were placed on metro carts wrapped with shrink-wrap, and shipped via truck between Yale campuses, undergoing a freezing cycle upon arrival.

During assessment, 82 items more than expected were discovered, all previously without a database location. These included smaller items found within larger ones, likely due to space constraints. Others were folded, stacked, or rolled together in bundles. Many presented in a friable condition due to the lack of environmental controls. Evacuation triage allowed collection assistants to mark items for priority consideration, such as 50 folded sleeping mats from the Solomon Islands, candidates for a batch conservation treatment to allow for rolled storage. Moving the collection with an eye towards future conservation needs allowed for proper space planning and reflects museum-wide initiatives for increasing collection accessibility and modernizing storage systems.

45 The End of the Beginning - When the Risk Assessment Is Completed

Gretchen Anderson¹, Marion Burgwin¹, Suzanne B. McLaren¹

¹Carnegie Museum of Natural History

In 2017 Carnegie Museum of Natural History (CM) received funding from the Institute for Museum and Library Services (IMLS) to conduct a risk assessment for its collections. CM had already conducted two general conservation surveys (1989 and 2010) and an environmental survey (2011), all funded by IMLS. The next logical step was to do a risk assessment.

From the beginning, we wanted to work with R. R. Waller, Protect Heritage Inc., an experienced subject matter expert. Additionally, Waller has a longstanding relationship with CM, having been part of the core team during the 1989 and 2010 surveys. In the grant application, we proposed the use of Waller's Cultural Property Risk Analysis Model (CPRAM) to assess our risks.

The overall goal of the project was to identify risks to the collections in a quantifiable manner by completing a workbook that documents hazards in each collection unit at CM. The risk assessment workbook links data to the CPRAM. With final results compiled, our plan is to prioritize those identified risks using these data, and subsequently develop reasonable strategies to reduce them. This project will inform the overall strategic plan currently being developed for CM. Having included a few non-collection staff, the risk assessment serves to promote better understanding and communication of collection concerns across the museum and our parent organization.

We recognized from the start, that staff time was limited and therefore included funding for a full-time collections associate dedicated to the project. Having this “gatekeeper” to manage the data keeps the project focused, responses consistent, and maximizes scheduling. It would have been a challenge to complete the project without this person.

Completion of the project was complicated by the pandemic, as well as several other factors. From the beginning we had complete administrative support, however, the leadership changed in mid project. We also experienced a loss of staff through attrition. Retirement was factored into our schedule when possible.

The project has taken just over three and a half years to complete. Aspects included an in-person workshop to introduce key members of the staff to the concepts of risk assessment and CPRAM methodology; intensive data collection from 30 collection units, covering 22 million specimens/objects; completion of data analyses for individual collection units; review of individual reports for each unit by the Project Manager, Gatekeeper, and appropriate collection staff; documentation of staff with responsible for future oversight of each category of

risk; and compilation of all data into a comprehensive report. Staff changes since the beginning of the project include administration, exhibition and collections personnel. With these changes it is a happy coincidence that the final report provides both information on identified risks but also deep documentation of each collection and units within those collections that will be invaluable to new staff.

This poster reviews the project and incorporates the results of the final report. It takes a critical look at our successes, challenges, and how the culmination of the project will become part of the next strategic plan.

46 Before and After Measurements of the pH of a Deacidification Treatment on Paper

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¹Johns Hopkins University ²The Mariners' Museum and Park

The pH of the paper from 13 books was measured prior to deacidification and immediately following, 2 years, and 6 years post deacidification. The surface pH was measured at three to five locations on a single page of each book, with three pages in each book measured. The results of the pH measurements are compared. In addition, X-ray fluorescence spectroscopy was used to identify some of the chemicals on the paper. The results show an increase in pH for some of the books studied, with large statistical variation between the measurements on each single page, indicating a lack of uniformity.

47 Beva Gel as a Fill Material for Wax Artwork

Megan Randall

“Beva Gel is a long-time product in the Beva adhesive system. It combines the trademark ‘EVA’ ethylene vinyl acetate with acrylic resins in an aqueous dispersion. It is primarily used to cold lining paintings, and the majority of conservation literature details this type of treatment. Beva Gel is compatible with both Beva 371 and Beva D8 and can be softened or reversed with water, toluene, xylene, isopropyl alcohol, or ethanol. Applying any of these solvents to the surface of a dried Beva Gel film will reactivate its adhesive properties.

Prior to its inclusion in MoMA's 2019 expansion reopening, the wax and plaster artwork *Woman With a Veil* by Medardo Rosso (1895) displayed several areas of wax loss along the edges and highpoints of the artwork that required fills. Beva Gel was chosen to complete the treatment because it had an affinity for and an appearance similar to the surrounding wax, while being chemically dissimilar enough to minimize interaction between the fills and artwork. As a thixotropic material, Beva Gel could perform as a fill over areas with significant contours without sagging or changing shape while it dried. The dried film could be resurfaced or reshaped with water to match the texture and shape of the surrounding artwork, and could also be toned with a variety of inpainting media.

This poster will review Beva Gel's listed properties, its possible use as a fill material, and its advantages when working with wax or other materials when reversibility, texturing, or toning is a priority.”

48 Surface cleaning of photographs using humidified eraser crumbs

Tomasz Koziol¹, Marta Nalaskowska¹

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This paper focuses on a new method of surface cleaning of photographs with the use of eraser crumbs humidified with water vapor in a chamber.

Surface cleaning is an important part of conservation treatment of the photographs. Photographic prints handed over for conservation often have extensive dirt and grime from handling, various types of stains, sometimes even mud, plaster - various organic and inorganic substances.

In conservation practice, surface cleaning of various delicate historical objects, including photographs, is performed using block erasers or eraser crumbs. The latter enable gentler surface cleaning. Grated erasers are commonly used in conservation in a dry form. An interesting alternative is the possibility of using them

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also after humidification. There is very little information on the use of humidified erasers available in the literature.

The paper presents the study which was conducted in order to test the efficiency of surface cleaning of photographs with humidified eraser crumbs. Silver-gelatin prints (DOP) on paper supports with various surfaces were selected for the research. Photographs were both artificially and naturally soiled with various substances. The cleaning efficiency was tested by comparing two methods: traditional – with the use of dry eraser crumbs - and experimental – with the use of humidified eraser crumbs. The efficiency of surface cleaning was evaluated measuring the color difference (in CIE L*a*b* units), conducting observation of the surface under the microscope (bright field and darkfield illumination), ultraviolet fluorescence examination and using reflectance transformation imaging (RTI). An important part of the research was testing the influence of the eraser on the gelatin coating. Moreover, attempts were made to observe the presence of the residual eraser crumbs after surface cleaning and resulting scratches on the surface of photographs. As the part of the study, it was examined how quickly humidified eraser crumbs lose the moisture after being removed from the humidification chamber.

Conducted test led to few interesting conclusions. The obtained results indicate greater effectiveness of the erasers that were exposed to a moisture (subjected to the humidification process). Also, during the research, the occurrence of some side effects on the gelatin layer caused by both dry and humidified erasers were observed.

49 COVID-era Collection Concerns: Examining the Impact of Sanitizer Gels and Wipes on Library and Archival Materials

Cindy Connelly Ryan¹, Jamie Shetzline¹, Chris Bolser¹, Hadley Johnson¹, Kelli Stoneburner¹, Eric Monroe¹, Amanda Satorius¹, Fenella France¹

¹Library of Congress Preservation Research and Testing Division

Since the spring of 2020, the use of sanitizing products has greatly expanded in businesses, schools, and cultural heritage institutions alike. Sanitizing sprays, wipes, and hand cleaning solutions are routinely used in expanded cleaning regimens, dispensed for visitor use, and likely lurking in many of our pockets, briefcases, desks and cars. As our institution planned its re-opening to researchers, questions arose about potential transfer of sanitizer residues to collection items during normal handling and use, and what long-term impact they might cause.

Typical commercial and CDC-recommended sanitizers' impacts were examined on eight materials reflecting a cross-section of library and archive general and special collections, including book cloth, parchment, leather, and five types of paper. Both 'worst case' direct applications and more realistic finger transfers after varied drying times were assessed via complementary analyses: ultraviolet imaging, reflectance colorimetry, multi-spectral imaging (MSI), and direct thermal desorption gas chromatography mass spectrometry (DTD-GCMS).

Alterations of the substrate were detected on initial application in some cases, and marker compounds of sanitizer gel were detected on paper for all gel application scenarios. Additional impacts after aging include discoloring of residues, increases in fluorescence, and the development of tidelines.

Recent Publications from Managing Collection Environments Initiative

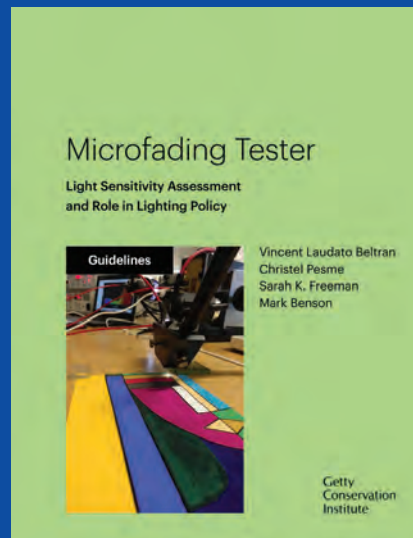
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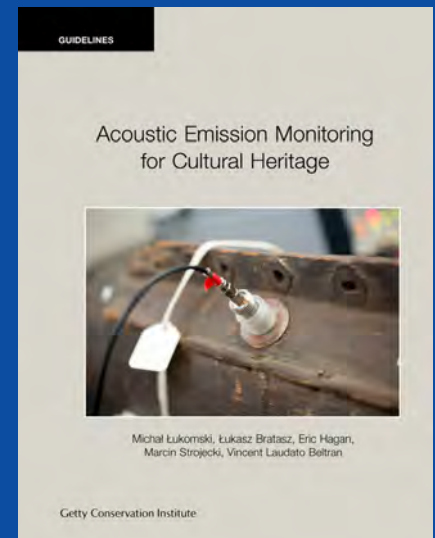
Tools for the Analysis of Collection Environments: Lessons Learned and Future Development, 2022

Explores the use
and development of
environmental data
analysis tools from the
perspectives of collection
care professionals,
educators, engineers,
and computer scientists



Microfading Tester: Light Sensitivity and Role in Lighting Policy, 2021

Addresses use of the
microfading tester (MFT)
in the cultural heritage
field, with chapters on
color science, MFT
fundamentals and practice,
and lighting policy



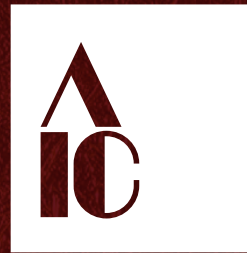
Acoustic Emission Monitoring for Cultural Heritage, 2020

Provides technical guidelines
for conservation scientists
and conservators seeking
to deploy acoustic emission
monitoring as a means of
tracing physical change in
cultural heritage objects



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Also presenting at AIC Annual Meeting
“Acoustic Emission and Collection Monitoring at Distance:
Reimagining Connections between Scientists and Conservators”
Senior Scientist, Michał Łukomski, Presenter
Collections Care Network, specialty session
Tuesday, May 17, 2:00 to 2:30




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