
Annual Meeting Abstracts

The 2019 WAAC Annual Meeting was held November 6 - 8, at The Getty Center, Los Angeles

The papers from the meeting are listed below along with summaries prepared by the speakers.

Keynote Presentation

The Wise Museum Leader

Melody Kanschat

Empowering arts professionals for over 40 years, the Getty Leadership Institute at Claremont Graduate University boasts over 1800 alumni from all over the world. Executive Director, Melody Kanschat, will share information about recent trends in the museum sector, developing yourself as a leader, and effectively leading change in your own practice and the institutions you serve. Melody brings her experience as the former President of the Los Angeles County Museum of Art and her 30+ years as a sailor together as example of ways you can enrich yourself, your field, and your institution through practice.

The Making of a Museum: Modern Materials Tell the Story of Hollywood History

Sophie du Bois Hunter

The Academy Museum of Motion Pictures, opening in Los Angeles next year, celebrates the artistry and craftsmanship of filmmaking and its place in Los Angeles history. It is the first film museum of its kind in the city, exhibiting a wide panorama of technological and historical items related to the art and science of film. One could argue that the artistry and innovation involved in film making have been equally as important to moving the cultural needle as many of the most celebrated fine artists of past centuries.

The process of filmmaking, in fact, involves the work of skilled craftsmen and artists who draw on the traditions of fine

art, but then realize their achievements in a mass culture realm, often working with contemporary materials that are as transient as the films in which they're exhibited.

Thus, as a part of gearing up to open, the museum has been working with conservators and film industry specialists across the board to learn how best to preserve these unique, often fragile, collections composed of modern materials, in pursuit of celebrating the wide sweep of film history.

The goal of this presentation is to introduce the Academy Museum to the WAAC conservation community and to discuss its unique collections in the context of conservation and preservation. Some of the most challenging treatments will be discussed, including the conservation of items made of polyurethane foam, plasticine modelling clay, pot metals, and polystyrene, as well as restoration projects that have been particularly unique, involving the collaboration of conservators across the state and film industry special effects artists, to develop the most appropriate, sometimes unorthodox, treatment plans.

As much of the art world is moving away from traditional materials and towards installation and interactive-based forms, it is the Academy Museum's hope that they will be able to contribute to the conversation about evolving museum practices and cutting-edge conservation topics regarding the treatment and preservation of modern materials.

Treatment of the "Mystery" Mural at the Los Angeles Coliseum

Suzanne Morris and Aneta Zebala

The faded and water damaged mural inside the central arch of the Los Angeles Memorial Coliseum had been forgotten and was a mystery until Dean Gordon, a high school student, uncovered its history in 2017.

In 2019, Zebala & Partners were hired to treat the mural as part of USC's renovation of the Coliseum. The mural's location, 45 feet from the ground in a virtual wind tunnel and surrounded

by construction, was not an ideal environment for conservation. The mural, painted in oil with a possible addition of another medium, and gold leaf was in poor condition overall. Faulty plumbing caused water infiltration and extensive structural and surface damage to the bottom third of the mural.

The following conditions were observed during the initial examination: cement loss, spalling, and delamination, cracks, corroded rebar, rust staining of painted surface, salt efflorescence, the detachment & disfigurement of paint and gold leaf. The paint layer was powdery on contact due to the binding medium failure. Treatment included cleaning, cement and rebar repair, recreation of missing design elements, re-gilding large areas, and repainting with Beek mineral paints. This paper discusses the lost and found history of the mural in a National and Californian Historic Landmark, the methods and materials used in its treatment, and the challenges of working on site.

Preservation of Comic Arts - Report from Comic Con

Christina Bean, Abigail Duckor, Sophie du Bois Hunter, and Anna Lagana

The comic world comes to life with illustrated comic books, action figures, memorabilia, movie props, and costumes. These physical objects are powerful storytelling tools, and they allow a collector to engage with their passion. They are also an extremely lucrative business as comic books alone generated \$1.095 billion dollars in sales in 2018.

Classic comics and memorabilia are also sold at prices that rival the art world. Ensuring the preservation of these objects from destruction has also become big business; but there is a surprising disconnect from the conservation and preservation world that traditionally inhabits arts spaces.

A panel presentation by 4 conservators at the 50 year anniversary of the San Diego Comic Con attempted to create a bridge between these two worlds. Our goals were to educate on what conservation is, what is happening scientifically to the objects, and how to engage with

preservation suppliers to get good quality storage products. The information was welcomed and well received across the board – though there was some confusion as to the finer points of long term storage. We also learned a lot about the decision making of collectors and creators as well. We will discuss all that we have learned as well as our hopes for future collaboration projects across these two realms.

A Collaborative Celebration of Community History

Mostyn Gale

The “discovery” of a historic clock in the Santa Barbara (California) county courthouse led to a remarkable collaboration amongst diverse professionals to create a new space for community celebration all centered on a historic, dynamic object in desperate need of conservation.

A horological conservator meets with an educator in 2010 to “show off” his love for a Seth Thomas tower clock that had been keeping time for the city since it was installed in 1929. This “chance” meeting sparked a collaboration with the county architect (responsible for preservation of all county historic buildings), a horological museum professional, a self-educated inventor, a local philanthropist, an artist, and other craftspeople to create an attractive space for the public to learn, be inspired, and appreciate our history.

The 1929 tower clock (which was limping along) was repaired and restored to its full capacity, ringing bells that had never been rung. The walls were surrounded by a 70 ft. mural depicting the history of time and timekeeping, and the ceiling was decorated with five miles of fiber-optic “heavens.” A plywood wall to the stairwell previously blocked the view of the clock. The plywood was replaced with glass, providing a two storied view of the restored clock and bells.

A Southern California gem, this project was winner of the National Association of Watch and Clock Collectors' craft contest for Best Public Clock Restoration in 2012. It also won the Santa

Barbara Beautiful Award for Historic Revitalization in 2013 and was awarded the California Governor's award for Historic Preservation in 2015.

Conservation of Mary Corse White Light Paintings

Linnaea E. Saunders

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 longtime 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 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).

Mounting Barkcloth with Rare Earth Magnets: The Compression and Fiber Resiliency Answer

Gwen Spicer

The use of magnets to mount barkcloth is common, yet details of the specific techniques used have not been adequately documented. An investigation of

magnetic systems globally was made and found that while all current systems use ‘point fasteners’ on the surface of the cloth, this is where the similarities end. The unresolved question for mounting barkcloth is the potential for compression. Compression is a significant issue for art works on paper, especially when magnets are located on the face. How are barkcloth and paper similar or different?

While researching various materials frequently placed together and used within a magnetic mounting system, otherwise known as ‘the gap,’ some interesting ancillary results were found. Materials are typically selected for their archival value, which includes their long-term stability. Over time, a set of preferred materials became well established; these encompass both natural and synthetic materials, woven and non-woven alike. The phrase ‘like with like’ is often used when materials are selected. This long-held philosophy should be reexamined. Compression relates to an object's ability to regain shape once a force is applied, one aspect of its resiliency. It appears that barkcloth is less likely to experience compression than does paper, although both media are cellulosic.

Cellulose is rated a low resilience fiber, when compared to proteins and polyester. These materials most likely have different compression potentials due to the different ways in which paper and barkcloth are prepared. This and other surface phenomena will be discussed. The investigation will briefly summarize why the ‘point fastener’ system appears to be favored over ‘large area pressure.’

Characterization of Rust Stains on Beaded Hide Garments

Beth Knight, Edward P. Vicenzi, and Thomas Lam

Cut steel beads are sometimes used as design accents on beaded brain tanned hide garments from Native American Plains tribes dating to the late 19th to early 20th centuries. The sinew thread used to secure these beads is generally robust, but sinew stained by rusting beads is often weakened and breaks, resulting in bead loss.

Annual Meeting Abstracts, continued

Rust is a combination of iron oxides that can vary in composition and removal mechanisms depending on its formation. There has been little research into characterizing rust stains on historic textiles and costumes, especially leather and hide where iron stains complex with the proteins. Mellon Fellowship research undertaken at the National Museum of the American Indian aimed to characterize rust staining on beaded hide garments and explore stain reduction treatment methods for sinew and brain tanned hide.

Beads, stained hide, and stained sinew were analyzed by Ed Vicenzi and Thomas Lam of the Museum Conservation Institute using scanning electron microscopy and energy dispersive x-ray spectrometry (SEM-EDS) to characterize the iron oxides. Goethite, akaganeite, and ferric chloride were identified. The iron (III) ions of these corrosion products are pernicious and insoluble. Hydroxybenzyl ethylenediamine (HBED) is an effective iron (III) chelator used in the medical field, but its expense has limited its broad use in conservation.

Other iron (III) chelators derived from medical applications may be useful in conservation, especially small lipophilic chelators that can easily penetrate proteinaceous materials. Pyridoxal isonicotinoyl hydrazone (PIH) is a medically effective iron (III) chelator that can be synthesized for less cost than HBED. The chelating capabilities of PIH and HBED are compared for treating rust stained sinew and hide with the ultimate goal of aiding in the prevention of losses caused by rust stains.

Conserving Weathering Steel Sculpture

Rowan Geiger, Sarah Johnson, and Christine Haynes

Weathering steel became a popular material for outdoor sculptures in part due to its protective layer of compact corrosion. Instead of preventing corrosion, weathering steel corrodes naturally and immediately, forming a compact rust layer that is relatively protective. However, environmental factors such as pooling water, acidic

bird droppings, and biogrowth can cause rapid-forming localized corrosion that jeopardizes this compact corrosion layer. Additionally, graffiti, scratches, and burnish marks can easily mar the surface.

Current methods of localized conservation treatments lead to irregularities in the surface, rarely producing desirable results for minimalist sculptures. This presentation will explore procedures for examination and conservation of outdoor weathering steel sculptures during the time of manufacture, during installation planning and implementation, and during its continued preservation maintenance. Themes will include how to collaborate with artists, manufacturers, installation crews, and clients in addition to providing tangible treatment options.

XRF Training for Conservators: Reconsidering the Learning Process

Lynn Lee, Karen Trentelman, Aniko Bezur, and Maggi Loubser

X-ray fluorescence (XRF) spectroscopy, as a non-invasive, in situ technique, is frequently used as the first, if not the only, analytical tool applied in the study of materials comprising works of art. XRF analysis and interpretation are not always straightforward for complex objects, however, in many institutions the responsibility for operating the instrument and interpreting the results frequently falls to non-specialists.

Teaching XRF to non-specialists, whose background in science may vary, requires an approach that incorporates hands-on application, highlighting the challenges specific to cultural heritage objects. In addition, for those who might not use XRF regularly, periodic refresher training may be needed. The Getty Conservation Institute, in collaboration with the Yale Institute for the Preservation of Cultural Heritage, have created a unique teaching approach designed specifically for conservators utilizing XRF for the study of works of art.

The students are taught using an engaged, project-based methodology. The use of mock-ups designed to simulate real world

challenges, lectures on fundamentals and how they are applied to specific examples observed in cultural heritage materials, and the application of skills to real objects are the bedrock of the methodology. Since many students bring with them specialized knowledge of the objects' history and condition, an important part of the teaching program is to empower the students to utilize their expertise to identify the questions that can be specifically answered by XRF for a fuller understanding of the objects.

On a Roll: Drawings beyond the Frame

Jan Burandt

Oversized drawings are becoming more commonplace in museum collections and they present challenges for storage, framing, installation, and treatment. Every drawing of large scale requires coordinated teamwork at every step between conservation and the preparatory team.

This paper will discuss encounters with recently installed drawings from 10–30' in width - including practical solutions used to adapt artist-specified methods of installation. Works by John Cage, Trisha Brown, and Siah Armajani will be discussed. Complications encountered include preservation of intentionally distressed paper surfaces and grappling with a 222" translucent polyester film substrate.

Community Resilience: Reflections of a Shaky Day

Monica Shah and Sarah Owens

On the morning of November 30, 2018, a 7.1 magnitude earthquake was centered 10 miles north of Anchorage. The Anchorage Museum suffered damage to both the building and collections. Along with facilities and exhibition staff, collections staff worked diligently to reopen the museum to the public. It was an important event to show the resiliency of our community and provided a place of welcome for those dealing with many uncertainties during the aftermath. For the first few months, staff were focused

Annual Meeting Abstracts, continued

on response. Now, with more than nine months since the event, museum staff are able to reflect and analyze the response, precautions, and changes implemented. This paper will present an analysis of precautions taken and how those mitigated additional damage – from emergency plan and procedures, to storage and exhibition mounts.

Preserving Harald Szeemann's 1974 Exhibition, *Grandfather: A Pioneer Like Us*

Melissa Huddleston

In 1974, trailblazing Swiss curator Harald Szeemann curated an exhibition about his late grandfather, a beautician by trade. Staged in the curator's own apartment, the exhibition was composed of over fifteen hundred objects, including family documents, photographs, artworks, clothing, household items, and a dazzling array of hair styling accoutrements dating to the 1920s and 30s.

The project was not only a personal homage to his ancestor, but also a self-reflexive examination of conventions of value, meaning, and the agency of the curator. When the Getty Research Institute acquired the Harald Szeemann Archive in 2011, numerous objects from *Grandfather, A Pioneer Like Us* were rediscovered within the archive. When the GRI embarked on a Szeemann retrospective titled *Museum of Obsessions*, which opened in 2017, it was decided to reconstruct the 1974 exhibition as part of it.

The exhibition process is by nature collaborative, and this was highlighted in *Grandfather, A Pioneer Like Us* – both because of the complex amalgam of materials included and because of its character of historical reconstruction. Curators and conservators worked in close collaboration conducting extensive analysis of photo documentation from the original exhibition and research into Szeemann's practice in order to establish methodologies for an accurate reconstruction.

After years of use or neglect, many of the original items were severely damaged, stained, or even vandalized. The overall

goal was for the items to appear as they did in the 1974 exhibition, and not in overly good condition. Hence, establishing appropriate levels of treatment for each individual object was an especially challenging balancing act.

Collaboration between conservators from different disciplines and conservation scientists was also crucial to the success of the project due to the huge variety of materials in the exhibition. This included early celluloid plastics, casein plastics, bone, tortoise shell, fur, leather, textiles, dyes, a variety of woods, antique glass, hair, reverse glass paintings, gilded frames, taxidermy, oil paintings, printed ephemera, photographs, shells, silver, copper alloys, porcelain, ceramics, wax, plaster, and paper mâché.

Finally, the practical challenges of safely installing the objects were many-fold and only could have been met through extensive collaboration between conservators, mount makers, and preparators as well as specialists outside of the field (including prop artists, a wig maker, and a taxidermist). After a five venue world tour, the exhibition will return to Los Angeles in September. Looking forward, new challenges in terms of storage and longterm care will need to be addressed.

A Culturally Collaborative Model for Conservation Decisions

Landis Smith and Nicole Peters

Using a culturally collaborative model, an IMLS-funded project to conserve historic collections at the Museum of Indian Arts and Culture (MIAC) is underway. Pueblo potters, Navajo jewelers, and Apache basket weavers are in discussion with conservators and curators regarding accurate documentation of materials, technologies, and use as well as culturally appropriate treatment and care.

The proximity of Santa Fe to Native communities facilitates ongoing relationships and exchange, with multiple planned and impromptu visits in the museum, in Native communities, and elsewhere. Collaborative conservation decisions about the methods and extent of treatment (or no treatment) offer a

more solid and holistic rationale for the decisions made. Case studies will illustrate the collaborative process employed in this project.

Conservation Review: Incorporating Conservators into the Acquisition of Commissioned Public Art

Adam Fah and Janae Huber

The Washington State Arts Commission (ArtsWA) is responsible for one of the largest public art collections in the nation. The nearly 5,000 artworks that make up the State Art Collection are permanently sited in K-12 schools, colleges, universities, and state agencies spanning Washington's 71,000 square miles.

In 2010, to get a better handle on future conservation needs, our collections team created a series of tools that address materials, fabrication techniques, and placement during the artwork proposal phase. These tools—Conservation Consultation, Conservation Review, and a supplementary text titled the Materials and Fabrication Handbook—support artists in creating durable artworks for highly active public environments. They were adapted from an in-house review process created by our colleague Tin Ly, conservation manager (retired) for Broward County Public Art and Design in Florida. Conservation consultation and reviews have been integral to ArtsWA's acquisition of more than 200 artworks over the past decade.

The first artwork was acquired for Washington's State Art Collection in 1975. The collection grew to around 4,000 objects before the state invested in dedicated collection care staff, hiring a part-time collections manager in 2000. In 2005, the collections manager position became full-time, and ArtsWA limited its purchases of small, portable works in favor of site-specific commissions with a minimum budget of \$30,000. This resulted in an average of 35 artworks acquired annually, down from 166 per year. In 2007, a part-time conservation technician, the first on staff with materials and fabrication experience, was hired, and the program procured an off-the-

Annual Meeting Abstracts, continued

shelf museum collections management database system to track artworks.

By 2008, the collections team (1 collections manager + 1/2 conservation technician) had identified many works built with inappropriate or incompatible materials, inherent vice, poor fabrication techniques, or that were inappropriately sited. These artworks demanded a significant amount of the department's limited resources and made it difficult to address the larger backlog of the collection's needs. With support from program leadership, the collections department incorporated Conservation Consultation, Conservation Review, and the Materials and Fabrication Handbook into all artwork proposal phases to reduce long-term costs and eliminate unnecessary future repairs. For more information: <https://www.arts.wa.gov/public-art/>

Collaboration: Considering the Degradation of Polypropylene Products for Use with Collections

Dr. Nancy Odegaard, Gina Watkinson, Dr. Kelly Simmons-Potter, Dr. B. G. Potter, Jr., Frances Willberg, and Emma Potter

In recent years the ASM conservation lab has noticed the deterioration of polypropylene used as: shelf foam in collections storage; repurposed conference bags; coverings for historic furniture and costumes, vehicles, and art; photographic slide holders and films.

We began to investigate the wider use of polypropylene-based products recommended for use in museums and wondered about its suitability. We teamed up with faculty and students in the University of Arizona Materials Science & Engineering Department to focus on accelerated aging to learn more about degradation of a suite of polypropylene materials as a result of exposure to heat, humidity, and solar irradiation. A chamber calibrated for testing solar panels in southern Arizona was employed to create an annual outdoor exposure. Our fundamental questions were:

1. Can we determine how long it takes for materials to degrade? 2. How can we measure or quantify the process of polypropylene material decomposition (yellowing, deteriorating, becoming brittle)? 3. Can one tell if a polypropylene material is about to decompose? This presentation will share the preliminary findings:

Samples: Our polypropylene degradation test suite was comprised of samples taken from an open-cell expanded foam (shelf liner), a green fabric (conference bag), a white coated fabric (grocery tote), a thin transparent film (photographic negative holder and film sheet), and a thick translucent sheet (archival folder).

The samples were evaluated and documented prior to and during the aging process. Evaluation and documentation included photography to monitor changes in the visual appearance of the samples, measurements of sample weight and mass, analysis using Fourier Transform Infrared spectroscopy (FTIR), testing with UV-Visible transmittance, examination of surface deterioration with optical microscopy, and assessment of brittleness by bend radius of curvature.

Accelerated aging took place in an environmental chamber (EC) for exposure to temperature, humidity, and irradiance typical of Tucson, AZ over an extended period. The samples were periodically extracted from the EC and examined using the range of measurement techniques, before they were replaced in the EC for further aging.

Mayan Stela: Packing and Transportation Studies

Rita Gomez and Vincent Beltran

In February 2017, the packing team at the JPGM was presented with the task to transport a 960 lb. 97.5" high Mayan limestone with clay, *Stela with Queen Ix Mutal Ahaw*, from the de Young Museum for exhibition at two venues. The challenge was to construct an interior crate to keep the object rigid, maintain even pressure with regard to its delicate surface, and mitigate the highest percentage of events from external

shock and vibration to the object during transport.

A scanned 3-dimensional image of the object, reverse engineered to create a negative contoured foam support was incorporated. Using accelerometers positioned at various locations, shock and vibration during transit were then compared for the truck, the packing crate, and the object mount to assess the performance of the system.

The Artistic Practice of Alfred Mitchell: San Diego's Favorite Painter

Morgan Wylder

Alfred Mitchell (1888-1972) may be San Diego's most widely recognized 20th-century plein-air painter. Initially trained at the Pennsylvania Academy of Fine Arts, Mitchell spent most of his life as a painter and painting educator in the San Diego area, eventually becoming known as the "Dean of San Diego County artists." Over his lifetime, his work evolved from more traditional, *alla prima* "Impressionist"-like technique to a more minimalist, sparse aesthetic.

This talk will discuss the examination of artworks, personal journals and letters, and extant art supplies of Alfred Mitchell in context to his own life and evolution, other San Diego artists, and early 20th-century painting movements in general. The San Diego History Center's collection of Mitchell's paintings, art supplies, custom-made paint boxes and French easels, and personal letters and journals provide great insight into the artist and his practice.

In addition, Balboa Art Conservation Center has treated over 30 Mitchell paintings, providing detailed examination notes about his use of varnish, re-use of substrates, etc. Paintings from the San Diego History Center and other private collectors and member institutions have been examined with microscopy, UV light, infrared reflectography, and XRF to aid in the understanding of their construction and materials. Mitchell's work is compelling because many of his works are more than simple,

Annual Meeting Abstracts, continued

decorative pseudo-Impressionist pieces we might associate with California plein-air. Well aware of international and national artistic movements of his time, Mitchell intentionally created moments of experimentation, improvisation, and even humor in his works, all the while also documenting the changing landscape of Southern California over his lifetime.

His painting materials and techniques reflect his story: a firm foundation in Academic training in concert with the less stringent, freer painting aesthetics of the California artistic climate. He used a combination of local materials, some he himself made, and special-ordered European paints and mediums. He was a talented draughtsman, and yet also enjoyed allowing for instances of spontaneous abstraction, loose brushwork, and bright, right-out-of-the-paint-tube colors in his work. The story of Mitchell's painting practice is not only important to the academic understanding and conservation of his works, but also because his practice extended so far beyond himself, with his many students, collaborators, and friends in Southern California.

Comparison of Chinese Painting and Western Paper Conservation Techniques

Grace Jan

For several decades, traditional Chinese painting conservation has been part of the broad field of art conservation in the United States. However, conservation professionals trained in the West are typically unfamiliar with the background, educational training, and practices of Chinese painting conservation. The Andrew W. Mellon Foundation has been working with US museums to address this disconnect, foster training, and strengthen Chinese painting conservation across established institutions on the West and East Coasts and in the Midwest. My background and training in both Chinese painting and Western paper conservation provides a perspective on both traditions. As a result, as a participant in this initiative, I am motivated to engage conservators across these traditions and increase the profile of Chinese painting conservation in the US.

During the conservation of a 20th-century, Qing Dynasty ancestor portrait painted with ink and color on paper, a specific question arose: What treatment approaches would be taken by Western paper conservators or those without expertise in Chinese paper-based objects and might these approaches and techniques be useful or appropriate for Chinese works.

Chinese paintings have unique laminate structures composed of multiple layers of paper supporting a painted primary support with silk or paper borders constructed to achieve a flat and balanced structure that can withstand repeated handling. This painting was in poor condition, with severe creases that made it difficult to unroll flat and exhibit without extensive treatment. Following treatment using traditional Chinese and East Asian mounting techniques, it was decided that this painting would not be returned to its previous rolled format, but remounted and stored flat. This format shares properties with two-dimensional paper-based objects familiar to most Western conservators.

In order to compare and contrast treatment approaches, I surveyed several Western paper conservators about the techniques they would apply to this painting. They would normally refer this painting to a specialist, but they were able to evaluate it through photographs, providing novel ideas and treatment approaches.

This talk will present the traditional Chinese approach used to treat this painting, and Western-based treatment proposals from my colleagues. My examination of different approaches, techniques, and materials will expand our knowledge of treatment techniques across disciplinary fields, and assess if and when a combination of traditional Chinese and Western approaches is appropriate.

This talk will discuss Chinese conservation approaches and how Chinese and Western approaches can be leveraged to advance conservation practices in the US. More broadly, this exploration of approaches aims to expose Chinese art conservation to the larger community of conservators,

increase the dialogue between cultures, and contribute to its integration into art conservation.

Collaborative Paper and Photo Conservation at the University of Washington

Claire Kenny

In December 2016, the University of Washington was awarded a grant by the Andrew W. Mellon Foundation to support a new Collaborative Paper and Photograph Conservation project and hire a jointly appointed Conservator for Paper and Photographs to conserve collections at both the Henry Art Gallery and UW Libraries.

This three-year, 50/50 joint appointment is designed to advance the development of shared conservation services on the UW campus and bring together staff expertise at both institutions to explore and develop substantive collaborations. This presentation will share what we have learned thus far and describe some of the ways in which this collaboration gives rise to greater support of our diverse collections, exhibitions, and communities.

Update on the Gladzor Gospels at UCLA Library: Planning for a Collaborative Rebinding

Consuela (Chela) Metzger and Nora Avetyan

Back in 2001 Getty Museum manuscripts conservator Nancy Turner gave a talk at WAAC on the extraordinary medieval Armenian manuscript *The Gladzor Gospels*, currently held at the UCLA Library Special Collections. Nancy covered the complex history of this manuscript, the conservation treatments she carried out when more than forty Gladzor leaves were exhibited at the Getty Museum, and the considerations for rebinding the leaves once the manuscript returned to UCLA.

In 2019, we are finally moving the rebinding conversations forward at UCLA Library, and it is time to look closely at what a rebinding is, how modern book conservation in the western

Annual Meeting Abstracts, continued

world has framed the act of rebinding, and what collaborative rebinding plans might work for a book that is part of an active faith tradition. The rebinding work is still in the planning stages, and I invite the WAAC community to share their ideas. The thinking behind this rebinding effort will be shared from the perspective of a book conservator and from the perspective of a librarian who is also active in the Armenian Community of Los Angeles.

Let's Stick Together! Group Consolidation Projects at the Huntington

Kristi Westberg

In 2016 Debora D. Mayer and Alan Puglia gave a talk at the AIC annual meeting titled, "The Challenge of Scale: Treatment of 160 Illuminated Manuscripts for Exhibition." For the last three years the Preservation team at The Huntington have used their framework to carry out group consolidation projects on medieval manuscripts.

During our most recent project we were faced with areas with silver leaf as well as powdery green and blue pigments. This led us to work together to figure out the best setup, settings, and concentrations for the application of non-aqueous aerosol consolidants. While this research and testing is ongoing, this presentation aims to share what we have learned so far and invite WAAC members to share and discuss other techniques for consolidating similarly moisture sensitive materials.

The Conservation Curiosities of Clyfford Still

Pam Skiles and James Squires

This presentation will share a number of examples of conservation issues with the paintings of Clyfford Still. Still was an originator and leader of Abstract Expressionism, however, he severed ties with the New York art world in 1951, near the zenith of the artistic movement. He retreated to rural Maryland where he finished out his career.

During his life, he created over 1,100 paintings and 2,700 works on paper, most of which were kept in the artist's possession and were never exhibited. The establishment of the Clyfford Still Museum in Denver, Colorado in 2011 has begun to affect change and make his artwork increasingly accessible. In addition to expanded viewership, it has allowed the conservation staff to begin examining, studying, and analyzing a uniquely intact body of work.

Many of the condition issues seen in the collection stem from the artist's working method and also pose challenges to interpreting artist's intent. Other intriguing issues have unknown origins and are the focus of ongoing research. Additionally, conservation activities must take into account developing curatorial scholarship, determine acceptable aging characteristics for little known abstract works of art, and the role the conservator plays in the interpretation and presentation of these artworks.

Photogrammetric Imaging as a Tool for the Condition Recording of Outdoor Public Murals

Samantha Emmanuel and Kiernan Graves

Condition recording is one of the fundamental aspects of documentation for conservation interventions. Graphically annotated images are a useful tool for mapping and understanding patterns of deterioration. They serve as a record for treatment and are useful for monitoring the condition of an artwork over time. However, graphic documentation (GraDoc) can be problematic, as it requires the creation of accurate basemaps; methods of recording data are subjective, imprecise, and subject to human error; and, the type and severity of condition phenomena is open to interpretation.

An improvement to this type of GraDoc has been the addition of Visual or Illustrated Glossaries, in order to reduce misinterpretation and improve consistency of condition vocabulary. Still, this approach is time-consuming and often not within the scope of work.

Nevertheless, accurate and detailed condition reporting for large murals is paramount, as conditions manifest on a micro-scale and can vary considerably across an artwork. Additionally, it also informs treatment and maintenance decisions.

The Market Street Railway mural is a much beloved community mural in the Mission District of San Francisco, painted by local muralist Mona Caron in 2003-2004. After 13 years in an unmitigated exterior environment, ongoing deterioration and damage were visible across the entire surface of the mural.

The most pervasive issues were widespread cracking, severe flaking/tearing, complete loss of the acrylic paint layers, extensive fading, and graffiti. Previous condition surveys had graphically notated conditions onto an image of the mural captured soon after completion. However, this method presented difficulties in recording phenomena to scale and recording the severity of conditions in three dimensions.

The primary aim was to obtain a current image of Market Street Railway to use as a basemap. Another objective was to create an accurate record of condition to be used for monitoring and maintenance after completion of the conservation treatment.

To resolve these issues, the decision was made to create a high resolution basemap using close-range photogrammetry. A series of overlapping high resolution images of the mural was captured, and using structure-from-motion photogrammetric processing (Agisoft Photoscan) the output was a high-resolution digital orthophoto—a color corrected, rectified, uniform-scale image.

After processing, the orthophoto revealed/documented precisely the extent and severity of the condition of the entire mural in the image. These images were used as basemaps to graphically map select condition issues of the entire surface and record conservation treatments.

Annual Meeting Abstracts, continued

Photogrammetric imaging allowed the capture of a three-dimensional surface in a two-dimensional format, reproducing in high resolution both the pictorial image and the irregular surface topography without distortion. This is advantageous for conservators working on large architectural surfaces with limited access and project time constraints. The resulting orthophotos allow for full condition assessments of the surface and greater accuracy in mapping condition. Furthermore, the image capture/processing methodology is reproducible, where in addition to providing a visual record of condition before and after treatment, the process can be repeated so that change can be monitored over time.

A New Method for the Identification of Wood by Chemical Analysis

Arlen Heginbotham, Madeline Corona, Jessica Chasen, and Michael R. Schilling
Wood species identification is important in cultural heritage research because it provides essential information about the materials and techniques used by artists to create objects of art, provides clues to historians about trade routes, and guides conservators in the selection of suitable replacements for damaged pieces of wooden objects. Examination of anatomical features in thin cross sections is the established method for identifying wood genus and/or species, and practitioners have access to well established databases to aid in their efforts.

However, not all species can be differentiated by this method (for instance, pine, ebony, and rosewood are problematic), and it takes much time and practice to develop the required expertise. An alternative to wood anatomy is chemotaxonomy, in which wood species are identified on the basis of compounds originating from secondary metabolites that are unique to each species. Recent studies have focused on identifying a particular wood species (such as *Dalbergia*) to provide diagnostic support for the Convention on International Trade in Endangered

Species (CITES), but none address the larger goal of developing a viable chemotaxonomic alternative to wood anatomy.

This paper presents a novel method (nicknamed MOXI; MOlecular Xylem Identification) for conducting wood identification based on chemical analysis using thermal desorption pyrolysis gas chromatography/mass spectrometry (TD-Py-GC/MS) to analyze volatile fractions and thermal decomposition products from finely divided wood samples. This method has several advantages over traditional anatomical identification including a significantly reduced sample size (0.3 mg of powder vs. more than 40 mg for traditional thin anatomical sections) and increased ease of sampling. The method also shows promise for successfully discriminating between species that are not separable by anatomical methods.

The use of an established analytical technique that is widely found in conservation science laboratories should make this method readily accessible to many researchers in the cultural heritage sector. The use of user-friendly and commercially available software for the evaluation of the GC/MS data also makes it possible to develop a reference database that can be easily shared and referenced by collaborating researchers. In a preliminary study, two reference specimens of each of 62 wood species commonly found in decorative arts collections were analyzed with the optimized TD-GC/MS method.

The resulting chromatograms and integrated mass spectra were compiled in a reference library. The method was validated by analyzing samples taken from 17th – 19th century objects within the J. Paul Getty Museum collection and comparing the results to identifications made through traditional anatomical study. All of the samples were correctly identified through the combined use of software called F-Search (from Frontier Laboratories, a program originally developed for polymer identification) and specific comparison of distinctive phytochemical compounds identified by the analysis.

Is Quantitative XRF of Historic Copper Alloys Possible?

Arlen Heginbotham

Energy dispersive X-ray fluorescence spectroscopy (ED-XRF) is a method of elemental analysis that has numerous advantages for the study of cultural heritage materials. It is rapid, nondestructive, and capable of simultaneous multi-element analysis. In the last 15 to 20 years, miniaturization and mass production have made the technique widely available to the scientific and conservation laboratories of many arts and heritage institutions.

Although the generation of an XRF spectrum is a straightforward undertaking, the conversion of an XRF spectrum to an accurate quantitative estimate of elemental composition is an extremely challenging undertaking.

As a result, the collaborative study of large classes of objects is hindered by poor interlaboratory reproducibility. This flash talk addresses the collaborative application of XRF to the study of historic copper alloy artifacts with a particular focus on French gilt bronzes of the seventeenth through twenty-first centuries. The results of an early interlaboratory round robin study are presented to demonstrate that without the benefit of a well-designed, shared, calibration protocol, interlaboratory reproducibility for XRF analysis of historic copper alloys can be expected to be dismal.

A detailed calibration protocol has been developed, relying on a new set of certified reference standards and the use of freely available open-source software for spectral analysis. A second interlaboratory study, using a wide variety of instruments in use by cultural heritage institutions, demonstrates the dramatic improvements in reproducibility that may be expected by following the protocol.

Finally, the potential benefits of collaborative study using the proposed protocol are highlighted by applying machine learning techniques to a large reference dataset of French gilt bronze

Annual Meeting Abstracts, continued

compositional data acquired using five different ED-XRF instruments over a ten-year period. The machine learning analysis outperforms more traditional statistical methods in providing an estimate of the date of manufacture for undated French gilt bronzes with a well-defined confidence interval.

The Use of Agar for the Superficial Cleaning of Water-Gilded Wooden Objects

Sophie Kirkpartrick, Cécile de Boulard, Marianne Decroly, and Paolo Cremonesi

Agar is a rigid polysaccharide gel that has been introduced in conservation cleaning treatments through the intermediary of Richard Wolbers in the early 2000s. Since then, different researchers have studied the use of agar in the field of conservation of painting on canvas, wood panels, wall paintings, plaster sculptures, marble sculptures, terracotta, graphic documents, and textiles.

All these studies have shown the interest of agar for the cleaning of works of art. It appears that this natural product would be one of the safest ways to deliver moisture on water-sensitive surfaces. Actually, the dispersion rate of agar can be tailored to the treatment by adjusting the concentration of the solution. In addition, agar acts as a molecular sponge, it solubilizes the impurities and holds those materials within its gel matrix.

Through my master's degree thesis, we wanted to expand our knowledge of the agar by studying its use for cleaning aqueous gilding on three dimensional wooden objects. This kind of substrate constitutes a particular cleaning problem because it is made of extremely water-sensitive materials. Whereas, it turns out that water is often an indispensable tool for the removal of dirt layers. Moreover, the sensitivity of the gilding to friction and abrasion makes any mechanical action necessary for cleaning difficult.

My master's degree thesis is divided into three parts. The first is a theoretical study which provided better understanding of the different parameters that influence the

action of agar. These parameters are the composition of agar, the concentration of the gel, and the method of application. Then, on the basis of the theoretical study, an experimental study was carried out to determine the appropriate conditions for an agar gel to be effective as a cleaning agent on a dirty gilding placed on a three-dimensional wooden substrate. Finally, the cleaning of a gilded wood frame was carried out using agar gels, according to the results obtained in the experimental phase.

Cleaning a Fresco Secco with Gellan Gum - A Case Study

Bianca Garcia

Mother and Son, a fresco secco by Jean Charlot, was treated at the Balboa Art Conservation Center (BACC). There was a heavy layer of grime embedded in the paint layer and support, obscuring the true tonality of the composition and darkening stress cracks throughout.

Due to the porous nature of the support, using an aqueous solution delivered by the traditional swab method was considered problematic as the cleaning solution might drive the grime further into the support. Mechanical action was also considered a risk factor since the paint layer had aggregates prone to cleaving off.

Both of these issues led to the idea of surface cleaning with rigid gels. Low-Acyl Gellan Gum was selected due to its ability to poultice grime and how readily it conformed to the textured surface. Due to a concern for tidelines, it was decided to cast the gel in one single sheet that covered the entirety of the painted surface, measuring 23 1/2" x 27 1/2". While a successful treatment, it was not without its challenges, and there is room for improvement and further perfecting of the technique.

Preliminary Investigation into Nanotechnology for Textile Application

Staphany Cheng and Laura Maccarelli

This talk will present research on the application of two different Nanorestore Gels® on textile substrates and discuss how the results of the experiments

Terra 2021 World Congress on Earthen Architectural Heritage

Announcing Terra 2021, 13th World Congress on Earthen Architectural Heritage - **Looking Back, Moving Forward: Advances in Conservation**, June 8-11, 2021, Santa Fe, New Mexico.

The Getty Conservation Institute, in collaboration with the National Park Service, Vanishing Treasures Program and University of Pennsylvania, Stuart Weitzman School of Design is organizing this 4 day conference that will address conservation management and care of earthen architectural heritage around the world and in the southwest.

500 - 600 specialists are expected to attend from all parts of the world with significant architectural heritage. The call for abstracts has been extended until April 1, 2020. More information about Terra 2021 and the call for abstracts can be found at terra2021.org. We hope to see you in Santa Fe for Terra 2021.

informed the treatment proposed for a water damaged, 19th-century applique thangka. Successful applications of Nanorestore Gels® have been published for the treatment of works on canvas, works on paper, wall paintings, stone sculptures, and waterlogged wood. However, limited experimentation has occurred for applications on textile objects.

Nanorestore Gel® Peggy 6, a hydrogel based on poly (vinyl alcohol) network, and Nanorestore Gel® Medium Water Retention, (MWR, formerly known as "Max Dry"), a chemical hydrogel based on a pHEMA/PVP semi-interpenetrated network, were evaluated. Three fibre types and three application durations were tested. The extent and rate of water movement was quantified for each of the gels on each fibre type. Digital microscopy, FTIR, and UV photography were utilized to determine if either gel left detectable residue when applied to the textile substrate.

Both gels displayed different properties and interacted differently across the three fibre types, suggesting that each of the gels is suited to specific fibre types. The gels were tested further for potential application on different thangka components.