

## President's Letter

Tricia O'Regan

Dear WAAC members,

First, my thoughts and sympathies go out to everyone who has been affected by the Coronavirus.

This is a somewhat impossible letter to write. Traditionally, a WACC president's message in the May issue would focus on the upcoming annual meeting and selling the tantalizing details to potential participants.

As I write this, none of us has much certainty about, oh, *anything*, and so I have no idea what the situation will be when you receive this newsletter!

My own workplace, FAMSF, shut down on Friday, March 13th, and I, like most of you, have been home since then doing my best in the current normal. I have been keeping busy cleaning up files and databases, participating in our museum's digital outreach, and even managed to brush up on the MCP thanks to Chris and Nina's online workshop. It's difficult for me, however, to break away from the pull of the constant Corona news, as we all become amateur epidemiologists and public health experts and speculate about the future. I've had the time to be in touch with colleagues all over the world, as we all commiserate about the unknown road ahead and navigation of changes for our institutions, university programs, and private practices.

It has given everyone time to reflect, and hopefully, to connect and to access what is important and essential both at work and in life.

I do have moments of guiltily enjoying this unexpected time with my family. With homebound husband, Mike, and twenty-something daughters, Oona and Lucie, the loss of our usual hectic schedules has given us rare time to slow down and "do nothing" together. We take long walks in the Berkeley hills, watch streaming videos, and cook, all at a leisurely pace. Daisy, our rescue dog, is in heaven with multiple walks a day, too many treats, and a wider choice of bedmates to sleep with. The sound of giggling fills the house as the kids enjoy some rare extended time with each other too. Thanks to their talents in the kitchen, Mike and I feel like we live in a bakery and have dinner each night at a gourmet restaurant. I may never fit out my front door again.

Other upsides to this enforced sabbatical are that my house has never been cleaner or more organized, and I've temporarily won an epic battle with the weeds in our cracked driveway! I started by pulling them, and as the weeks rolled into months, I washed out the cracks with a high pH solution and followed by filling every groove in the cement. I didn't go so far as before and after photos, but I think I really need to get back to work. The neighbors are beginning to talk.

But about the meeting. We do have (or did have?) a great conference planned at Stanford Sierra Camp for September! The abstracts I have received to date are fascinating; thank you for the submissions. The camp will be (would have been) a peaceful and gorgeous location to mingle with old and new friends, learn, hike, swim, paddle, and just sit and stare at one of the prettiest lakes in the world.

As of today, May 12th, as I listen to Gov. Gavin (each day at noon!), there does appear to be a bit of light at the end of this tunnel, and we may well be back to some sort of "normal" by the time you read this. Stanford intends to decide during the first two weeks of June if we can go ahead with the conference. If so, fantastic! And we will make the meeting as safe as possible. If not, I do hope the WAAC meeting can be held at Fallen Leaf Lake sometime in the post-vaccine future!

So, knowing very little, I will sign off:

"Onwards to Stanford Sierra Camp in September and/or Seattle in 2021!"

My best to you, stay well, and wash your hands!

Trish

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## Alaska

The uncertainty of the Covid-19 situation is exacerbated in Alaska by the gutting of two huge contributors to the state economy: oil and tourism. Oil and gas are 85% of the state economy. Low oil prices for the past several years had already taken a heavy toll on schools, ferries, the university system, and many other publicly-funded services. Tourism is the second-largest employer in the state. With a population of less than 750,000 but more land than Texas, California, and Montana combined, communities here are good at hunkering down but the flip side of isolation is a health care system that could be easily overwhelmed. The statewide museum organization, Museums Alaska, has been working jointly with several institutions to help prepare resources and advocacy for the museum sector.

**Helen Alten** and the Haines Sheldon Museum staff are working from home, using VPN to directly link to the museum's server and databases. Thanks to the digitization efforts of the past year, there is plenty of material for daily Facebook and Instagram posts. Helen has been hosting a twice weekly "History Tidbits" program on Facebook Live. (Noon, Alaska Standard Time, Wednesdays and Fridays.) Recordings are available on the new Haines Sheldon Museum Youtube channel.

Staff have been taking online courses in archives management and exhibit production while working from home. Interns were unable to come this spring, with the museum closed and the town actively discouraging non-essential people arriving from Outside. Grants have been submitted to rehire archivist **Sara Delengova** and assistant **Natalie Pardee** for the next step in the archives upgrades – creating finding aids for older collections and putting all of them online with ArchivesSpace for accessibility. Building expansion plans are on hold, with operating funds being the priority in the short-term.

**Ellen Carrlee** and the Alaska State Museum staff have been teleworking since late March, developing online/ distance content, writing reports, and updating policy and procedure documents. The constellation of activities surrounding the summer exhibition of Northwest Coast woven textile regalia has been postponed until next summer. Full-time staff positions in Juneau and Sitka number only 13, with three current vacancies and a hiring freeze.

On a brighter note, the Friends of the State Library, Archives, and Museum has established a Friends of the Organ Committee to help develop a strategic plan for the Kimball Theater Pipe Organ, a remarkable instrument used in Juneau in the 1920s to accompany silent films with a variety of orchestral accessories such as percussion and wind that could be controlled by the organist at the console. The theater organ has been part of the museum collection since 1977, installed in its own chamber downtown at the State office building and played every Friday at noon to audiences in the atrium. The new committee includes a combination of organists, performing arts administrators, and the proprietor of the art house movie theater.

Tuning and baseline maintenance has long been coordinated between the ASM conservator and the company that originally installed the organ in Juneau, but the new committee hopes to connect the instrument to the national preservation community associated with theater organs. An enhanced network of relationships might bring both increased access to the instrument through silent film events and visiting musicians as well as facilitate grants and donations to help the organ fund its own care.

The Anchorage Museum has been closed since March 13, and Anchorage has been under orders of "stay at home" since March 22. Most museum staff have been working remotely, with the live collections manager, security, and facilities staff continuing onsite. This early response by the city has helped keep Covid-19 numbers low. We are immensely thankful and appreciative for this well-planned emergency response. The museum's response has been in conjunction with the city and has been very

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**Internet**  
Articles and most columns from past issues of WAAC Newsletter are available on-line at the WAAC website, a part of CoOL (Conservation OnLine) <http://cool.conservations-us.org/waac/>.

**Deadline**  
Contributions for the May Newsletter should be received by the Editor before **August 2, 2020**.

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# Western Association for Art Conservation

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

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## Regional News, continued

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transparent with staff. Daily messages and information have helped keep morale strong. Optional twice weekly staff get togethers have also helped.

Like many museums, focus has shifted to online platforms. **Monica Shah** has been developing and providing digital content, including short videos about conservation and the collection for the general public. **Sarah Owens** is focused on a series of textile conservation videos, which will soon be in development. Both have also taken this opportunity to enter old treatment reports into the database, helping future conservators manage the care of the collection. Since most exhibits and loans have been postponed, conservation projects are on hold. Hopefully the next news will find us back at work, back at interesting and meaningful conservation projects.

**Nicole Peters** finished her work in New Mexico and made her way to the east coast where she has been self-isolating at her family's farm and bed & breakfast in Pennsylvania. With most of her upcoming projects being either cancelled or delayed, Nicole has had time to repair numerous personal artworks in her own collection, plot out a future master garden, repaint rooms in the bed and breakfast, and assist her family with home renovations and general farm work. Nicole will be working with Museums Alaska to conduct a webinar this spring/summer on storage mounts and archival materials.

She also recently became a board member with the Cape Decision Lighthouse Society (CDLS), a small non-profit organization dedicated to the preservation of Cape Decision Lighthouse on the southern tip of Kuiu Island, Alaska. Nicole will spend time working on preservation efforts and planning for the 2021 lighthouse work season. In the upcoming months, she plans to pursue public service activities and charity work, expand upon her conservation training via online classes and webinars, and get back to drawing and general art making.

*Regional reporter:*  
Ellen Carrlee

## **Arizona**

**Nancy Odegaard** is blaming the virus for a sore neck from too much time working on a laptop from the couch during the home shelter period. She now uses a straight chair and has the laptop on a box. She would like to blame the virus on a dastardly clothes moth infestation in her guest bedroom that ruined several favorite textiles but that would be a stretch. Besides, being at home for the virus sheltering made her notice them in the first place. At least she recognized them and knew to freeze and clean crevices in the room. Otherwise, all the meetings (now by Zoom), students (drafts by email), and reports (still due) that she has to do are active as ever.

Nancy and **Gina Watkinson** are working on textiles for an upcoming ASM exhibit. Gina recently joined the board of the Museum Association of Arizona as one of the at-large directors. She has also been collaborating with conservation colleagues from other institutions in preparation for a panel on plastic storage material. She has enjoyed time hiking in the early morning and has made her home office space outside on her patio to partake in the many free conservation/museum webinars being offered. Gina misses working with students and volunteers in the lab and looks forward to meeting up with them, virtually or in person, soon.

**Marilen Pool** and **Susie Moreno** have been working on the documentation for the ASM cradleboard collection as part of an IMLS-funded conservation treatment project. Aside from entering catalog data into a custom-built database for cradleboards, Marilen has been researching and developing a documentation guide

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## Regional News, continued

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of the materials and technologies used by various cultural groups for fabricating cradleboards in the greater Southwest and beyond. In addition to books and articles as sources, information gleaned from on-line museum collections, and botanical/ethnobotanical databases have been useful.

The documentation guide will provide valuable background for assessing condition and developing treatment protocols once they again have physical access to the collections. Marilen has also been sewing cloth facemasks for family members using conservation grade fabrics acquired for her private practice. The one-inch twill tape doubled over and stitched make excellent ties!

The conservation team at the Western Archeological and Conservation Center welcomed two new conservators in the last quarter, **Stephanie Cashman** and **Ileana Olmos**, to help with exhibit conservation projects for Mesa Verde National Park and Chiricahua National Monument. In April, they said goodbye to **Maggie Hill-Kipling**, who has worked with NPS collections for 14 years, preserving many of our national treasures. Maggie has moved to Minneapolis to be closer to family, and they look forward to hearing about her future adventures.

Stephanie, Maggie, and **Audrey Harrison** have all been treating ceramic vessels from Chaco Culture National Historical Park, and they have all been appreciating these amazing prehistoric pieces while they are temporarily in the lab. **Maria Lee** recently wrapped up a significant phase of treatment work to relax and flatten prehistoric textiles from Canyon de Chelly. These are much more visually accessible for research and short term exhibits.

Over the past year, **Betsy Burr** and **Dana Senge** developed a survey strategy for archaeological and natural history dendrochronology specimens from NPS collections stored at the Laboratory of Tree Ring Research at the University of Arizona. Stephanie and Ileana have picked up the survey work and it continues. This has been an interesting challenge to understand what is to be

preserved of these research specimens and how to focus recommendations!

**Luke Addington** continued the technical study and treatment of an early 16th -century panel painting attributed to Marco d'Oggiono, a late 17th-century polychrome sculpture attributed to Luisa Roldán, a Gothic diptych, an ornate Russian swan cradle, a Napoleon III Bouille table, and architectural woodwork at Mission San Xavier del Bac. He continued provenance research for several pieces of furniture looted during the Möbel-Aktion and completed a furniture condition survey for the Zion Human History Museum.

**Alex Lim** and his wife Christina are expecting a baby girl in July.

*Regional reporter:*  
Gina Watkinson

### Hawaii

At the Bishop Museum, **Meg Absolon** and **Nikki dela Fuente** have abided by the stay-at-home order to catch up on report writing, in addition to taking shifts at the museum to do essential checks and to monitor IPM traps. Condition reporting objects for the future exhibits, *Ka 'Ula Wena: Red* and *Kaula Piko: Source of Strings*, will continue as restrictions lift.

Congratulations goes to Nikki dela Fuente, conservation technician, who was accepted into the Master of Cultural Materials Conservation course at the University of Melbourne, Australia. She will be heading down under to study as soon as the travel is safe.

Paper conservator **Liane Naauao** reports the hiring of **Patrick Layton** as the circulating collection care specialist for University of Hawaii-Manoa Library.

**Kent Severson**, conservator at Shangri La writes: Whatever we were doing at the beginning of March got put on hold by March 13 when Shangri La was

closed to tours, and we began to think about what a hard closure would look like, particularly if we became short on security staff. Our first operation was to deinstall the Mughal jewelry usually on display in the bedroom, packing it away to a secure vault in the basement.

Because Shangri La is by the shore, we are constantly cleaning to prevent build-up of salty airborne particles, and we continued our cleaning routine for a week, but it soon became clear that we might be facing a total lockdown. With that in mind we took preparations a step further, deinstalling smaller objects throughout the museum and covering larger pieces with Tyvek. There will be a period of hard work to put the exhibitions back together, but it will be a labor of love when it finally arrives.

**Thor Minnick** has begun treatment of a large koa and kou wood sideboard by Wilhelm Fischer, likely made in Honolulu for Queen Lili'uokalani. The piece suffers extensive dry wood termite damage as well as older, poorly done restorations including being refinished with CN lacquer. He is also treating a previously restored art deco Brazilian rosewood dining table made by Dominique.

*Regional reporter:*

### Los Angeles

LACMA's textile conservation studio has been updating The Museum System (TMS). Led by **Catherine McLean**, work has focused on linking scans of hard copy treatment reports dating back to the studio's founding in 1968. They are currently well into the 1980s. Additionally, because TMS is LACMA's third collections database platform (preceded by a homegrown database called LADDRS and MultiMIMSY) there are always records that can be cleaned up. To date they have conserved approximately 25% of the 35,000 costumes and textiles (C+T) in their collections. They are grateful for a top

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## Regional News, continued

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notch C+T collections management team led by **Rachel Tu**.

This past spring, paintings conservation head **Joe Fronck** co-authored a catalog entry for LACMA's 17th-c. painting by Aelbert Cuyp, *View of the Maas Near Dordrecht*, for an upcoming exhibition *In the Light of Cuyp*, opening at the Dordrechts Museum March 2021. The Cuyp may have been part of a much larger scene that was cut in half. The other half is now at the Museum of Fine Arts, Leipzig. Both the LACMA and Leipzig panels will be brought together for this scholarly exhibition. Joe is studying art historical records, x-radiographs, cross-sections, and other analyses to compare the two panels and determine if they were once part of the same painting.

**Elma O'Donoghue** is, like other LACMA staff, working from home. She continues her research on Spanish Colonial painting techniques and plans to complete interrupted cleaning and inpainting treatments of two Spanish Colonial paintings on copper when she returns to LACMA. One of these is a circular *escudo de monja* or "nun's shield" that was painted by Antonio de Torres. These elaborately painted small shields or badges were worn by nuns in New Spain from the 16th through the 18th centuries. Elma is also investigating techniques to improve areas of cracking in two modern paintings in LACMA's permanent collection.

**Caroline Hoover** and **Laura Macarelli** continue to research nanogels and their use for cleaning paintings. Caroline will be presenting her treatment of Ernst Kirchner's *Still Life with Jug and African Bowl* using nanogels at the upcoming annual AIC conference.

In February 26-28<sup>th</sup>, **Dawn Jaros** hosted the Image Permanence Institute (IPI) workshop "Training Sustainable Environmental Management Teams" at the Pickford Center for Motion Picture Studies in Hollywood. They had 6 staff members across the Academy's collection foundations: the Margaret Herrick Library, Academy Film Archive, Academy Museum of Motion Pictures, as well as the facilities department. They were joined by 6 participating

collecting institutions in the southern California area, working together with their respective teams to ensure that their vault environments are sustainable yet effective.

**Katie Rouw**, **Martha Ramos**, and Dawn attended a presentation by **David Saunders** related to his recent publication *Museum Lighting: A Guide for Conservators and Curators* in which he explores how to balance the conflicting goals of visibility and preservation under a variety of conditions. The talk was held at the Getty Center and while onsite they toured the Getty Research Institute's paper conservation lab and vaults.

The Margaret Herrick Library has been closed to the public since March 10<sup>th</sup>, and the staff has been working from home since March 16<sup>th</sup>. They have been working on a couple of organizational projects on their hard drives, watching webinars, and doing fun projects such as making book futons!

**Tania Collas** and **Marina Gibbons** are busy revising the Natural History Museum of L.A. County's collections emergency response plans. Marina is also preparing digital content about the treatment of a fossil millipede among other subjects. In May, Tania presented an online lecture on museum pest management with a demonstration of anoxia treatments for the UC Riverside Urban Entomology seminar.

**Erin Jue** resigned from LACMA to focus exclusively on her private paper practice, Los Angeles Art Conservation.

At The Huntington Library, Art Museum, and Botanical Gardens, **Christina O'Connell** was almost finished with the treatment of Gainsborough's *The Blue Boy* by mid-March. Christina is now spending time on documentation and research for the project. She will be giving a virtual talk for AIC on the public-facing side of the project and discuss the planning, on-view treatment stages, and education involved.

Christina has written a post for the Huntington's blog, Verso, about recent x-radiographs of Henry Fuseli's *The Three Witches*. The biggest discovery

was that the reused canvas has two underlying compositions: an unidentified portrait of a man and the head, arms, and torso of a male figure that would likely have been part of a larger composition. The blog is scheduled to be published in June 2020.

Christina is also processing the data from a multi-year collection survey and making plans to treat the almost 70 paintings that need immediate attention.

**Glenn Wharton** recently joined the UCLA faculty as professor of art history, and will serve as chair of the interdepartmental program in the conservation of archaeological and ethnographic materials, which is affiliated with the Cotsen Institute of Archaeology. Glenn comes to UCLA after 16 years in the museum studies program at NYU and 7 years at MoMA where he established the museum's program in time-based media conservation. Prior to that he ran a private practice in objects conservation in southern California with **John Griswold** and served as conservation director for the Japanese Institute for Anatolian Archaeology at Kaman-Kalehöyük in Turkey. He founded the non-profit organization Voices in Contemporary Art (VoCA) and co-directs the NYU-based Artist Archives Initiative. And... Glenn is an ex-President of WAAC.

Students, faculty, and staff at the UCLA/Getty Program in the Conservation of Archaeological and Ethnographic Materials are adapting to life during the COVID-19 pandemic. Without access to our laboratories we are developing new ways to work, teach, and learn remotely. Students have turned their home desks into improvised labs as we provided students with ancient coins and contemporary metal artifacts, USB digital microscopes, and scalpels for their Structure, Properties, and Deterioration of Metals course.

With student summer internships planned across the globe being cancelled, our MA students will dedicate this summer to thesis research at home and our PhD students will continue their own research at home. The Mellon opportunity for diversity in conservation July workshop has been cancelled to safeguard everyone

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## Regional News, continued

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involved and accepted applicants have been given the option to attend the program in 2021, which all have accepted.

We are currently working with both UCLA and The J. Paul Getty Museum to develop re-entry plans for the fall quarter, which will likely include offering hybrid courses – a combination of remote learning and in-person labs.

*Regional reporter:*  
Virginia Rasmussen

### New Mexico

**Susan Barger** has been doing home chores that were left undone while she was actively working and as well as, reading and doing a bit of writing (more to come) and taking long walks.

NMSU museum conservation program student **Paris Bowers** was admitted to the MA in conservation studies at West Dean College, Arts and Conservation where they will start in the Fall.

*Regional reporter:*  
Silvia Marinas-Feliner

### Pacific Northwest

**Linda Roundhill** mercifully can still work on long-term projects in her studio, but alas without assistants or clients. A variety of porcelains, bronzes, polychrome wood statuary, ceramic plaques, and baskets have been her companions these last few weeks. They are all fascinating, but not good conversationalists. Ergo, she completed unknown hours of audiobook listening while doing bench work (*Boys in the Boat, Postcards from the Edge, All the Light We Cannot See, Unbroken, Blue Shoes and Happiness, The Book of Isaiah, Unnatural Death, Funny--You*

*Don't Look Autistic, Pride and Prejudice, How the Finch Stole Christmas,* etc). She is looking forward to her usual outdoor sculpture projects for a change of scenery!

The Royal BC Museum conservators are all “working from home” but they are expected to head back to the museum in a few weeks. They are doing their best during this pandemic crisis to look after themselves and others, as well as their collections. From Canada, they wish the best to their American neighbors, who seem to be suffering a great deal. Hopefully the worst is behind us and positive changes ensue, as we learn new ways of doing things.

Some are raising brand new chickens and distributing fresh eggs. Some are sewing non-medical masks. Some are growing food, and others are taking this opportunity to engage in professional development and administrative backlog. It's certainly an interesting time, and fortunately they remain healthy so far.

**Megan Doxsey-Whitfeld** has been brushing up on the care of silver by teaching her partner (a chef) to polish his silver spoon collection. She has had a container of precipitated calcium carbonate moving around with her ever since the care of metals workshop that she took in school (taught by **Lyndsie Selwyn**, senior conservation scientist, Canadian Conservation Institute), and she is glad that it is finally getting some use! It has been a nice break from all the computer work, although she now finds herself frequently going down a rabbit hole researching silver hallmarks.

**Kasey Lee** delivered a couple of BC Heritage Emergency Response Network webinars through the BC Museums Association on Emergency Response and Salvage of Museum Collections. After attending the AIC webinar on Collections Care in the Age of Covid-19, he was able to include some content on that topic as well. If you're interested in the webinars, the recordings will soon be posted at <http://museumsassn.bc.ca/brain/learning-opportunities/webinars/>.

**Corine Landrieu** has been fortunate to work from her studio on a substantial backlog of pieces since the beginning of Washington's stay-at-home order, and making patient clients happy. A nice variety of objects and challenges, ranging from Navajo pottery, to antique trays, ceramic and porcelain sculpture, roman artifacts, and oceanic art. She has been enjoying the quiet time and more leisurely pace, taking walks in her neighborhood and helping her garden deal with the annual invasion of weeds.

**Lisa Duncan** is looking forward to getting back to work after Covid-19 Quarantine here in Seattle. She has no work, other than some backlog. Everything has frozen up. Luckily her garden has days of weeding so she will be billing out her services to the bees, squirrels, and birds this year. Do you think they'll pay in a timely manner? Ok, maybe she should also apply for a few funded loans and grants too. Maybe they'll pay her, maybe not, she's pretty low on the totem pole. (There are, without doubt, many others in the same situation. Ed.)

The Seattle Art Museum conservation team just about caught their collective breath after the February re-opening of the renovated and expanded Seattle Asian Art Museum when the lockdown was issued in Washington State.

During the brief interim window of time, staff had been working on projects including the bittersweet task of evaluating an incoming bequest of works of art from the Virginia and Bagley Wright collection. Mrs. Wright passed away this year, and attendees of the 2013 WAAC meeting may remember visits to see her collection at her condo and to the Wright Exhibition Space where SAM, the Getty Conservation Institute, and Mrs. Wright collaborated to show *9 From LA*, incorporating material from her collection and SAM's as well as extensive material from the GCI's *From Start to Finish: De Wain Valentine's Gray Column*.

**Nicholas Dorman** and **Elizabeth Brown** are developing documentation and a work plan as the final group of works from the Wright collection comes to the

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## Regional News, continued

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museum. The bequest includes great works by DoHo Suh, Franz Kline, Philip Guston, Vilhelm Hammershoi, Morris Louis, Sigmar Polke, DeWain Valentine, and many others. Each incoming work is being studied, documented, and, where necessary, conserved and reframed in time for a special exhibition this October.

Unusually, they suspect, SAM's Olympic Sculpture Park stayed open through the pandemic, so they implemented an emergency maintenance program for the outdoor collections and tag teamed on their maintenance on a regular basis. Otherwise, as colleagues everywhere have been forced to do, the SAM conservation team continues to make occasional sporadic forays into the museum sites for brief bouts of essential work and to spend most of their time plugging away remotely on projects during the lockdown.

These projects include finalizing plans and contracts for the re-painting of a monumental Calder sculpture at the Olympic Sculpture Park, which we hope to undertake later this summer thanks to the kind support of a Bank of America grant. The team is also refining the final implementation plans for the completion of our wholesale storage upgrades, supported by a generous IMLS grant and the Seattle Asian Art Museum capital project. As with many institutions, our primary connection with our audience is currently a digital connection; and the conservation team has contributed several short films to the museum's *Stay at Home with SAM* initiative.

*Regional reporter:*  
Corine Landrieu

### Rocky Mountain Region

*Regional reporter:*  
Julie Parker  
Parker Art Conservation LLC  
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www.parkerartconservation.com

### San Diego

The staff of the Balboa Art Conservation Center (BACC) have been busy creating art conservation video tutorials for the public using only the objects and help (read: family) they have at home. assistant conservator of paintings **Morgan Wylder** and chief conservator of paintings **Alexis Miller** have already covered environmental control and lighting, examination and dusting, and framing and hanging paintings in these fun but totally useful "Instastories." More videos will be created and posted soon.

**Sabrina Carli** writes that while she has a lot of work on at the moment, she and her family are healthy, if a little stir crazy. She writes that fortunately the lockdown hasn't been all that challenging for her on the isolation front. However, with the schools closed she is home-schooling a fourteen year old who, thankfully, is rising to the challenge, despite the intensity of his 8th grade curriculum. Today they explored the Age of Enlightenment through the works of Voltaire, Decartes, Rousseau, and Montesquieu!

**Frances Prichett** is trying to gradually catch up on a backlog of work and, now that the rain has stopped, taking frequent breaks to pull weeds in the garden.

*Regional reporter:*  
Frances Prichett

### San Francisco Bay Area

**Yadin Larochette** moved back to the Bay Area after 16 years in Los Angeles. She recently presented a webinar on glazing through Connecting to Collections Care. It's now available through their archives at <https://www.connectingtocollections.org/looking-at-glazing-finding-the-best-solution-to-protect-your-works-of-art-and-historic-artifacts/>

She has also been working on a book on tapestries in collaboration with her

father, **Jean Pierre Larochette**. He is a fourth generation master weaver, and he focuses on techniques while Yadin discusses materials and general care. *An Anatomy of a Tapestry* is scheduled to be released at the end of June.

**Katherine Untch** has been enjoying projects with a variety of team members. She writes, "I have learned that one of the joys of working as a sole proprietor is teaming with colleagues and professionals to fit a specific project, rather than training existing employees to try to fit into a role for which they may or may not yet have experience. Don't get me wrong, I still enjoy teaching and training, but teaming with other conservators, architects, archaeologists, engineers, art movers, etc. has brought a lot of gratification and a level of quality to the work that I admire.

It is an equal joy to be in a position where I can refer others to jobs that might be more suited to their experience and skill set than mine. Being able to provide referrals and not having to feel like I need to take on every job for the sole purpose of income is very satisfying. And of course, I appreciate those of you who have referred me to projects as well. A big thank you for thinking of me!

I don't usually publicize specific projects unless I have specific permission from clients; however, I can share that recent and current projects include repairing architectural elements, moving and repairing artworks on public fountains, design review for public art, teaming with architects for NPS projects, assessing and repairing cemeteries damaged in the CARR fires, consulting on murals, providing more well-rounded conservation services on archaeological sites, consulting for museums, and grant writing. I have also started coaching/consulting for other conservators who have questions or need a little assistance. It's all fun. I'm also glad that our profession already knows how to wear and handle PPE! Stay safe. Be well.

In January of this year, **Karen Zukor** traveled to India as part of her annual work conserving rare manuscripts and books. This would have been the 11<sup>th</sup> year

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## Regional News, continued

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of doing so but it was not to be. Initially arriving in Bangalore, she was invited to give a presentation on 'Working in the Studio and out of a Suitcase' to the National Centre for Biological Sciences Archives department. She then visited the city's Indian National Trust for Art and Cultural Heritage (INTACH) facility, seeing a wide variety of materials being conserved and exchanging information regarding materials sourcing in India with their staff.

A side trip to Pondicherry included an afternoon at the Sri Aurobindo paper making facility and a spirited discussion with local conservators and papermakers about availability of archival supplies and training. The factory, over 50 years old, produces handmade paper from offcuts of cotton rags from the textile industry in Tamil Nadu, which would otherwise end up in landfill. The intended work visit, however, was cancelled because of virus fears, so Karen returned home to the Covid lockdown. Alone in the studio, she is working on two exhibitions, both postponed: a retrospective of the California artist Yolanda Lopez and a traveling show of Ruth Asawa's drawings.

Fine Arts Museums of San Francisco conservators hope that any of you who are artists living in the Bay Area will submit your work for the upcoming deYoung Invitational - they can't wait to see art and people back together again in the galleries. Meanwhile, they are continuing to experiment with new varieties of web content and to work through the digital spring cleaning of their records.

Paintings conservation has been happy to host **Kat Harada** as the Getty Foundation Conserving Canvas Fellow focusing on the treatment of the Museums' large painting of *Vertumnus and Pomona* by François Boucher and his studio. Paper conservation will welcome **Tamia Anaya** for a Mellon Fellowship starting this fall. Tamia is a student in the Buffalo State art conservation program and is currently completing her third year internship at the Library of Congress.

Objects conservation is deeply grateful that **Emily Rezes**, currently a third

year intern in the lab from the UCLA/Getty program, will be staying on with them through the end of the year in a fellowship position.

**Jonathan Fisher** has been working on a variety of projects including a Roy De Forest painting, Inuit sculpture, Burmese polychrome sculpture, and Mexican terra cotta.

*Regional reporter:*  
Alisa Eagleston-Cieslewicz

### Texas

The Harry Ransom Center Preservation and Conservation Division has several announcements: In mid March, responding to a request from the Austin medical community for personal protective equipment for hospital staff, the Ransom Center Conservation and Preservation Division donated its inventory of N95 respirators to the University of Texas Dell Medical School for use by their staff. The donation was initiated by Kress postgraduate fellow in paper conservation, **Emily Farek**.

As part of an effort to reach out to our educational and institutional audiences, Emily gave two Zoom presentations on the research, scientific analysis, and conservation treatment of the Ransom Center's 1648 Blaeu World Map. She was invited by the Winterthur/University of Delaware Program in art conservation to present to current students and alumni, and later by the administration to all HRC staff. Her online presentations were very well received and showcased this project - a major initiative of the department - to audiences that may not have been aware of the extent and depth of her work on this monumental example of the HRC's historic cartographic holdings.

In June, Emily will end her fellowship at the Ransom Center and begin as conservation manager at the Tennessee State Library and Archives in Nashville. We thank her for all of her many wonderful contributions to the paper lab, the Preservation and Conservation Division, and the Ransom

Center mission as a whole. Good luck, Emily!

Since early April, paper conservator **Jane Boyd** has been sewing much needed masks for the Austin Disaster Relief Network. ADRN distributes these masks to the Capital Area Medical Operations Center as well as to Integral Care, an organization that assists adults and children living with mental illness, including depression, substance abuse, and developmental disabilities. Many of Integral Care's clients are homeless and at a higher risk for contracting the virus.

*Regional Reporter:*  
Ken Grant  
Harry Ransom Center

And from so far west it becomes east, we have news from **John Burke**, long time member and supporter of WAAC.

I retired from the Oakland Museum of California in 2015, after 30 years, and worked on a few projects, including at the Computer History Museum in Mountain View with my partner Nora Eibisch, PhD, from Berlin. I began spending increasing time in Taipei (Minsheng Community area), did some workshops at the National Palace Museum, and last year was asked join the faculty at the Graduate Institute of Cultural Relics and Museology at the Tainan National University of the Arts in Taiwan, which is Taiwan's primary conservation graduate program in the countryside. It's far outside of Tainan, the old capital.

There are about 1400 students at TNNUA in total, and I have a little over 30 students and teach four classes a week. The campus is beautiful and remote, surrounded by bamboo forests, lakes, and mango farms. Just outside my faculty housing is a small canal full of red water lilies (and frogs and birds) and a 12th-century bridge that had been relocated from Zhejiang province in China.

My wife Snowy came over to help setup house and is now "working from home" with after-midnight conference calls

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## Membership

*Chris Stavroudis*  
membership secretary

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back to Oakland. Our son Sean, who was in Portland after graduating from Reed College, also came over at the beginning of April, did his government-mandated two-week quarantine in Taipei with Snowy, and all three of us are now on campus, with periodic trips via Japanese-built train system to surrounding villages or a two hour high-speed train back to Taipei once a month or so.

I miss all my US friends/family, and I hope that everyone is safe, and comfortable, and surrounded by loved ones.

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**WAAC Welcomes** the following new members and very late renewals.

The *2020 WAAC Membership Directory* will be emailed as a pdf to all members in July.

Jessica Arista, Jennifer Beetem, Kristin Egan, Nadia Ghannam, Rachael Griswold, Meghan Mackey, Vaughn Meekins, Peter Mitchelson, Elizabeth Nunan, Martin O'Brien, Ewa Paul, Steven Pine, Kari Rayner, Agata Sochon, Elisa Stewart, Pamela Suggs, Bethany Viviano, and Aisha Wahab.

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## More Fun With Vellux, and Face Masks

A problem with many face covering designs, whether commercially available or hand-made, is getting them to conform comfortably around the nose. This tip is for a Vellux addition that can be added easily to most mask designs to improve fit and feel.

The most economical way to get Vellux material to use in conservation treatments is just to buy a blanket online. The blankets come with a sewn over binding that can get in the way when using the fabric for treatment, so one normally cuts it off, which produces a nice Vellux tube.

If you sew a piece of this tube at the top inner edge of a mask and insert a folded over pipe cleaner (or other bendable metal strip) in the tube, it becomes easy to shape the mask snugly to your nose. Not only is it soft and comfortable, it makes a good fit that keeps your glasses from fogging.

If you run out of tubing, you can, of course, sew your own. Probably sewing on a strip of Vellux would work just as well.

(for more on Vellux: *WAAC Newsletter*, v. 39, #3, p. 10)



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## WAAC Publications

### Handling Guide for Anthropology Collections

Straightforward text is paired with humorous illustrations in 41 pages of “do’s and don’ts” of collection handling. A Guide to Handling Anthropological Museum Collections was written by Arizona State Museum conservator Nancy Odegaard and illustrated by conservation technician Grace Katterman. This manual was designed to be used by researchers, docents, volunteers, visitors, students, staff or others who have not received formal training in the handling of museum artifacts. Paperbound and printed on acid-free stock.

**Price: \$10.00**

(\$8.00 copy for orders >10 copies)

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### Back Issues of WAAC Newsletter

Back numbers of the *Newsletter* are available. Issues Vol.1 - Vol.14, #3 (Sept. 1992) are \$5/copy. Issues Vol.15 - Vol.29, #3 (Sept. 1997) are \$10/copy. Issues Vol.30 (Jan. 2008) and after are \$15/copy. A 20% discount will be given to libraries seeking to obtain back issues to complete a “run” and for purchases of ten copies or more of an issue.

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# Beyond the Margins: A Survey of Framing Trends and Preventive Conservation for Modern and Contemporary Paintings

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## Abstract

Frames have long contributed to the physical integrity and presentation of paintings, yet there are limited data on framing conventions for modern and contemporary paintings. To document framing trends, the Museum Conservation Institute (MCI) developed an on-site survey focused on painting collections on display at 13 museums and galleries.

What started as a small academic research project expanded into a half-year study that included six weeks of data collection in the field. The survey was further supplemented with information obtained from on-line museum catalogs. The paintings surveyed dated from the 1880s to the present and included both permanent collections and temporary exhibits. The surveys addressed the following questions:

What are the style preferences for the framing and display of modern and contemporary paintings?

How do these framing and display preferences affect the paintings' long-term preservation?

Distinct trends in the prevalence of traditional, tray, and strip frames were observed for paintings dating from 1880 to the present, as well as a negative correlation between the frequency of glazing and painting size. These observations led to an examination of strategies and best practices required to safely frame and display modern and contemporary paintings.

## Introduction

Historically, frames tended to reflect collectors' preferences and regional styles; however, the age of modernism ushered in new methods of display that influenced framing styles. By the 20<sup>th</sup> century, paintings were increasingly displayed as self-contained works free of any formal or decorative connection to their surroundings (Gaiger 2009). Many paintings have since been exhibited on blank gallery walls, popularized in the mid-twentieth century, employing simplified frame moldings or eliminating the frame entirely (Allan 2013).

Despite ongoing changes in the physical and presentational contexts of paintings throughout the 20<sup>th</sup> and 21<sup>st</sup> centuries, the frame persists. Today, stakeholders might choose to house a work of art in a frame based on its materials, region, style, historical period, and the artist's intent. Framing decisions are also affected by institutional preferences.

Recent exhibition trends have also had an impact on how works are handled and exhibited. Over the past two decades in the U.S., many museums with fine art collections have devoted nearly half of their temporary exhibitions to contemporary art (Halperin 2017). As museums show more contemporary works of art, the exhibition of unframed and non-traditional paintings will also likely increase, presenting new handling and display challenges.

In addition to contributing aesthetically, the frame can play a practical role in the preservation and handling of a painting. Many institutions that exhibit and loan their paintings can rely on the works' frames to protect them from the frequent handling

inherent in the process of packing and displaying art. When used effectively, the frame has the potential to contribute to a painting's safe exhibition and long-term preservation.

By looking beyond the margins of a painting, a deeper understanding of framing and display conventions is possible, leading to better informed decisions for the exhibition and care of modern and contemporary paintings.

## Methodology

### Survey Groups

Over a four-month period, two groups of surveys were conducted to collect data on different topics. The first group (Group A) recorded specific frame attributes of 341 paintings dating from 1880 to the present; the second group (Group B) recorded the prevalence of glazing in 964 paintings, including the works surveyed by Group A. Various data from these surveys were combined to document observed trends.

**Group A:** The first survey focused on frame styles and approximate dimensions of 341 paintings dating from 1880 to present from 13 collections in Washington, DC and New York, NY (Appendix A). From this group of 341 paintings, 223 in-depth survey forms were completed on-site by visiting public galleries and temporary exhibitions.

The in-depth surveys recorded supplemental information relating to a painting's frame construction, materials, decorative qualities, glazing, observable hanging hardware, and context. For the remaining 118 paintings, surveyors recorded only the basic features of frame style, frame prevalence, and dimensions in order to expand the overall data analysis.

**Group B:** The second, broader survey was carried out to determine the prevalence of glazing in 964 paintings observed on-site in DC and NY collections, including the 341 paintings surveyed by Group A. Paintings with glazing were tallied and categorized according to approximate size.

### Survey Criteria

For this survey, frames for paintings on rigid and flexible supports were examined. Works on paper were not included in the sample. The observed media included oil, acrylic, enamel, tempera-based media, and mixed media.

General painting and frame measurements were recorded through on-site estimations or taken from on-line museum catalogs. Based on the longest edge of the artwork, the surveyed paintings were categorized as small (<36 inches), medium (36–60 inches), or large (>60 inches).

### Frame Style

Framing and display styles were described and classified under five categories (Appendix B):

**Traditional frame:** features a lip and recess, known as the rabbet or rebate, which allows the top edge and depth of a painting to be captured and supported.

**Tray frame:** also referred to as a floater frame. The painting "floats" within a tray-shaped molding that allows the canvas's tacking edges to be seen. The space surrounding the painting, the reveal, can vary according to design preferences.

Strip frame: composed of narrow strips of lathing, often thin wood or metal, screwed or nailed into the tacking edges of the canvas stretcher or strainer.

No frame: the absence of a frame is often intended by the artist as part of the work, especially in large-scale paintings.  
Other: singular frame styles that defy categorization.

### Photography

Throughout the in-depth survey, Group A frame styles were photographed to complement written documentation. Photographs were taken in RAW and JPEG format with a 24.2 MP Nikon D5300 Digital SLR camera, capturing overall style, corner details, and oblique shots. In post-production, images were cropped to focus on the frame, and the lens distortion was corrected using Adobe Photoshop. These digital photographs and survey forms have been filed in the paintings conservation department at the MCI.

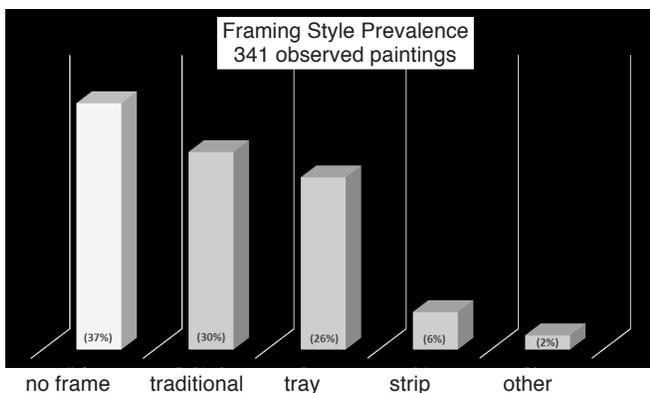
### Data Processing

When documentation was complete, surveyors used Microsoft Excel to generate a spreadsheet showing frame characteristics. The spreadsheet allowed for a variety of sorting combinations, aiding in the identification of distinct trends. Noted trends included the prevalence of certain frame styles, the relationship between a painting's dimensions and framing, and the frequency of glazing.

### Results: Prevalence of Frame Styles

The prevalence of various frame styles in modern and contemporary painting exhibitions was recorded in 13 collections across Washington, DC and New York, NY. Figure 1 shows the high prevalence of traditional frames (30%) on works dating from 1880 to the present, as well as modern tray frames (26%) on works created from 1930 to the present. The least common frame style was the strip frame (6%), possibly because it was popular with artists of the New York School for a relatively short time (approximately 1920 to the late 1960s, based on survey data) (Allan 2013). The "Other" category comprised singular artist frames.

Figure 1. Frame style prevalence as surveyed by Group A in 341 paintings across 13 institutions. The bar graph represents the number of paintings observed in five categories: no frame, traditional frame, tray frame, strip frame, and other.



The majority of the surveyed paintings (126 out of 341 total) were displayed without frames (Fig.1). A total of 103 of those 126 paintings were from modern and contemporary collections (including the Hirshhorn Museum and Sculpture Garden, Whitney Museum of American Art, MoMA, and Met Breuer). This data was combined with 23 additional paintings surveyed in Group A.

### Discussion

A suitable frame can contribute to the structural support and long-term preservation of a painting while enhancing aesthetic qualities and portability.

Paintings exhibited without frames comprised 37% of the surveyed works. Handling challenges presented by an unframed painting can be partially overcome by the installation of hand-holds or straps on the reverse side of the stretcher (Perry 1978).

Multifunctional hardware containing a D-ring and folding brace can facilitate handling, crating, display, and storage. It is especially important to wear gloves when handling paintings without frames, as bare canvas or painted edges can be easily damaged.

Traditional frames comprised 30% of the surveyed works, with wide variations in moldings, finish, and ornamentation. While a traditional frame can protect a painting, it can also present handling challenges if the ornamentation is elaborate or delicate. In such a case, the frame may require a flat surface for staging when not crated or hung.

When selecting a traditional frame molding, care should be taken to ensure the sight edge does not cover too much or too little of a painting's edges, as this can result in abrasion or poor support of the painting (Hyder 1986). Spacers can be added to the rebate of traditional frames to properly secure the painting and to accommodate glazing, if desired. Traditional frames also provide areas on the reverse for attaching backing boards, hardware, and mending plates to secure the painting.

Tray frames comprised 26% of the surveyed paintings and were most prevalent on works created from 1930 to the present. These frames can enhance the handling and structural stability of a painting, as all four sides of the stretcher are supported and attached to the frame, in contrast to a painting contact-fitted against the rebate with mending plates.

A tray frame can also provide optimal surface area for attaching backing boards and hardware for shipping, storage, and display. Due to their simplicity and variation in reveal width, tray frames appear to be a popular choice for the display of modern and contemporary paintings.

Strip frames made up only 6% of the surveyed works and were observed on paintings dating from 1920 to 1960. A strip frame can aid in the handling of an artwork; however, it relies on a painting's stretcher or strainer for support. To respect the artist's intent but better protect the painting, it

## Beyond the Margins: A Survey of Framing Trends and Preventive Conservation for Modern and Contemporary Paintings, continued

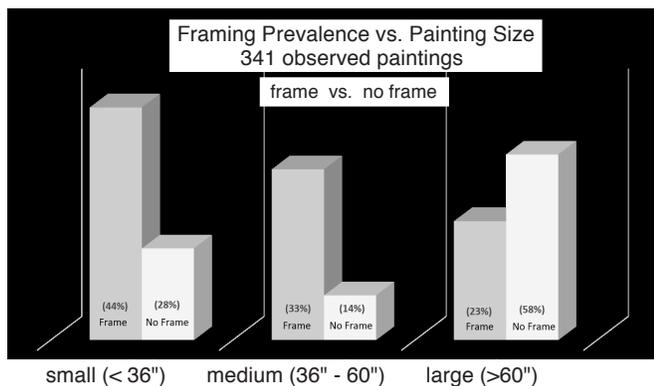


Figure 2. Relationship between frame prevalence and painting size, surveyed and observed in 13 institutions across 341 paintings. The bar graphs represent the number of paintings observed with or without frames in relationship to their size. Based on the longest edge of the artwork, the paintings were categorized as small (<36 inches), medium (36–60 inches), or large (>60 inches).

is possible to retain the strip frame and install an outer tray frame along with glazing.

### Results: Framing Prevalence vs. Painting Size

Across the 13 collections in both DC and NY, surveyors found a negative correlation between the prevalence of framing and painting size (Fig. 2). Small paintings had the highest prevalence of framing (44%), followed by medium paintings (33%). Large paintings had the lowest prevalence of framing (23%) and the highest percentage of being exhibited without frames (58%; greater than both small and medium paintings combined).

### Discussion

The cost of framing is inevitably higher for larger paintings, which may be one reason why large contemporary works are often unframed. Our survey was based on observing real-world trends and practices in galleries and museums, and we chose to track framing only in relation to painting size. The study indicates that whether or not modern and contemporary paintings are framed is generally a size-dependent decision.

Aesthetic considerations do play a role in deciding whether and how to frame a particular painting. For example, smaller paintings frequently have frames that provide more visual space immediately adjacent to the image. In contrast, large paintings without frames have the potential to visually extend beyond the pictorial space to the exhibit wall, a valued effect.

In a practical sense, large-scale, unframed modern and contemporary paintings with bare or painted canvas edges often pose risks for handling, storage, and display that can be lessened by adding a frame. A frame can potentially safeguard a large painting from the risks inherent in

handling, storage, and display, effectively shifting these risks from the painting to the frame.

Repeated drilling required for the attachment of appropriate hanging hardware, folding shipping braces, and hand holds or straps can be more safely sustained by the frame than the painting's stretcher. Moreover, a well-made frame with crossbars can add to the structural stability of a large painting.

Across all size categories, a frame can contribute to the safe handling and structural stability of a painting. For example, a tray frame can incorporate cross bars and corner braces that provide support and rigidity. Furthermore, a frame profile with a higher and wider top molding can serve as a barrier to protect the surface of the painting and prevent soft wrapping materials from touching a painting's surface during transit.

### Results: Glazing Prevalence vs Painting Size

Glazing, which usually relies on the presence of a frame, protects the paint surface from scratches, pollutants, and light. Glazing can be glass or acrylic and have special features such as an antireflective coating, UV filters, safety and shatterproof properties, and scratch resistance. (Distinctions between specific types of glazing on the paintings surveyed were beyond the scope of this study.)

In our survey, the rate of glazing correlated negatively with painting size. Of the 964 paintings surveyed, 81% did not have glazing, but small paintings were glazed more frequently than large paintings. In fact, of the 180 works that were glazed (19% of the total sample size), most were small paintings (60% of those glazed). Reasons for this could include cost, institutional or curatorial preferences, available security personnel, and the stability of the paint media.

Glazing Prevalence for 964 Observed Paintings

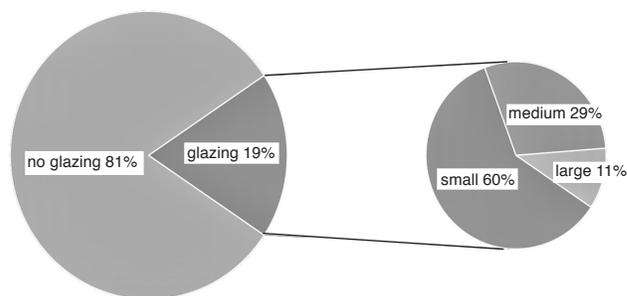


Figure 3. Relationship between glazing prevalence and painting size for 964 paintings across 13 institutions. The left pie chart represents the number and percentage of paintings with glazing, regardless of size (including works from the Group A survey). The smaller pie chart (right) represents the sizes of paintings exhibited with glazing. Based on the longest edge of the artwork, the surveyed paintings were categorized as small (<36 inches), medium (36-60 inches), or large (>60 inches).

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## Beyond the Margins: A Survey of Framing Trends and Preventive Conservation for Modern and Contemporary Paintings, continued

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### Discussion

The preservation concerns associated with unframed and large-scale paintings are not easily addressed with typical glazing options, which may be costly or limited by the size of commercially available materials.

While varnish was often used as a proto-glazing method prior to the 20<sup>th</sup> century, changing artistic practices resulted in a preponderance of unvarnished paintings (Woodcock 2005). Later, many contemporary artists incorporated vulnerable and mixed media, prompting institutions to balance preservation concerns with the aesthetic experience.

One way to address these concerns without imposing a frame on the work is to cover the work with a glass or acrylic vitrine, which offers site-specific protection to large, vulnerable surfaces, especially in areas of high traffic within a gallery space.

A simple acrylic or glass box can have a refined appearance when “kept thin and wide so that it is visually well separated from the painting” (Hackney 2007). Furthermore, the vitrine backing can be painted the same color as the gallery wall to minimize its appearance. However, addressing one preservation concern can raise new issues, since glazing and vitrines can add weight to the painting, making handling more difficult (Woodcock 2005).

### Conclusion

A better understanding of framing conventions aids in both the display and preservation of modern and contemporary paintings. The data collected from this survey reflect general trends, but only in the context of current institutional display preferences. However, as nuanced as framing decisions can be, the construction and style of a frame will nevertheless play an important role in the preservation and interpretation of a painting.

The results of this survey are based on just one method of collecting and processing data from publicly accessible paintings on display. The interpretation of these results indicates that there are indeed observable trends in modern and contemporary frame styles, influenced by the size and time period of the artwork and institutional preferences.

While the frame generally serves a function in preservation and safe handling, how well these goals are achieved will inevitably vary based on the frame’s design.

When installed properly, a frame with a backing board and glazing protects a painting from dust, debris, and visitor contact and provides a buffer against rapid changes in temperature and relative humidity (Stout 1975).

More than a simple appendage to a painting, a good frame reduces the likelihood of damage to the tacking edges by attaching to the back of the stretcher, and can provide structural support through reinforcements like cross bars and corner braces. Lastly, an effective frame will provide a suitable location for attaching hanging hardware and backing boards, thus minimizing the placement of drill holes into the stretcher itself.

The methods employed in this survey can be expanded to cover new locales, different cultures, additional frame styles, and larger sample sizes.

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## Beyond the Margins: A Survey of Framing Trends and Preventive Conservation for Modern and Contemporary Paintings, continued

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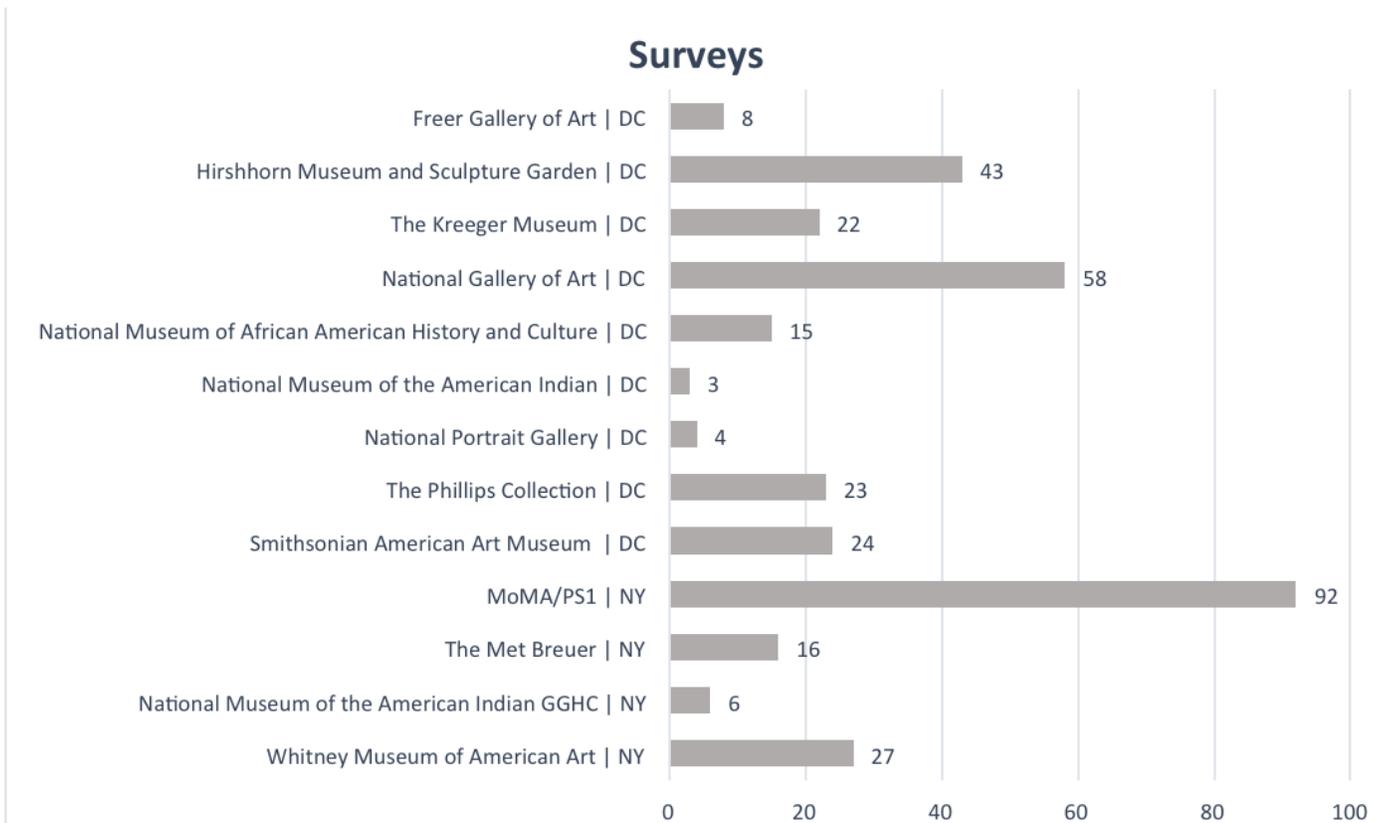
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### APPENDIX A: Survey Locations



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## Beyond the Margins: A Survey of Framing Trends and Preventive Conservation for Modern and Contemporary Paintings, continued

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**APPENDIX B:** For this survey, frame styles were broadly classified into the following categories:

### Traditional Frame

Traditional frames (Fig. 4) can have diverse materials, profiles, and ornamentation while being similar in construction. This survey considered traditional frames to be those which feature a lip and recess, known as the rabbet or rebate, which allows the top edge and depth of a painting to be captured. Contemporary frames that exhibit this structure might have more minimal moldings. However, we also observed the use of old frames for new paintings, such as Impressionist artists' use of modified gilt frames that were toned to suit their paintings' light palette and matte textures (Penny, 2010). Both contemporary and period-specific formats continue to be used in the display of modern and contemporary paintings today.

### Tray Frame

Tray frames (Fig. 5), sometimes referred to as floater frames, are so named because the canvas appears to float inside the tray molding. The painting is situated in the tray and often held in place by screws inserted in the back of the frame, allowing the viewer to see the entire artwork. This frame exposes the canvas edge rather than covering it with a rabbet. In effect, the painting may appear unconstrained while still defined in an enclosed interior space. Depending on the aesthetic preferences of a given exhibition, institution, or individual, there can be variations in the space between the frame and painting, known as the reveal or shadow gap. The rise in popularity of this frame style is tied to the legacy of frame designer Robert Kulicke, who conceived of a welded metal frame not long after developing a wooden floating frame for the furniture and design company Knoll in 1953. In the late 1950s, MoMA decided to standardize the frames on much of its painting collection, commissioning the Kulicke welded aluminum frames which began production in 1960 (Allan 2013).

### Strip Frame

Strip frames (Fig. 6) are constructed of strips of thin wood or metal screwed or nailed into the sides of the canvas stretcher or strainer. Despite its unobtrusiveness, the strip frame still defines the edges of a painting and helps draw attention to the image (Kiilerich 2001). Like the tray frame, the front face of the strips can be flush or extend just beyond the painting's surface, adding slight protection to a painting's edges. This frame style was used frequently by Abstract Expressionists in the 20<sup>th</sup> century (Brettell 1986).

### No Frame

The absence of a frame is often part of the concept behind paintings displayed today, especially large-scale works. The preference for no frame reflects the intent of 20<sup>th</sup>- and 21<sup>st</sup>-century artists who aim to display their paintings unadorned (Kiilerich 2001, 321). A variation of this display technique is sometimes called "gallery wrap," where the tacking edge of the canvas is stapled or nailed to the back of the stretcher or strainer, allowing the side edges to be clean or painted, sometimes serving as a continuation of the composition.

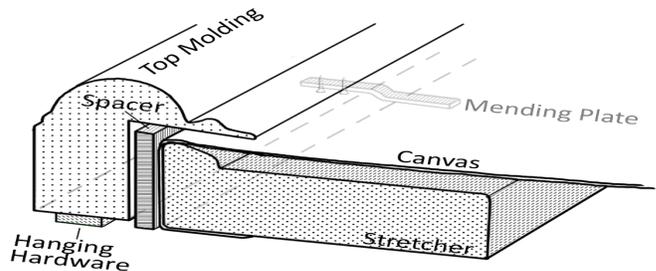


Figure 4. Example of a traditional frame.

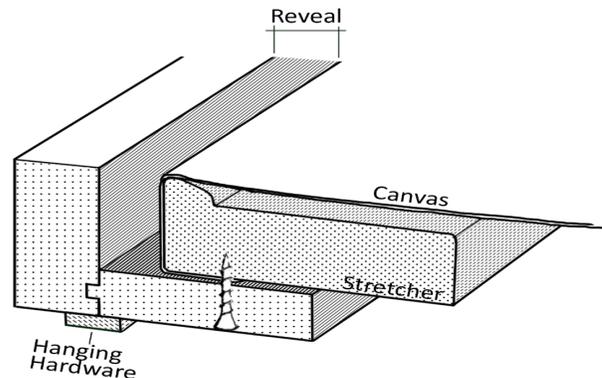


Figure 5. Example of a tray frame.

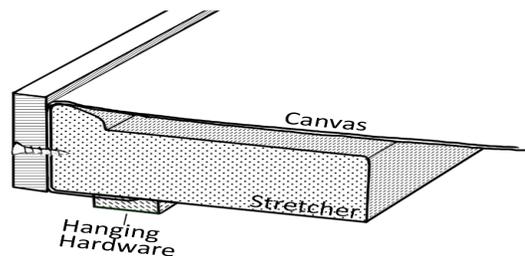


Figure 6. Example of a strip frame.

### Acknowledgments

The authors thank Robert Koestler, Paula DePriest, and Jessica Johnson at the Smithsonian Museum Conservation Institute; Renée Anderson at the National Museum of African American History and Culture; the Asian Pacific American Initiatives Pool, administered by the Smithsonian Asian Pacific American Center; Eileen Graham, the Internship to Fellowship (I2F) Program, and the Office of Fellowships and Internships' Webb Endowment.

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# Chelating Agents in Paper Conservation

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Even in normal times, not everyone can take part in the chelating workshops that Antoinette and Chris have offered. So, in the interest of sharing with a much larger group, we're presenting the core material here in the *Newsletter*.

To supplement this article with many recipes and protocols, a power point presentation, "The Use of Chelating Agents in Paper Conservation," is available on the WAAC website at [www.waac-us.org/chelatingagents](http://www.waac-us.org/chelatingagents), password: WAAC-Dwan. A short video is also available at [www.waac-us.org/citratelutions](http://www.waac-us.org/citratelutions).

In the simplest model to describe aging in paper, light and oxygen cause the oxidation of the cellulose. The paper discolors because the oxidized molecules absorb blue light causing the paper to reflect everything but the blue light, thus becoming yellow. This discoloration is something that a paper conservator may want to minimize with treatment.

The gentlest treatment, but not without consequences, is to wash the paper. Water can solubilize some of the degraded/oxidized components of aged paper. When immersed, a lot of discoloration products can be seen diffusing into the wash water. It is also possible to modify the wash water by altering its pH and conductivity to control and enhance the process.

If the decrease in discoloration is deemed insufficient, the more aggressive treatment previously has been to bleach the paper. There are two broad classes of bleach: oxidative bleaches and reducing bleaches. Oxidative bleach further oxidizes degradation products that were not water soluble, rendering them water soluble so they can be washed away. Reducing bleaches can be thought of as repairing the damage done by natural oxidation. They reduce the structure that absorbs blue light eliminating the discoloration.

However, there is a treatment between the extremes of simply washing and that of bleaching. That is the subject of this article.

## Chelation

As has been found in paintings conservation, we can posit that calcium and magnesium ions (and possibly others) form a bridge between oxidized sites on the cellulose fibers and oxidized degradation products. These ions "cement" the otherwise soluble oxidized and discolored degradation products onto the mechanically sound cellulose. Without these ions the degradation products would wash away, but now they are essentially glued in place. It is reasonable to assume that, in addition to degraded cellulose species, general impurities and absorbed grime are likewise adhered onto the cellulose fibers

Enter chelating agents. Chelation comes from the Greek word *χηλή*, *chēlē*, meaning claw as in "to grab." A chelating agent or polydentate ligand is a water-soluble substance whose molecules can form multiple coordination bonds to a single metal ion.

Or to describe it graphically, these are molecules that possess a three-dimensional structure that forms a water-soluble cage. The acid and other functional groups on the chelator molecules will abstract and hold ions in the cage structure.

The ions that cement the degraded, discolored, and otherwise insoluble components onto the paper fibers are pulled into and held in the cage-like structure of the chelating agent freeing the degraded material to be washed away.

There is, of course, more to the chemistry and physics than this, but it does serve as a model of how a chelating agent can aid in the washing of discolored paper.

The efficacy of using a chelating agent can easily be observed by first washing a degraded paper until no more degradation products are washed out. If the paper is then immersed into a chelating solution, often more discoloration will be released from the paper into the bath. No bleaching was used so there was no alteration of the paper's chemistry. The "cemented" discolored material was released and allowed to wash away.

Another useful function of chelating agents is the removal of metal ions. Metal ions (iron, copper, lead, tin, aluminum) can cause active catalytic degradation of the paper structure. This is often the cause of foxing. These metal ions can be removed by treatment with chelating agents, often locally applied or overall. Rust stains can also be ameliorated by treatment with a chelating agent, although a reducing agent is also needed.

## Citric Acid, EDTA, and DTPA

There are three commonly used chelating agents in conservation: citric acid (citrate); ethylenediaminetetraacetic acid (EDTA); and diethylenetriaminepentaacetic acid (DTPA). Citrate is the mildest, in that its formation constant for the calcium ion is 4.68 while that for EDTA is 10.61 and DTPA, 10.75.

The formation constant, a thermodynamic constant, is a measurement of how strongly a given ion will be held in the chelator's cage. The higher the formation constant, the more strongly that ion will be held by the chelator. We can compare the formation constant of an ion in a given chelator with the solubility parameter of the slightly-soluble salt source of the metal ion. If the formation constant is roughly equal to or greater than the solubility product, the ion will be taken up by the chelating agent. If the solubility parameter is greater than the formation constant, the ion will not dissolve sufficiently to be accessible to the chelator.

All three chelating agents start as free acids; that is, their carboxylic acid groups (three for citrate, four for EDTA, and five for DTPA) are protonated – the acid groups are in their less-soluble, acid form. Citric acid is freely soluble in water, but the free acid forms of EDTA and DTPA are a little harder to dissolve.

As the acid groups are reacted with a base, the carboxylic acid groups are transformed into charged carboxylate groups. The charge renders the chelator molecule more water-soluble. The nature of the counter ion, the base, added is not particularly significant although sodium and ammonium ions are most common – meaning that sodium hydroxide or ammonium hydroxide was added to the acid

form of the chelator molecule to make the solution. In practice, citrate solutions can be either ammonium-citrates or sodium-citrates and can be used interchangeably. Prepared ammonium citrate dibasic or tribasic (also called diammonium or triammonium citrate) are citric acid with either two (di) or three (tri) ammonium ions added to give a pH of 6.5 for the “di” or pH of 7.0 for the “tri”.

You can also make your own solutions beginning with citric acid and adding ammonia or sodium hydroxide to the desired pH using a pH meter. Ready-made products from conservation or chemical suppliers are convenient, but it is cheaper and very easy to make your own. 10% ammonium hydroxide or 10% sodium hydroxide is used to adjust pH in the citric acid.

The ammonia can evaporate from ammonium citrate solutions, so it is important to use freshly made solutions (they are stable for weeks but not months). They are also not a good choice for gels for the same reason: the ammonia evaporates. In comparison tests, ammonium and sodium citrates performed identically.

### Some Chemistry

Each carboxylic acid group on a chelator will have a separate acid dissociation constant,  $K_a$ . We normally use the ‘p’ notation (negative base-10 logarithm) and refer to the dissociation constants by their pKa values. Citric acid, having three acid groups, has three dissociation constants,  $pK_1$ ,  $pK_2$ , and  $pK_3$ ; EDTA has four; and DTPA, five. The values of the dissociation constants can be found in Table 1.

Table 1

Chelator	$pK_{a_1}$	$pK_{a_2}$	$pK_{a_3}$	$pK_{a_4}$	$pK_{a_5}$	pH when fully deprotonated
Citric acid	3.13	4.76	6.40			7.3
EDTA	2.00	2.67	6.16	10.26		11.2
DTPA	2.30	2.60	4.17	8.26	9.48	10.4

There is an important distinction between the formula of a powder in a reagent bottle and the behavior of that powder when it is dissolved in water. The bottle can say diammonium citrate or disodium citrate on the label, and that’s completely correct. Each molecule contains one citrate ion, one hydrogen ion, and two ammonium or sodium ions.

However, when dissolved in water, the ions separate, and there will be ammonium or sodium ions; hydrogen ions (pH); and a mixture of citric acid (which we could call trihydrogen citrate which is uncharged); dihydrogen citrate with one negative charge, hydrogen citrate with two negative charges; and citrate ion with three negative charges.

All four species are always present in solution. Some may be at vanishingly low concentrations, but there will always be some of each present. In the case of diammonium citrate or disodium citrate, calculations show that the pH of the solution should be about 5.5. This means that the concentrations will be:

Citric acid	$H_3Citrate$	0.01%
Dihydrogen citrate	$H_2Citrate^-$	4.06%
Hydrogen citrate	$HCitrate^{2-}$	69.02%
Citrate	$Citrate^{3-}$	26.92%

This tells us that at the pH of 5.5, one fourth of the citrate in solution will be in the most active chelation form,  $Citrate^{3-}$ , while two-thirds will be in the form that matches the name on the bottle.

Each of the forms of a chelating agent will hold ions. How well a specific form of a chelating agent can hold a particular ion is very difficult for chemists to determine. The tabulated formation constants are a measurement of how strongly an ion is held in the fully ionized (deprotonated) form of the chelator. The free acid, hydrogen, dihydrogen, etc. forms will each hold an ion with less force than the fully deprotonated chelator.

The pH of each chelating agent when fully deprotonated is listed in Table 1. At pHs below the fully deprotonated form, as the solution pH increases, a greater proportion of the chelating agent will be in the fully deprotonated form, and therefore the solution will have a stronger chelating action. This increase in effective strength of the chelator with increase in solution pH is in addition to any effects of the pH change on treatment materials.

So, we see that citric acid is at its maximum efficiency above a pH of 7.3. Using EDTA at a pH of 11 or higher will be most effective for most metal ions. In the case of DTPA, the chelator molecule is fully deprotonated at a pH of just over 10, and will be most effective for most ions.

That is unless you are trying to remove iron salts. At high pHs, iron ions form insoluble salts with the hydroxide ion. Striking a balance between the formation of iron hydroxides at high pH and having the less active forms of DTPA or EDTA in solution at lower pHs, the maximum efficacy of both DTPA and EDTA to complex iron ions is around pH 5.0.

### Chelators and Alkaline Reserve

As mentioned previously, calcium, magnesium, and other ions can hold degradation products in the paper structure, but calcium carbonate and magnesium carbonate also function as alkaline reserves and historically have been considered to improve the stability of paper dramatically.

If EDTA or DTPA are used to remove the calcium and magnesium ions that are holding discoloring color bodies onto the cellulose structure, the chelators will also remove any alkaline reserve from the paper structure.

However, something interesting (and something that needs more research) happens with citrate solutions. Calcium citrate is only sparingly soluble in water. If you add citrate ions to a solution of calcium hydroxide, after a few minutes a white precipitate of tricalcium dicitrate tetrahydrate will form. The solubility of the precipitate is 0.85g/L.

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## Chelating Agents in Paper Conservation, continued

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(For reference, calcium carbonate's solubility is 0.013g/L and calcium sulfate's, 0.24g/L.) One could speculate that lone calcium ions "cementing" degradation products are taken up by the citrate ion efficiently. Small deposits of calcium carbonate might form a skin of calcium citrate on the surface of the deposits that slowly is washed away in rinsing, perhaps not stripping away all the alkaline reserve.

The potential to remove calcium or magnesium, is anathema to paper conservators. However, at the end of a treatment, calcium or magnesium can easily be added back into the paper structure. Some chelating formulas are designed specifically not to remove calcium but target other degradation-causing metal ions.

A strategy that can be exploited to preserve the alkaline reserve in paper is to use the calcium salt of EDTA or DTPA. By adding the stoichiometric amount of calcium hydroxide to the EDTA or DTPA – one calcium ion per chelator molecule – the chelator will not alter the alkaline reserve. In this case, the EDTA's or DTPA's cage already is holding a calcium ion so no additional calcium ions will be extracted from the paper.

However, metal ions will be pulled into the cage, and a calcium ion will be released. This is because metal ions,  $Fe^{++}$ ,  $Fe^{+++}$ ,  $Cu^{++}$ , etc. have higher formation constants than the calcium ion and will be preferentially complexed, releasing the calcium ion into the surrounding solution. An example of this formulation is in the Stock Solutions (Table 3).

Anecdotally, several conservators have noted that the presence of the calcium has hindered stain removal. They were more successful when they switched to the formulation without the calcium.

### Sources of Metallic Components in Paper

Sarah Bertalan wrote an excellent paper<sup>1</sup> describing the many instances in which inorganic and metallic components might be present in paper artifacts. These include: barium sulfate, calcium sulfate, clay, satin white (coatings), zinc sulfide, calcium carbonate, titanium dioxide, zinc oxide, diatomaceous earth, and earth pigments (iron oxides/hydroxides). Aluminum ions can come from aluminum sulfate used in alum-rosin sizes.

In addition to those mentioned in her work, it is also probable that air-borne pollutants carry metals (such as lead) in the grime deposited on the surface of artifacts. Grime can also be held near the artifact by metal-ion "cement" mentioned above. The paper industry notes that heavy metals are contained in wood pulp itself, especially iron, copper, and manganese. In paper manufacture, DTPA is used to remove metals from pulp so that hydrogen peroxide bleaches are not degraded by the metals. Coatings, fillers, sizing, and dyes, that can contain contaminants are then added back into the paper-making process.

Soyeon Choi in her 2007 publication summarizes the role of metals in foxing: "Metals found in foxing spots

include iron, tin, copper, copper-mercury, or copper-zinc (brass). Metals were typically identified using scanning electron microscopy and energy dispersive x-ray or x-ray fluorescence. It is interesting to note that copper contamination is more potent in foxing formation since copper ions can have higher catalytic effect than iron ions. A copper-induced foxing spot was reported to have the same appearance as an iron-induced foxing spot."<sup>2</sup>

XRF on a number of papers showed metallic content:

G. Bauman: Zanders Bergisch Gladbach 1917:  
iron, chromium, sulphur, aluminum, calcium

Beckett wove, tan, paper made in Ohio:  
iron (more than Bergisch), sulphur, aluminum,  
silicon, (titanium possible)

Ansbach:  
iron (more than other samples), aluminum, silicon,  
calcium, barium

Charcoal Newsprint:  
iron (large amount), aluminum, chromium,  
titanium, calcium

Arches (no other description), new not aged:  
iron, calcium, sulphur, aluminum, titanium

Rives (no other description), new not aged:  
calcium, sulphur, aluminum, titanium

### Iron Is Special

A reducing agent is principally used when iron needs to be complexed and removed. It is difficult to know when iron in one of its many forms might be present as a coloring material, additive, or an accidental ingredient. If iron is suspected then a reducing agent is required in addition to a chelating agent to change any  $Fe(III)$  which is insoluble, into  $Fe(II)$  which is only slightly soluble but soluble enough to be complexed by DTPA or EDTA.

Although both the reducing agent and chelator can be combined in the same solution, treating an area first with a reducing agent followed by the chelator, going back and forth as needed, can also be successful.

The iron-gall ink study group introduced a non-bleeding indicator test for iron ions (bathophenanthroline indicator paper) that turns magenta in the presence of soluble  $Fe^{++}$  (Iron(II) or ferrous) ions. The indicator paper can be used to test for the presence of  $Fe^{++}$  ions. To test for both  $Fe^{++}$  and  $Fe^{+++}$ , a small amount of reducing agent (1% ascorbic acid – vitamin C) is applied to the test strip to reduce the  $Fe^{+++}$  ions to  $Fe^{++}$  causing the indicator to turn magenta. Further information and instructions can be found on their website: [https://irongallink.org/igi\\_indexff9d.html](https://irongallink.org/igi_indexff9d.html).

### Reducing Agents

Sodium metabisulfite, introduced to the conservation community by Seth Irwin, has an initial pH of 4.1 so 10% NaOH is needed to adjust to the desired pH. It is considered a mild reducing agent. It is soluble in water and slightly

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## Chelating Agents in Paper Conservation, continued

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soluble in alcohols. It is easy to obtain (Amazon) and is not considered hazardous. It mixes easily and can be disposed of simply. It is used in food production (“...metabisulfite solution concentrations between 1.25% and 12% in shrimp during storage”) and common laundry products.

For use with DTPA, 2% sodium metabisulfite was selected because the recommended ranges in conservation literature for reducing agents have been between 2% – 5%. In the authors' tests, 2% seems to be a suitable concentration, however further experimentation is encouraged.

Sodium dithionite has an initial pH 7, and both Helen Burgess and Season Tse recommend using it at 0.1 M concentration. However, it can be tricky to use: it has to be made immediately before use; if not buffered, it quickly degrades, forming acidic by-products, turns yellow, and smells bad. Since there are other options, it was not selected for the workshops, but can be used successfully if desired. It is the primary reducing agent in the paper conservation literature.

In "The Chemistry of Sodium Dithionite and its Use in Conservation,"<sup>3</sup> Lyndsie Selwyn and Season Tse reported on their many tests that showed using a reducing agent alone followed by rigorous rinsing can change Fe (III) to Fe (II). The Fe (II), which is soluble, is removed during the rinsing. However, using only a chelating agent did not remove Fe (III).

They further tested two methods, combining the reducing with chelating agents in the same solution or using the reducing agent followed by the chelating agent. Both were successful.

The chelator was used to remove any remaining Fe (II) ions. “The iron (II) ions can also react with residual rust to form a gray stain that might be magnetite, or with dithionite decomposition products, such as hydrogen sulfide to form black iron sulfide.” “Re-staining (color reversion) occurs when the remaining iron (II) ions are oxidized back to rust colored iron (III) oxyhydroxides.”<sup>4</sup> The chelator is a type of insurance that there will be no further reactions from colorless Fe (II) in the future.

Sodium borohydride has an initial pH 9 -10. It is widely used by paper conservators, and it can be both incorporated into chelating systems and used as a separate first application. For iron stains, the authors find that the sodium borohydride at 0.1- 0.15% is needed for adequate reducing prior to use of a chelator. (Table 2)

All reducing agents have the potential to “bleach” the paper, so keeping track of the reducing agent and the color of the artifact is important. A reducing agent removes conjugated double bonds implicated in discoloration. As such it has a dual function as a stain remover for cellulose and to convert iron to a soluble form. A solution can always be repeated to approach the color tone and to remove the stain slowly.

Table 2

Sodium Metabisulfite 190.1g/mol pH 4.0			
1M	190.1 g/L	19 g/to 100 ml	19%
0.25M	47.5 g/L	4.7 g/to100 ml	~ 5%
0.1M	19 g/L	1.9 g/to100 ml (Seth Irwin)	~ 2%

Sodium Dithionite 174.1g/mol pH 7.0			
1M	174.1 g/L	17.4 g/to 100 ml	~17%
0.25M	43.5 g/L	4.4 g/to 100 ml (Seasan Tse)	~ 4%
0.1M	17.4 g/L	1.7g/to 100 ml (Helen Burgess)	~ 2%

Sodium borohydride 37.83 g/mol, pH 9.0			
0.1M	3.78 g/ L	0.37g/to 100 ml or	
0.05M	1.8 g/L	0.18g/to100 ml	
0.03M	13 g/L	0.11g/to100 ml typical stain removal	
		used for 2-step procedure	

### Buffers

DTPA is self-buffering between pH 1.4 – 6.1 and pH 7.5 – 10.4. Citrate solutions are buffers between pH 2.2 – 7.3. If you add some citric acid to the DTPA, you have an effective buffer range of pH 1.4 – 10.4.

### Antoinette's Notes on Treatment Guidelines

Chelating agents generally are used at the earlier stages of a treatment. A generic sequence might be using a citrate solution to surface clean followed by initial bathing to remove water soluble degradation products, then drying.

If any degradations stains remain, test various chelator solutions for effectiveness. For example, a 2% sodium citrate at pH 8.5 might be more effective than the same solution at a lower pH. Remember to always test media at any change of concentration or pH. When testing, check under UV light to see effectiveness of tests or treatment. Sometimes results can be seen under U.V. before they become obvious in normal light.

To break up staining clusters, a mild chelation treatment (bath, local, brush, or spray application) can be tried prior to any further stain removal, alkalization, or bleaching treatments. Often no other stain removal procedure will be needed.

One consideration is whether the stain has metallic components, since often a stain will have several components. The chelator will remove the metallic contribution to the stain, opening up and releasing degradation products. Since it is generally not known which metals might be contributing to the stain or in what quantity, switching pH or adding a reducing agent will often make a difference in the success of the treatment.

Refer to the solutions chart in Table 3. It is divided into the top section where solutions are made at 6.5 pH and the lower section where solutions are made at 8.5 pH. The formulations come from the MCP. It is necessary to have a calibrated pH meter, as paper strips are not accurate enough. (See supply list.)

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## Chelating Agents in Paper Conservation, continued

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Surface clean sized paper with 1% ammonium or sodium citrate pH 7.0 followed by rinsing. Use a swab and a gentle rolling procedure. You can add some calcium to the rinse and use a swab, as in application. Unsized paper will be abraded, so this is not recommended. Overall bathing may be a substitute for local surface cleaning.

Bathing. After initial bathing, test and use a 1% - 4% ammonium or sodium citrate pH 7.0 - 8.5 bath followed by rinsing to break up stain and degradation components. Test between changes of concentration or pH. Multiple baths at the same concentration and pH may be needed to remove degradation for that setting. When the bath water is clear, move on to another concentration or pH and repeat the process. Rinsing, drying, and testing between changes is recommended. Most metal ions except iron will be removed in the 7-8.5 pH range.

Concentration is significant. At too low a concentration you may not get results. It is advised to start with a 1% solution and work up to stronger concentrations as needed. Working locally may be needed if media is sensitive. Note that if media is, for example, sensitive at 3%, it may not be sensitive at 1% repeated three times.

I have found instances where a mat-burn is removed with a sodium citrate, except one area which needed a DTPA solution.

Gels. Instead of using water to make the gel, use the sodium citrate solutions. Ammonia in the ammonium-citrate solutions may evaporate, leaving an uncertain pH.

Test for iron for stronger chelator use. For suspected iron, use the bathophenanthroline indicator paper. If confirmed, use a reducing agent followed by chelator. If not confirmed, use chelator at higher pH or concentration to capture non-iron metals contributing to stains. Follow by rinsing.

There are advantages to either the one-step or two-step process. When iron is detected and, for example, makes a brown toned paper darker, it may be best to mix the reducing agent, sodium metabisulfite, and the chelator. I don't do this one-step method personally because it may be too surprising due to limitations of testing. However, it is a valid method.

I also don't find that sodium metabisulfite significantly reduces iron at the 2% concentration. More experimentation is encouraged with this reducing agent. Its advantage is that it can be easily mixed to a pH of 6.5, unlike the sodium borohydride.

When iron is found overall, it can be necessary to use a stronger reducing agent such as sodium borohydride which cannot be mixed with the lower pH of DTPA of 6.5 for iron. In that instance use the two-step method. This is my personal approach, perhaps because I am very familiar and comfortable with sodium borohydride.

To make a one-step solution with both the reducing agent and chelating agent together:

Make 100 mL of pH 6.5 DTPA buffered with citrate / 10% sodium hydroxide:

Measure 7.86 grams of DTPA, 1.92 grams citric acid, and 1.48 grams calcium hydroxide into 50 mL distilled water. (The DTPA will not dissolve until some sodium is added.)

Slowly add approximately 30 mL of 10% sodium hydroxide to bring the pH to 6.5 while stirring and monitoring the pH.

Bring the final volume to 100mL.

Add 4 grams of sodium metabisulfite to 75 mL distilled water and adjust with 10% sodium hydroxide to pH 6.5.

Add DTPA and sodium metabisulfite solutions together and bring final solution to 200mL.

To make a two-step solution:

Add 0.15 grams of sodium borohydride to 100mL of distilled water.

Treat either locally or overall (I prefer a spray application rather than a bath) followed by rinsing but not drying.

Use blotters to remove excess moisture.

Apply the sodium citrate solution at pH 6.5 or the DTPA solution at pH 6.5 either locally or overall.

It may be necessary to repeat the procedure for significant results.

Make 100 mL of pH 6.5 DTPA buffered with citrate / 10% sodium hydroxide :

Measure 3.93 grams of DTPA, 0.96 grams citric acid and 0.74 grams calcium hydroxide into 75mL distilled water. (The DTPA will not dissolve until some sodium hydroxide has been added.)

Slowly add approximately 15.45mL of 10% sodium hydroxide to bring the pH to 6.5 while stirring and monitoring the pH.

Bring the final volume to 100mL.

After any treatment, rinsing is very important. You may not see changes until the area is rinsed and dried.

### Making Solutions

Some basic recipes for chelating agents are listed in Table 3.

These solutions are intended either as stock solutions to be diluted when used or can be used at these higher concentrations as is. The stock solutions are 0.1M in concentration. This translates to approximately 2% citric acid and 4% DTPA. To use a solution at 0.05M (1% in the case of citrate), simply dilute the concentrate with an equal part of distilled or deionized water.

We haven't given recipes for EDTA-based solutions but you would replace the 3.93 grams of DTPA in the recipes with 2.92 grams of EDTA (the free acid not disodium EDTA),

Table 3 Stock Solutions

0.1M pH 6.5 Citric Acid / NaOH (self-buffered)	To make 100 mL of pH 6.5 citric acid / sodium hydroxide :
1.92 g citric acid	Adjust the pH to 6.5 by slowly adding approximately 9.19 mL or 10.2 grams of 10% NaOH while stirring and monitoring the pH.
~9.2 mL 10% NaOH to adjust pH to 6.5	Bring the final volume to 100mL.
100 mL final volume with distilled water	
0.1M pH 6.5 DTPA / NaOH (unbuffered)	To make 100 mL of pH 6.5 DTPA / sodium hydroxide :
3.93 g DTPA	Measure 3.93 grams of DTPA in 80mL distilled water. (The DTPA will not dissolve until some NaOH has been added.)
~10.9 mL 10% NaOH to adjust pH to 6.5	Slowly add approximately 10.85 mL or 12.04 grams of 10% NaOH to bring the pH to 6.5 while stirring and monitoring the pH.
100 mL final volume with distilled water	Bring the final volume to 100mL.
0.1M pH 6.5 DTPA / 0.05M citric acid (as buffer) / NaOH (buffered)	To make 100 mL of pH 6.5 DTPA buffered with citrate / sodium hydroxide:
3.93 g DTPA	Measure 3.93 grams of DTPA and 0.96 grams citric acid into 75mL distilled water. (The DTPA will not dissolve until some NaOH has been added.)
0.96 g citric acid	Slowly add approximately 15.45mL of 10% NaOH to bring the pH to 6.5 while stirring and monitoring the pH.
~15.5 mL 10% NaOH to adjust pH to 6.5	Bring the final volume to 100mL.
100 mL final volume with distilled water	
0.1M pH 6.5 DTPA / 0.05M citric acid (as buffer) / CaOH / NaOH (buffered)	To make 100 mL of pH 6.5 DTPA loaded with calcium ions, buffered with citrate / sodium hydroxide :
3.93 g DTPA	Measure 3.93 grams of DTPA, 0.96 grams citric acid, and 0.74 grams calcium hydroxide into 75mL distilled water. (The DTPA will not dissolve until some NaOH has been added.)
0.96 g citric acid	Slowly add approximately 9.3mL of 10% NaOH to bring the pH to 6.5 while stirring and monitoring the pH.
0.74 g calcium hydroxide Ca(OH) <sub>2</sub>	Bring the final volume to 100mL.
~9.3 mL 10% NaOH to adjust pH to 6.5	
100 mL final volume with distilled water	
0.1M pH 8.5 Citric Acid / NaOH (unbuffered)	To make 100 mL of pH 8.5 citric acid / sodium hydroxide :
1.92 g citric acid	Measure 1.92 grams of citric acid in 83mL distilled water.
~10.8 mL 10% NaOH to adjust pH to 6.5	Adjust the pH to 8.5 by slowly adding approximately 10.77 mL or 11.96 grams of 10%NaOH while stirring and monitoring the pH.
100 mL final volume with distilled water	Bring the final volume to 100mL.
0.1M pH 8.5 DTPA / NaOH (self-buffered)	To make 100 mL of pH 8.5 DTPA / sodium hydroxide :
3.93 g DTPA	Measure 3.93 grams of DTPA in 78mL distilled water. (The DTPA will not dissolve until some NaOH has been added.)
~13.2 mL 10% NaOH to adjust pH to 6.5	Adjust the pH to 8.5 by slowly adding approximately 13.19 mL or 14.64 grams of 10% NaOH while stirring and monitoring the pH.
100 mL final volume with distilled water	Bring the final volume to 100mL.
0.1M pH 8.5 DTPA / CaOH / NaOH (self-buffered)	To make 100 mL of pH 8.5 DTPA loaded with calcium ions / sodium hydroxide :
3.93 g DTPA	Measure 3.93 grams of DTPA and 0.74 grams of calcium hydroxide into 80mL distilled water. (The DTPA will not dissolve until some NaOH has been added.)
0.74 g calcium hydroxide Ca(OH) <sub>2</sub>	Adjust the pH to 8.5 by slowly adding approximately 7.9mL of 10% NaOH while stirring and monitoring the pH.
~7.9 mL 10% NaOH to adjust pH to 6.5	Bring the final volume to 100mL.
100 mL final volume with distilled water	
0.1M pH 8.5 DTPA / 0.05M citric acid / CaOH / NaOH (self-buffered)	To make 100 mL of pH 8.5 DTPA citrate / sodium hydroxide:
3.93 g DTPA	Measure 3.93 grams of DTPA, 0.96 grams citric acid, and 0.74 grams calcium hydroxide into 75mL distilled water. (The DTPA will not dissolve until some NaOH has been added.)
0.96 g citric acid	Slowly add approximately 9.3mL of 10% NaOH to bring the pH to 6.5 while stirring and monitoring the pH.
0.74 g calcium hydroxide Ca(OH) <sub>2</sub>	Bring the final volume to 100mL.
~9.3 mL 10% NaOH to adjust pH to 6.5	
100 mL final volume with distilled water	
4% sodium metabisulfite (not buffered)	To make 100 mL of sodium metabisulfite / sodium hydroxide:
4.00 g sodium metabisulfite	Measure 4.00 grams of sodium metabisulfite into 75mL distilled water.
? mL 10% NaOH to adjust pH to desired pH	Slowly add 10% NaOH to bring the pH to the target value while stirring and monitoring the pH.
	Bring the final volume to 100mL.

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## Chelating Agents in Paper Conservation, continued

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and use less 10% sodium hydroxide. (Note that the pH 6.5 solution would be self-buffered but the pH 8.5 solution would be unbuffered.)

To make a 10% sodium hydroxide solution:

Be very careful and wear protective equipment.

Always add the sodium hydroxide slowly to the water, as it lets off heat. It's best to use a polyethylene container.

To 500 mL of distilled or deionized water add 50 grams of sodium hydroxide. Store as a stock solution in a plastic container.

### Long Term Stability

From a recent publication by Madison Brockman on the testing of paper treated with chelators:

“The results of the microfade testing and the three accelerated aging experiments show that citrate solutions do not appear to cause any deleterious effects to paper supports over time.

Paper samples, regardless of fiber composition or treatment with the citrate solution, appear to age at the same rates and are overall much less prone to change than the Blue Wool standards we rely on for indicating light sensitivity. In conclusion, citrate solutions, when used in normal conditions, appear to be safe for continued use in paper conservation treatments.”<sup>5</sup>

### Useful Supplies Available from Amazon.com

Oakton EcoTestr pH 2 Waterproof pH Tester, 0.0 to 14.0 pH range

Apera Instruments SX620 pH Pen Tester Kit with 0.01 pH Accuracy, 3-point auto calibration

Innovating Science - pH Buffer Calibration Kit - 16.9oz (500mL) of each pH 4, 7, 10 and 4oz. (120mL)

G2PLUS 100PCS 3ml Disposable Plastic Graduated Transfer Pipettes

2 of 1 Oz. Plastic Medicine Cups Medline 1fl. Oz. Polypropylene Plastic Medicine Cups, Sleeve of 100

Digital Pocket Scale: Next-shine Digital Gram Pocket Grain Jewelry Weigh Scale by 200 X 0.01g, Black

BIPEE SH-2 Laboratory Magnetic Stirrer Hot Plate, 12x12cm Aluminum Panel, 0~1600RPM, 1L Volume, Heating & Stirring Type

Intllab Magnetic stirrer with stir bar (No Heating). Max stirring capacity 3000mL  
Sodium metabisulfite: Duda-Energy

Sodium Hydroxide: Red Hot Devil Lye

### Footnotes

1. "Foxing and Reverse Foxing: Condition Problems in Modern Papers and the Role of Inorganic Additives." Sarah Bertalan. *The Book and Paper Group Annual*, 34 (2015).

2. "Foxing on Paper: A Literature Review." Soyeon Choi. *JAIC* 46:2 (2007).

3. "The Chemistry of Sodium Dithionite and its Use in Conservation." Lyndsie Selwyn and Season Tse. *Reviews in Conservation*, 9, 2008.

4. Ibid. 69. "After treatment with SDT (sodium dithionite), it is important to rinse objects well to remove residual soluble compounds such as iron ions, SDT, and its sulfur-containing decomposition products.

Although SDT alone can be effective at changing the color of an iron stain from rust-colored to colorless, the effect may be temporary if the iron (II) ions are not removed by thorough rinsing. Re-staining (color reversion) occurs when the remaining iron (II) ions are oxidized back to rust colored iron (III) oxyhydroxides.

The iron (II) ions can also react with residual rust to form a gray stain that might be magnetite, or with dithionite decomposition products, such as hydrogen sulfide to form black iron sulfide."

5. "Accelerated Aging Study of Papers Treated with Citrate Solutions." Madison Brockman. *WAAC Newsletter*, 42:1 (January 2020).

### Additional references

"The Use of Chelating Agents in Conservation Treatments." Helen Burgess *The Paper Conservator*, 15:1 (1991) 36-44.

"Triammonium Citrate: An Investigation into its Application for Surface Cleaning." Leslie Carlyle, Joyce Townsend, and Stephen Hackney. *Dirt and Pictures Separated*. United Kingdom Institute for Conservation of Historic and Artistic Works. (1990).

"Ammonium Citrates for Stain Removal in Paper." Antoinette Dwan. *WAAC Newsletter*, 37:3, 10-12. (September 2015).

"An Investigation of Parameters for the Use of Citrate Solutions for Surface Cleaning Unvarnished Paintings." Rachel Morrison, Abigail Bagley-Young, Aviva Burnstock, Klaas Jan van den Berg, and Henk Van Keulen. *Studies in Conservation*, 52:4 (2008).

"A Tale of Two Citrates (actually four)." Chris Stavroudis. *WAAC Newsletter*, 37:2 (May 2015).

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If you want a refresher on the calibration of pH meters and other subjects, go to the GCI UTube channel and you'll find a series of short videos done by the GCI featuring Chris. Scroll down to find one, and then click the Cleaning of Acrylic Painted Surfaces link to find them all.

# On a Roll: Drawings Beyond the Frame

by Jan Burandt

Julian Schnabel  
*Night in  
Boystown*

Gift of Caroline  
Huber and the estate  
of Walter Hopps



Rembrandt  
*Head of an Old  
Woman*



The Menil Drawing Institute focuses exclusively on unique works of art on paper, drawings. One of the popular romanticized characteristics of drawings is their intimacy, and there are many examples in our collection of drawings that demonstrate this quality. Recently we spent time with a Rembrandt sketch, poring over the exquisite details of the 4" x 4" paper. It may be this category of work that inspired Keiko Keyes to make the poetic analogy likening paper conservators to solo violinists.

However, more and more often, intimacy of scale is giving way to the power of scale. Crates measuring ten by ten feet are lining up to roll through the loading dock. Crates holding a single drawing can be so large they have to be secured at steep angles to get through doorframes.

With availability of papers in large rolls, artists are making statements that expand beyond a frame. Rolled drawings are becoming more common and they present much different challenges than drawings of an intimate scale.

If art is created on a large sheet of paper and then mounted to a stretched canvas - we can use standard hanging hardware and specialized mechanical lifts to deal with the weight. Those works behave like traditional paintings. But many drawings are not treated in that manner by the artist, and the impracticality, expense, and even undesirability of framing large-scale drawings means that they wind up on rolls.

## Trisha Brown, *Untitled (Montpellier)*, 2003, 130" x 106 3/4"

One of the challenges in dealing with rolled drawings is simply having the staffing power and space to view and evaluate the artworks. Sometimes it only happens when there is a compelling reason, and on short notice. A few years ago, a curator wanted to access our recently acquired Trisha Brown drawing, *Untitled (Montpellier)*, 2003, 130" x 106 3/4" for a symposium she was organizing.<sup>1</sup>

Choreographer Trisha Brown produced life-sized drawings by dancing on papers taped to the floor, with drawing media held in her hands and between her toes. Her dancing on the sheet also left artifacts of movement related to the stresses from the pressure of her body on the paper. The distortions and stretching of the paper were an integral part of the artwork.

The intent of the artist is always paramount in the care and display of drawings. The drawing was produced horizontally, but the artist and her gallery had installed a hanging system for the work to be displayed vertically.

From a curatorial standpoint the aesthetic of the install method was important to maintain. In this case, it was a series of long strips of wide pressure sensitive tape, secured to the verso of the drawing and extending beyond the edge by several inches. The tapes were folded over, and pushpins were used to tack this double thickness of the tapes to the wall. Additional horizontal tapes had been added as reinforcement, across the vertical tapes just below the top of the drawing.

Although this would not have been my preferred method if I were doing the original installation, I was tasked with making it work. The (possibly archival) pressure sensitive tapes were very securely attached to the drawing, however the work had been installed so many times that the numerous holes present on the tabs were making securing with pins difficult.



<sup>1</sup> Vivian L. Smith Foundation Symposium: TRESPASS: Entering the Scene of Making, April, 2016.

## On a Roll: Drawings Beyond the Frame, continued

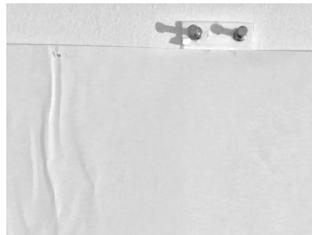
The holes had been enlarged, and the central area of the tapes was useless from a structural standpoint. It was clear that repeating the same method of installation would not work.

Adaptations needed to be made to strengthen the system. Addressing this in the most pragmatic and straightforward way possible, I took a “when in Rome” approach and added archival tyvek tape to reinforce the back of the vertical pressure sensitive tapes. The reinforcing tape covered the numerous holes in the original tape facing the wall.

To distribute the weight of the drawing and make tearing of the tapes less likely, I cut small two-ply matboard pieces (thin but sturdy) for each of the tabs – just slightly smaller than the fold-over.



Inserted between the folded flaps of the original tape, the matboard provided support for the entire width of the tapes, rather than at the pinpoint only - as the previous system had.



We then used two pushpins per tab rather than one, to avoid the heavily damaged portions of the tabs. The new tyvek tape added strength to the original tab at the points of contact.

The end result was a drawing that was secure on the wall with very nearly the same aesthetic appearance as the original artist installation. Once the tabs were secured, we unrolled the vertical drawing on the wall and “overmatted” the lower edges using thin boards and

push-pins (placed outside the drawing). This temporary measure prevented the drawing from curling forward as the paper relaxed into its new orientation.

This all happened rather quickly in the only available space in the museum that was large enough to temporarily install the work, the high-ceilinged paper conservation studio.

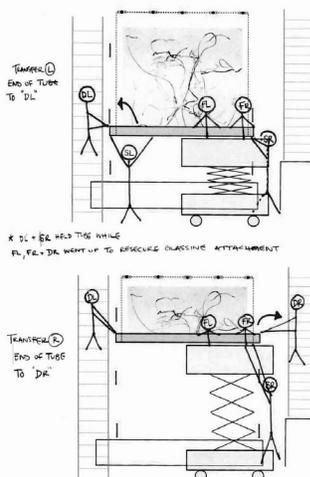
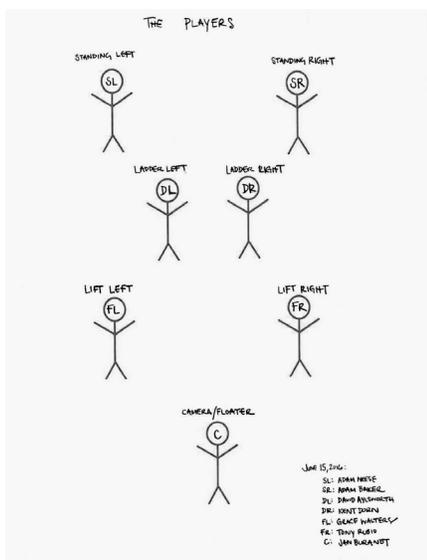
Everything we did with this drawing required a lot of participants. In preparation, the art handling crew had gathered together with us in the paper lab to talk through the proposed system of installation.

Our lab technician Grace Walters drew out a step-by-step diagram with our projected plan of action. It showed all the players and described what role each would have in the installation/de-installation.

Looking at these diagrams together before approaching the drawing confirmed everyone was on the same page. A few changes were made as we went along, and the diagrams were accordingly updated afterwards. Movies and stills were also made to document the process. And just as installation had required adaptation of the hanging system; in de-installation we improved the diameter of the tube, using a sonotube covered with MarvelSeal.

Before a year was out, the drawing was scheduled for an exhibition. In that time, there had been several changes on the art handling crew and although some staff were familiar with the artwork, it was a new team approaching the drawing this time. We had documented quite a bit about the drawing during the tight installation in the paper lab. Prior to this second installation the new team reviewed all those plans, photos, and movies.

The gallery placement was at a narrow end of a room, with just enough area to navigate the two lifts required to manage the drawing and its heavy tube. Since we were quite familiar



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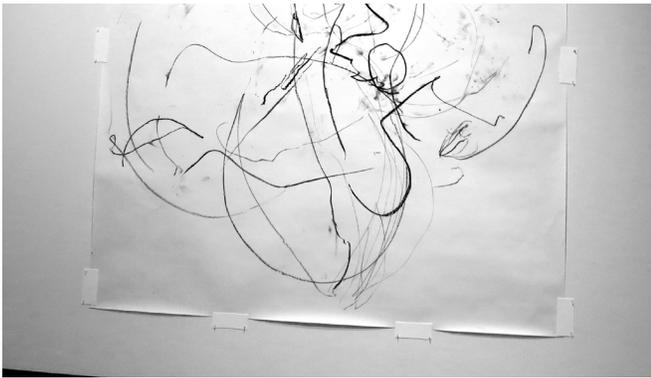
## On a Roll: Drawings Beyond the Frame, continued

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with the drawing and its needs, we were able to negotiate a few details in the exhibition design.

The placement of the drawing in a dead end of the gallery meant that people were not walking around it, and a platform on the floor kept visitors at arms length. Nearby air vents were covered. This reduced stress both on the drawing and on our gallery attendants.

The duration of the exhibition installation was two weeks, so we scheduled the installation of the drawing in the earliest timeframe. Installing temporary restraining boards around the bottom edge and sides coerced the drawing into relaxing with a nice drape. Just prior to the opening, the restraining borders were removed which resulted in an unrestrained sheet with a slight curl at the bottom which was the preference of our curator and exhibition designer.



With this installation, as before, we assembled a large crew and documented the entire process with movies made with a simple digital camera on a tripod. One of the important messages these films convey is the difficulty of maneuvering the drawing, and the importance of having enough space to work around it.

### John Cage, *New River Rocks and Smoke*, 102" x 389"

Less than a year later a new curator approached me with a request to install an iconic artwork by John Cage that I knew only by reputation. It was referred to as "the scroll." *New River Rocks and Smoke* was legendary in that it is so large (102" x 389") that it was stored on a roll, and no one working in conservation or art services had ever seen it other than on a tube in storage.

The tentative plan was to install the scroll in a stand-alone exhibition on relatively short notice. Frankly I was thrilled to have an excuse to pull together the team to look at it. However, it is no trivial task to do anything with an unmounted drawing that is over thirty-two feet wide.

There was only one place in the museum that was large enough to safely unroll the drawing for assessment – in a gallery on a day that we were closed to the public. It was exciting to open up the artwork, and everyone was pleased to see it and contend with its condition. Once they saw the drawing, the curatorial staff was eager to program the exhibition.

The drawing was made in part with fire. The techniques used to create the drawing caused damage and distortion that is seen as integral to the work.

When you wave a large sheet of paper over a fire to deposit soot patterns, you expect a few damages to the sheet as a result. It was far from pristine, with numerous tears and scars that clearly related to the production. There were also rough repairs that had the appearance of something likely done in the artist's studio. We accepted those conditions and appearance with a wabi-sabi mindset.

There were also damages and losses to the edges of the paper caused by the drawing having been stapled to a wall.



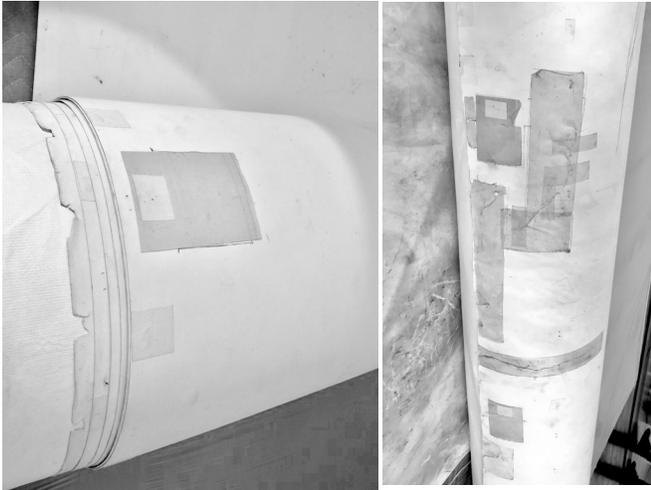
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## On a Roll: Drawings Beyond the Frame, continued

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Since the early technique for display caused these damages and losses, the curators didn't want to disturb that history of the artwork.

Damage due to earlier installations was recognized early on, and not repeated. At some point a series of hinges had been placed all around the drawing with stringent uniformity to replace the stapling technique; but even those were damaged.



As we re-rolled the drawing, our pre-program lab technician Brianna Warren photographed the verso, and the damages that would need to be addressed were documented. Problems with hinges were easier to quantify later with the digital images than onsite during the short period of time we had in the initial examination.

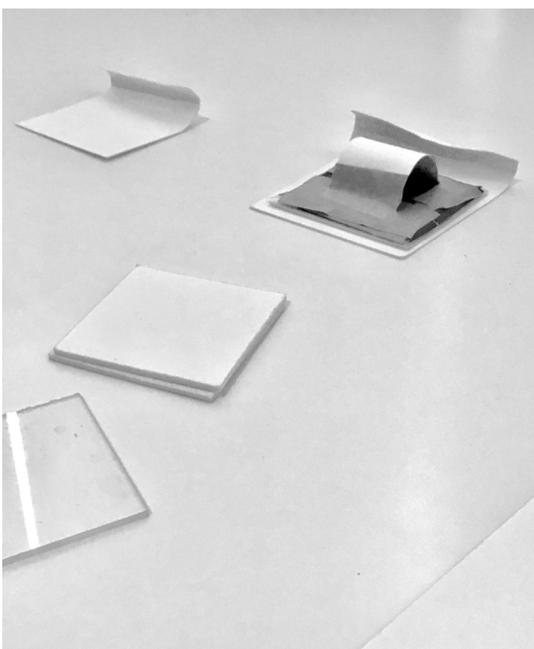
The hinges had been designed to provide invisible attachment to the wall. A portion of the hinge close to the paper edge was left un-adhered. To attach the piece to the wall, the drawing had to be bent / held back as a thumb tack was inserted by hand through the hinge into the wall.

This system was a dramatic step up from the staples that were originally used, but problems were still evident. Many of the hinges were partially torn from prior installations. A better system was needed, but with time constraints – impractical. We discussed and rejected the use of magnets.

The ordinary flat head thumbtacks used for the earlier installation were discovered in the framing studio. Re-using the original thumbtacks was practical, as the flat heads hid behind the drawing, however the mechanics of getting them positioned and secured had to be improved to avoid tearing the hinges or distorting the drawing.

We constructed a mock-up with hinges and tested it in the following manner. Each tack was inserted into a piece of folded over tyvek tape which securely held it so that it could be positioned. A piece of hard two ply board was then slipped between the tack head and the drawing. The board, which was curled at the top to hook over the thumb, acted as a barrier between the tack head and the drawing, preventing an impression when force was applied.

Finally, a pressing tool was made of a small acrylic sheet, padded with thick blotter, and wrapped with silicone release mylar, to which a loop was added at the back so it could be held by a thumb. When everything was in position, the tool was used to push the tack into the wall. The tool provided a firmness that would force the tack into the wall, but a surface that was soft and slick enough not to distort the paper or disturb the drawing media.



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## On a Roll: Drawings Beyond the Frame, continued

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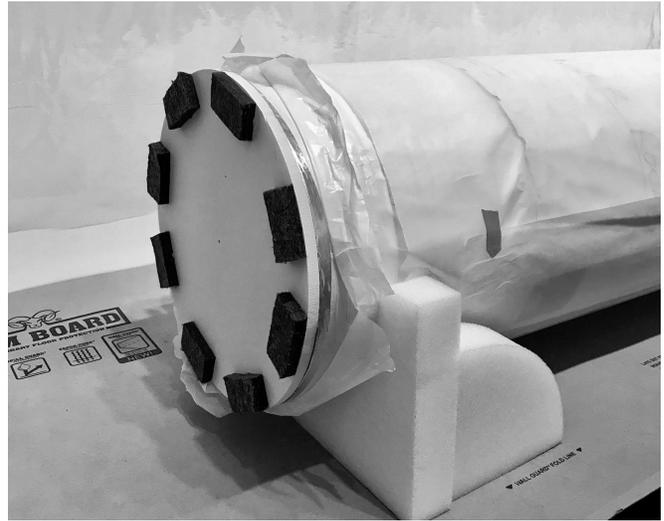
Our chief installer reviewed the mockup with me, and we agreed we could safely move forward using this technique. That meant that the hinges needed to be repaired before the exhibition. Given the extent of the damage and the time required to have the drawing in place for the repairs, we moved the drawing to the storage room of the Menil Drawing Institute, which has large banks of flat files with worktops and ample room for maneuvering.

To make the workspace even larger we brought adjustable height worktables from the lab and lined them up to extend the tabletop. Every time we handled this work at least four people had to be present - usually more. A larger work surface meant fewer rolling and unrolling sessions.



In the course of planning the installation, the curator and exhibition designer had pre-determined the display height. Once the hinges were repaired, the crew rolled the drawing back onto the tube at just the right height for the installation, careful to avoid any telescoping of the paper.

They had made a support insert for the tube, finished with material that could slide across the platform without marring the surface. Being able to unroll the drawing without bearing its weight was important since this drawing and roll are quite heavy, and the installation takes at least half an hour.

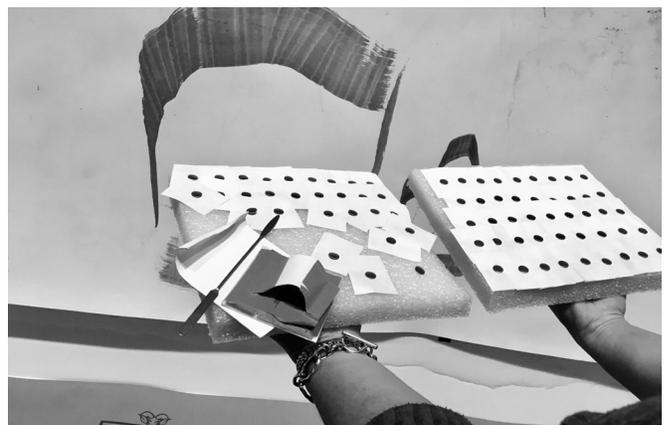


Prior to the day of installation, the crew got together to review the plans and practice the installation technique on a mockup. As usual on the day of installation we recorded everything, both in stills and movies.

We assembled a crew that was slightly larger than what we thought we would need. It is always good to have runners available. With so many hands present, it is important to be clear about who is conducting the project. In this case it was our art handler, Alex Rosas, who was at the top of the lift securing the drawing and handling all observations and concerns. We would all wait for his direction and act in unison to keep the drawing safe.

The series of simple actions went just as planned. The weight of the roll was fully supported as it was rotated across the platform. The right edge of the drawing was held in place until enough of the drawing was secure on the wall to bear the weight of the paper sheet.

The staged tacks were held in place on a hard foam panel. The crew on the platform made sure the paper did not slip as it was being unrolled.



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## On a Roll: Drawings Beyond the Frame, continued

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The tacking system worked beautifully and was made easier by Alex being on a lift rather than ladder. Once the roll was removed, the drawing still had a bit of curl at the edges. The sides were secured - held down with board for a few days while the paper settled into place.



Once the paper was relaxed, the side hinges were secured. Hinges along the bottom were secured loosely, not to interfere with the natural drape to the paper.

There is no rocket science about this, but it is impossible to overstate the importance of examining subtle

details of simple projects. No aspect of the task is too small to explain or clarify. We documented our part of this

drawing's history so thirty years from now the next group of people will understand exactly how we approached this project. At the conclusion Alex and I reviewed each step together and documented it for posterity.

Shortly after our successful de-installation of the drawing, I was contacted by a colleague who needed to supervise the installation of a recently discovered related drawing by Cage. It was produced in the same era and had the same hinging system. I sent him our mockup kit, instructions, and movies. He conveyed to me that he and his team found the material invaluable, and their installation was a success.

One thing these experiences with rolled drawings highlighted is the importance of having discussions with artists whenever possible and documenting their part in the process. Hanging systems that work initially may not be viable over time.

Complications arise when failures in initial systems require us to make adaptations without input from the artist. Whether they are available for consultation or not, working out systems for large-scale drawings that meet the aesthetic goals of the artist and provide the security needed to present the artworks to future audiences is a satisfying and worthwhile goal.

The challenge of large rolled drawings has been an interesting one to address. After dealing first with a vertical roll, and then a horizontal one, next I am faced with a 222" mylar substrate, which I am reluctant to roll at all. It has media that cannot sit on itself - even with interleaving. I have been curious to investigate the concept used in truck bed cover engineering - a spiral track system for rolling the cover so surfaces don't touch each other. Feedback from giving this talk at the WAAC annual meeting at the Getty made me realize there are people facing similarly interesting problems in the rolling of contemporary paintings and even ethnographic materials. I look forward to continuing to explore these large scale drawings and would be happy to hear from anyone faced with related projects.

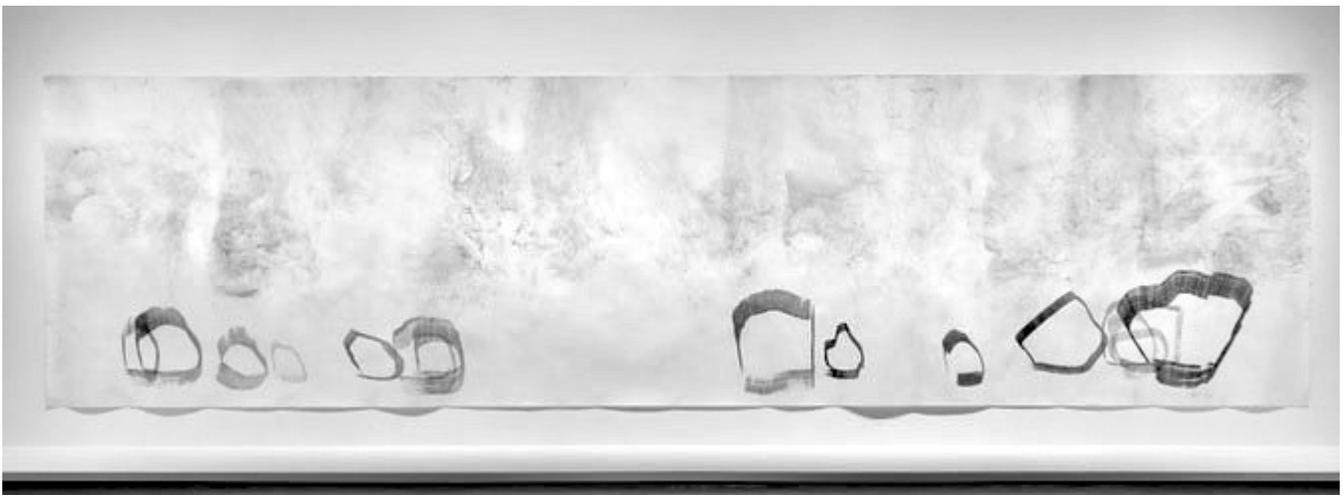


photo by Paul Hester

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## On a Roll: Drawings Beyond the Frame, continued

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### Installation Notes for Rolled Drawing J. Burandt & Alex Rosas 2019

#### Prior to Installation:

- The wall was measured and placement of drawing determined.
- No air vents should point towards the drawing, if so they need to be covered or diverted.
- The perimeter of the area the drawing is meant to occupy is outlined with dots of blue tape.
- A pencil line was drawn with a level along the top line.
- Dartek was stapled to the wall and the staples were covered with small passages of Tyvek tape.
- An insert was prepared for the tube - it has felt pads on the bottom to slide smoothly along the floor or platform without scratching. The weight of the roll is on the floor, not suspended by handlers.
- The drawing was rolled onto the tube very evenly at the same distance from the edge of the tube that it is wanted to be off of the floor or platform.
- Prior to installation a mockup was used to familiarize the team with the pinning method.

#### During installation of the upper edge:

- At LEAST six people should be present during installation.
- Three people held the drawing on the roll, being careful to keep the paper from sliding.
- The main installer is on a lift at the edge of the drawing.
- One person on a ladder at the edge assists the main installer by holding the paper in place as it is unrolled 3-4'.
- The main installer insures the first portion of the drawing is level with the pencil line.
- The main installer inserts tacks with supporting Tyvek tape (with backing in place) in 2-3 hinges.
- The initial hinge is secured by inserting the thin board between the tack and the drawing, and pressing the front of the drawing with the silicone release mylar coated tool.
- The ladder assistant remains at the first corner of the drawing and holds it in place against the wall as the main installer continues to tack the hinges to the wall.
- As the drawing is unrolled any interleaving material will need to be removed from the surface and handed off to a floor assistant.
- The three roll handlers work together to slide the tube on the floor as they unroll against the wall while being careful to keep the paper from sliding down on the roll.

#### Final installation details:

- Once the top of the drawing is tacked into place, the edges can be secured as well.
- The bottom edge was secured from the center outward.
- The bottom hinges are not carrying weight, they are keeping the drawing from floating out from the wall. They can be loosely secured to give the paper a more natural appearance.

#### Removal of the drawing:

- A microspatula is to be slipped between the wall and the hinge, gently loosening the tack, which should stay in place due to the Tyvek it is pushed through.
- As the drawing is pulled away from the wall, the Tyvek tape is separated from the hinge and the tack lifted away and pressed into the foam block

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## Articles You May Have Missed

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**“Light Relief: Could New Lighting Technology Avert the Need for Restoration?”** *The Art Newspaper*, 01/31/2020

Lighting affects our perception of a work of art. Just ask Robert van Langh, the head of conservation and science at the Rijksmuseum, where the Netherlands’s most famous painting, Rembrandt’s *The Night Watch*, is undergoing the most ambitious conservation effort in its 378-year history.

A chance observation made when the 1642 painting was temporarily relocated to a side gallery alerted the museum staff to details that had been previously thought lost, such as the architectural background. Changes in technology over the past decade have transformed art lighting from a presentational aid to a tuneable precision tool that can function as a non-invasive means of limiting the need for traditional restoration techniques.

The steady replacement of traditional halogen lamps with energy-efficient LEDs has resulted in significant savings for museums and galleries, while reduced heat emissions and little to no ultraviolet or infrared radiation have lowered (though not eliminated) the risks posed to works of art from light sources, thereby granting greater freedom to conservators and curators.

The treatment plan for *The Night Watch* has yet to be determined, Van Langh emphasises, and while he was not prepared to say whether lighting might offer a substitute for other conservation steps, he makes it clear that non-invasive interventions are always preferable.

Van Langh insists that observations must be substantiated by science, with one likely source of data a map of the painting’s chemical constituents currently being compiled through macro X-ray fluorescence (XRF) scans. For now, Van Langh is focused on establishing “which wavelengths of light to use so that we see as much as possible of *The Night Watch*”.

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*SPAM HAIKUS*

*author unknown*

*Blue can of steel  
what promise do you hold?  
salt flesh so ripe*

**“‘The Scream’ is Fading. New Research Reveals Why,”** *The New York Times*, 02/07/2020

“The Scream” is fading. Tiny samples of paint from the 1910 version of Edvard Munch’s famous image of angst have been under the X-ray, the laser beam and even a high-powered electron microscope, as scientists try to figure out why portions of the canvas that were a brilliant orangeish-yellow are now an ivory white.

Since 2012, scientists based in New York and experts at the Munch Museum in Oslo have been working on this canvas to tell a story of color. But the research also provides insight into Munch and how he worked, laying out a map for conservators to prevent further change, and helping viewers and art historians understand how one of the world’s most widely recognized paintings might have originally looked.

Jennifer Mass, the president of the Scientific Analysis of Fine Art lab in Harlem, explained the science recently in her lab. She pointed to a photograph of what looked like a set of stalagmites: the surface of “The Scream” seen under a microscope. “This is really, really not what you want to be seeing,” she said. Nanocrystals are growing on the painting.

Eva Storevik Tveit, paintings conservator at the Munch Museum, said the museum had sought out Dr. Mass because of her expertise in cadmium yellow. Munch’s materials have now been more fully analyzed, and the research, due out this spring, fleshes out a more complete story about the painting. Dr. Mass’s team was able to narrow down Munch’s paint choices using his paint tubes, some 1,400 of which are held by the Munch Museum.

Over time, with exposure, the yellow cadmium sulfide has oxidized into two white chemical compounds, cadmium sulfate and cadmium carbonate. The analysis, Dr. Mass said, has implications for Impressionist through Expressionist paintings made between the 1880s and the 1920s painted with cadmium yellow, 20 percent of which she estimates are experiencing similar phenomena.

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*Can of metal, slick  
soft center, so cool, moistening  
I yearn for your salt*

The colors of the late 19th century and early 20th century are fading especially rapidly because of changes that took place in paint making. The industrial revolution brought about the production of synthetic pigments like cadmium or chrome yellows. Artists began experimenting with these synthetic pigments, which were sometimes haphazardly prepared and untested for the purposes of longevity but were exceptionally bright — enabling the brilliant palettes of Fauvism, Post-Impressionism and modernism.

That made the new pigments popular, Dr. Mass said, but they were unpredictable. Conservators wouldn’t apply new pigments to a canvas — but digital reconstructions can gesture at the past. Dr. Mass predicts a shift toward augmented reality in reconstructions, so that you might hold up your phone to a painting and see its former color layered on the canvas.

**“HBCU Students Restore 1940s African American Art in Delaware,”** *WHYY PBS*, 02/11/2020

In the late 1800s and into the early 1900s there was a big trend of exhibitions and world’s fairs. The first ever world’s fair, called the Centennial Exposition, took place in Philadelphia in 1876 and was attended by more than 8 million people from around the world.

Unfortunately, the world’s fair has a long history of racism. Early world’s fairs put people of color from around the world on display as part of exhibitions. At the Chicago World’s Fair in 1933, “African Americans were shoved in the back in little shanties and they couldn’t even come to the main part,” said Joyce Hill Stoner, director of preservation studies at Winterthur Museum in Delaware.

After years of work, the 1940 American Negro Exposition in Chicago finally put the spotlight on African American heroes, both the historic and of that time. The event featured 12-foot-long murals and 33 diorama boxes. The creations depict scenes as far back as the construction of the Sphinx in Egypt

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*Twist, pull the sharp lid  
Jerks and cuts me deeply but  
Spam, aaah, my poultice.*

some 4,500 years ago. The exhibits were on display for two months in 1940.

Most of what was created for these fairs was designed to be temporary. The dioramas were rescued from being destroyed by artist Charles Dawson, who transported 20 of the 33 dioramas by truck from Chicago to Tuskegee, AL. "They were 60% destroyed when they got to Tuskegee," Stoner said.

For decades, the dioramas remained hidden in an Alabama basement. Now, meticulous restoration work is underway at Winterthur Museum. The larger goal of the restoration effort is encouraging African American art students to study the chemistry and art history needed to work in conservation. Only 1 to 2% of conservators are African American, Stoner said. "So by these displays, by our tours and by the four students we're accepting each June to work on the dioramas, we're getting more African American undergrads excited, we hope, about the rather complicated background you need as a conservator."

**"Art: Preserving (Art) History - Restoration of 'Fountain of the Four Winds' by Renowned New Orleans sculptor Enrique Alferez,"** *myNewOrleans.com*, 02/27/2020

The long-neglected and nearly-forgotten "Fountain of the Four Winds" — one of Louisiana's most spectacular, yet controversial Great Depression-era New Deal works of art located at the New Orleans Lakefront Airport — is at last being restored to its former glory.

A masterpiece designed in a neoclassical style and built in the mid-1930s by New Orleans sculptor Enrique Alferez, the fountain is a tribute to the prevailing four winds. Alferez, who died in 1999 at the age of 98, was a prolific sculptor whose artwork graces public and private spaces throughout New Orleans.

Doing the restoration is Elise Grenier. Painstakingly working through an internationally approved conservation process, Grenier is restoring the statues and surrounding pool wall. The fountain was part of a \$233,000 two-year WPA and

Levee Board-funded airport beautification project that began in 1936. Alferez hit a snag when local WPA officials objected to the North Wind's exposed penis. They ordered him to chisel it off.

He recounted the story in a 1989 University of New Orleans documentary: "The director of the WPA here, a roughneck, said, 'I'm not going to let my men go there and stand in front of that indecent thing, the man with his ding dong hanging out'," "There was a meeting at the City Park board and WPA. They were horrified that I should have a nude man there. They said, 'What would your mother say?' I told them if my mother didn't know what it was, I would not be here."

Alferez reported the incident to his friend Lyle Saxon, head of the local WPA Writers Project and Saxon intervened. Alferez said Saxon wrote letters of appeal to President Franklin Roosevelt and his wife Eleanor. They responded, saying they had no objection to the statue. The WPA official backed off. Since the 1930s, the fountain slowly decayed, despite shoddy repairs, and it stopped working long before Katrina.

**"Newly Attributed Artemisia Gentileschi Painting of David and Goliath Revealed in London,"** *The Art Newspaper*, 02/28/2020

Ahead of the first major UK exhibition of the work of Artemisia Gentileschi, a London conservation studio has unveiled a painting newly attributed to this best-known female artist of the Italian Baroque.

The large oil on canvas depicts David and Goliath. When the work was sold at Sotheby's in 1975, it was attributed to Giovanni Francesco Guerrieri. However, by the time it resurfaced in 2018 at Hampel Fine Art Auctions in Munich, Artemisia had entered the art historical canon, and the work came under scrutiny from scholars and dealers.

It was reattributed at the eleventh hour to Artemisia, selling for €104,000 to a UK-based collector who wishes to remain anonymous. He engaged the

private conservator Simon Gillespie to restore the painting in London—the city in which the work is thought to have been painted in the late 1630s. Gillespie and the Italian scholar Gianni Papi, a Caravaggio and Gentileschi specialist, back the new attribution of David and Goliath to Artemisia in the latest issue of the Burlington Magazine.

Now, having studied the work in the conservation studio, Papi says cleaning has revealed an original colour palette consistent with Artemisia's work. Papi identifies the work with an 18th-century account by the art historian and politician Horace Walpole, who wrote: "King Charles [I of England] had several of [Artemisia Gentileschi's] works. Her best was David with the head of Goliath."

Gillespie's restoration also uncovered the faint signature "Artemisia" along the blade of David's sword. The inscription includes the digits "16-", presumably the traces of a date that can no longer be read, Gillespie writes in his technical report for the magazine. Such images of strong, vengeful women have often been read in the light of Artemisia's own biography, which has contemporary resonances in the age of #MeToo.

Aged 17 and already an accomplished painter, Artemisia was raped by an artist acquaintance of her father, Agostino Tassi, who was later tried and found guilty. According to a new biography by the Guardian newspaper's art critic Jonathan Jones, she was "the most radical of [Caravaggio's] followers... building brilliantly on his revelation that art and life are doubles of each other".

**"Greasy Scumbags Vandalize Sacred Uluru's Ancient Aboriginal Rock Art,"** *Ancient Origins*, 03/01/2020

Ancient Aboriginal rock art at the base of Uluru has been vandalized with vegetable oil. Uluru, or Ayers Rock, is the massive natural sandstone monolith standing at the sacred heart of Australia's Northern Territory's 'Red Centre'.

According to an ABC News report, the park's tourism manager said that about a third of the cave art

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*silent, former pig  
one communal awareness  
myriad pink bricks*

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*you wait to feed me  
stoic vigil on the shelf  
ah my vibrant pink*

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*Old man seeks doctor  
"I eat Spam daily", he says.  
Angioplasty*

was covered in vegetable oil, partially obscuring the paintings, and police are consulting the national park body with contractors to plan how to best repair the damage.

The cave containing the art fills with water during periods of rain and a viewing platform had been installed above this basin for tourists, which limits how close people can get to the ancient art.

Traditional owner Leroy Lester said the community was discussing its response to the damage. He suggested more education is needed regarding Uluru's importance and explained that the art tells "creation stories" all around the base of Uluru and they "link to the landscape around Uluru." This makes them very important to the ancestral people who protect the ancient site.

While a criminal charge looms over the perpetrator(s), Australian police said they don't yet know who carried out the crime and they couldn't even begin to guess at this stage why someone used vegetable oil to deface the ancient art.

Meanwhile, the sites traditional owners and Parks Australia are consulting with a Melbourne-based consultant who is very experienced in rock art restoration about how to best restore the paintings without causing them any further damage. So far, the advice they have been given was "to do nothing reactively or quickly" so that the restoration project unfolds in a careful and a considered way.

**"Blockbuster Raphael Show Opens in Rome Amid Coronavirus Angst, Conservation Row,"** *France24*, 03/05/2020

An exhibition marking the 500th anniversary of Raphael's death opens in Rome this week, with experts hailing a once-in-a-lifetime opportunity to admire the Renaissance artist's greatest works in a single show. But the event's opening has been marred by the coronavirus outbreak sweeping Italy and a row over a treasured portrait some feared was too fragile to move.

The paintings, drawings, tapestries and sketches on show at the

Scuderie del Quirinale are collectively insured for €4 billion. But no amount of money can guarantee that Italy's outbreak of coronavirus, the largest in Europe, won't play havoc with the three-month run in Rome of this year's eagerly-awaited art blockbuster.

The Roman gallery has sold almost 70,000 tickets in online sales even before the doors open to the public, a record for such an exhibition here, but the government battle to halt the infection could yet wreck the event. "I am sure we will never see again such a concentration of works by Raphael together in one venue as we do here," said Eike Schmidt, the director of Florence's Uffizi museum which itself offered up nine paintings and 40 drawings.

The entire scientific committee of the Uffizi Galleries has resigned in protest of the museum's decision to lend Raphael's portrait of Pope Leo X; the museum loaned it to Rome's Scuderie del Quirinale regardless. The committee said the portrait of Pope Leo X was core to the identity of their collection and should never be let out of Florence, arguing that the work was too fragile to be moved. Schmidt overruled them, deciding that such an iconic painting deserved to return to the city it was created in.

**"Traditional Japanese Fish Art Could Be a Boon for Conservation,"** *Smithsonian Magazine*, 03/05/2020

Fish out of water don't last long. But prints of their dazzling scales, pressed into pools of ink, can preserve the aquatic creatures' forms for centuries.

Since the mid-19th century, Japanese fishers have been leveraging this unusual technique to create dazzling images known as gyotaku. As Sabrina Imbler wrote for *Atlas Obscura* last year, the term is quite literal: Split in two, it translates to "fish" (gyo) and "rubbing" (taku).

Like a pre-photography proxy for fish Instagram, the prints originally served as visual evidence for braggarts hoping to boast of an impressive catch.

Now, some 150 years later, researchers have found a new and perhaps unexpected second use for the art: cataloging the historical biodiversity of the region's fish. The art-meets-science approach could help conservationists track the ebb and flow of threatened and extinct populations in Japan's past, filling in gaps where other data sets run dry.

Experts agree that the earliest specimens date back to the 1800s, when Japanese fishermen began smearing the flanks of ink-dipped fish on pieces of rice paper labeled with the date, location and species of the catch. Splattered in non-toxic ink, the fish could then be rinsed off and released, sold or eaten as usual.

Over time, they began embellishing the prints with brushwork, adding details omitted by the cruder dip-and-stick method, such as eyes or extra colors on scales.

Rendered directly from the animals themselves, gyotaku prints are, by and large, extremely anatomically accurate—and scientists soon recognized their educational value. Some of the prints may even harbor bits of DNA, helping researchers validate and track the species listed.

**"The Prado Museum's Unsung Workers Step into the Limelight,"** *The New York Times*, 03/11/2020

Manolo Osuna lacks a formal art education, but he has spent years roaming the galleries of the Prado Museum as a guard and leader of a seven-person moving brigade that hefts national treasures by Spanish masters like Velázquez and Goya around the building.

With that homegrown background, Mr. Osuna, 56, has emerged from an invisible role at the museum to become an unlikely art critic in an Instagram video series that has become a hit.

The videos, shot with a cellphone and selfie stick, have attracted a growing international following of up to nearly 100,000 daily viewers, who are fascinated by the slow-paced, decidedly

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*jelly for mortar  
seven hundred tins and more  
i build a Spam house*

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*Like some spongy rock  
A granite, my piece of Spam  
In sunlight on my plate*

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*my friend pork shoulder  
I return to you. this time  
I've brought mayonnaise*

un-Hollywood view of the museum.

The creator of the Prado's Instagram series is Javier Sainz de los Terreros, 37, who never appears on camera but whose soft, anonymous voice guides viewers through the galleries. Beginning in 2019, Mr. Sainz de los Terreros started filming works in the museum without dialogue, and each of the videos appeared on Instagram for just 24 hours. But viewers clamored for more, and so he created the longer, more detailed series of permanent videos now on view.

The videos often feature the unhurried, deliberate work of employees such as Elisa Mora, a restoration expert who has been at the Prado for 37 years and is just beginning to contemplate the renovation of a Goya portrait of the Countess of Chinchón. Standing beside the portrait, she pointed out old patchwork repairs on the back of the painting and explained an X-ray that revealed that Goya had actually painted the face of a man, which he erased by covering it over with the silvery folds of the woman's dress.

More than 99,000 people watched Ms. Mora's video on Instagram and 260,000 on Facebook, and many comments praised the quick lesson in the makeover process. On Instagram, Julieta Varela, an Argentine artist, asked for more restoration updates, and an anonymous user called "Museum Nerd" from Colombia — with 200,000 followers — lauded the museum video as "an example of absolute best practices."

Most of the videos are in Spanish without subtitles, but the museum is working on an alliance with the American Friends of the Prado Museum to create videos in English.

**"Ancient Egyptian Mummy Reveals her Secrets to Perth Conservation Team,"**

*The Courier.co.uk*, 03/14/2020

Conservators at Perth Museum and Gallery are carefully cleaning a 3000 year-old mummy Ta-Kr-Hb, nicknamed the Perth Mummy, and her sarcophagus.

The Perth Mummy has been resident inside the gallery since the 1930s and now visitors to the museum can watch as conservators carry out their expert work.

The priestess Ta-Kr-Hb — pronounced Taherheb — has been a source of fascination since she was first presented to Perth Museum and Art Gallery in the 1930s. The lower part of the coffin is a forensically rich environment featuring soil, plants and insects.

The conservation team at the museum is confident scientific analysis of these substances, as well as the resin used to cover the bandages, will reveal more about the mummification process and the places her body was kept.

Perhaps the most exciting development so far is the discovery of painted figures on the internal and external bases of the trough. They are representations of Egyptian goddess Amentet or Imentet, known as 'She of the West' or 'Lady of the West.'

The best preserved of the two paintings is on the inside of the coffin and had been hidden by Ta-Kr-Hb's body. It shows the goddess in profile, looking right and wearing a red dress. Conservators Helena and Richard Jaeschke have been working closely on the project with the Culture Perth and Kinross' Conservation in Action team.

**"Thyssen-Bornemisza Museum Restores Canaletto's 'The Piazza San Marco in Venice',"** *ArtDaily Newsletter*, 03/17/2020

The Thyssen-Bornemisza Museum has completed the technical study and restoration initiated more than a year ago of Canaletto's painting *The Piazza San Marco in Venice*.

This project was crowd-funded using "micro-sponsorship", which raised the required 35,000 Euros in barely four months. The painting was divided into 1,000 sections, each with a symbolic value of 35 Euros, which was the minimum contribution and which allowed many people to contribute by acquiring a "little piece of Canaletto".

Painted between 1723 and 1724, *The Piazza San Marco in Venice* is one of the few works by Canaletto in a Spanish museum and one of the most representative of his style and finest quality.

The procedure undertaken by the museum's restoration team has principally consisted in returning the painting to its original state as far as possible, removing earlier restorations and various layers of oxidised varnish. The painting was relined at an unknown date and its original size was altered, with around 2cm of the canvas folded over the stretcher at the top and another 2 cm added at each side.

The final result has revealed the morning light and subtle nuances that Canaletto gave to his work. Images obtained with X-radiography have provided interesting information on Canaletto's working method.

Particularly notable are the marks left by the pair of compasses which the artist used to position the four decorative arches on the upper part of the bell tower, with a corresponding hole in the centre of each one and the incised line of each curve. While the use of this instrument by painters was not unusual, its employment on top of the paint layer is striking.

The similarity between the painting's orthogonals and the real image of the Piazza allows us to assume that Canaletto used a camera obscura in order to translate the different architectural elements onto his canvas. Nonetheless, the perspective that he created is not based on a direct image but on the manipulation of different viewpoints obtained in the Piazza in order to create a theatrical space that is more enclosed than the real one, in the manner of a stage set.

**"Work on Notre-Dame in Paris Halted by Coronavirus,"** *ArtDaily Newsletter*, 03/17/2020

French authorities halted restoration work on the fire-ravaged Notre-Dame cathedral in Paris on Monday as the country braces for additional

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*and who dares mock Spam?  
you? you? you are not worthy  
of one rich pink fleck*

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*Ears, snouts, and innards,  
A homogenous mass  
Pass another slice*

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*clad in metal, proud  
no mere salt-curing for you  
you are not bacon*

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## AYMHH, continued

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measures to contain the spread of the coronavirus.

Workers at the historic landmark in the centre of the French capital had been dismantling the molten metal scaffolding around the church's spire, which collapsed in the catastrophic blaze last April.

Officials said decontamination measures set in place to deal with danger from the huge quantities of lead that melted in the fire were incompatible with rules set down to deal with the coronavirus.

### **"Met Museum Prepares for \$100 Million Loss and Closure till July,"** *The New York Times*, 03/18/2020

In a powerful sign that casualties of the coronavirus outbreak include even the country's strongest cultural institutions, the Metropolitan Museum of Art is projecting a total shortfall of close to \$100 million for the near future and expects to be closed until July, according to a letter the museum sent to its department heads on Wednesday.

The Met is an important canary in the coal mine for arts institutions all over the country; when the museum announced on March 12 that it was closing, others followed close behind. If even a behemoth like the Met — with an operating budget of \$320 million and an endowment of \$3.6 billion — is anticipating such a steep financial hit, smaller institutions may not be able to survive at all.

According to Laura Lott, president and chief executive of the American Alliance of Museums, about a third of museums surveyed in the United States were operating in the red or close to it before coronavirus. Three-quarters have now closed, and one-third will not reopen if the crisis continues.

The Met, preparing for its own financial hardship, has developed a three-phase response: having all staff members work from home and continue to be paid through April 4 as the museum evaluates possible furloughs, layoffs and voluntary retirements; from April to July, evaluating how to control spending and

reduce operating costs, including freezing discretionary expenditures and hiring; and from July to October, "reopening with a reduced program and lower cost structure that anticipates lower attendance for at least the next year due to reduced global and domestic tourism and spending."

The Met, which estimates the overall damage from the virus will be spread over this fiscal year and next, is also creating an emergency fund of more than \$50 million by reallocating discretionary resources usually used for acquisitions and programming toward operating expenses, fund-raising from foundations and donors and pursuing government assistance.

### **"Swiss Museum Settles Claim over Art Trove Acquired in Nazi Era,"** *The New York Times*, 03/27/2020

Twelve years after the city of Basel, Switzerland, rejected a claim for restitution of 200 prints and drawings in its Kunstmuseum, officials there have reversed their position and reached a settlement with the heirs of a renowned Jewish museum director and critic who sold his collection before fleeing Nazi Germany.

In 2008, the museum argued that the original owner, Curt Glaser, a leading figure in the Berlin art world and close friend of Edvard Munch, sold the art at market prices. The museum's purchase of the works at a 1933 auction in Berlin was made in good faith, it said, so there was no basis for restitution.

But after the Swiss news media unearthed documents that shed doubt on that version of events, the museum reviewed its earlier decision and today announced it would pay an undisclosed sum to Glaser's heirs. In return, it will keep works on paper estimated to be worth more than \$2 million by artists including Henri Matisse, Max Beckmann, Auguste Rodin, Marc Chagall, Oskar Kokoschka, Ernst Ludwig Kirchner and Erich Heckel. Among the most valuable pieces are two Munch lithographs, "Self Portrait" and

"Madonna."

The turnaround is a major victory for the heirs but also a sign, experts said, of a new willingness on the part of Swiss museums to engage seriously with restitution claims and apply international standards on handling Nazi-looted art in public collections.

"Switzerland was neutral during the war, but it was a marketplace for art," David Rowland, the New York lawyer representing Glaser's heirs, said. "It is now making great progress in coming to grips with these cases. This is a big step forward."

### **"Philly Museums and Med Students Band Together to Donate Protective Gear to Front-line Health-care Providers",** *The Philadelphia Inquirer*, 03/30/2020

In the scramble to find PPE — personal protective equipment, an acronym unknown to most just a month ago — some unexpected groups have stepped up with donations to help out the area's hard-pressed hospitals, all of which say they are running critically short of protective gear.

Museums and art schools, it turns out, use PPE virtually daily in their conservation departments and to care for and create artworks. When officials at Moore College of Art and Design heard about hospital shortages of such things as N95 respirator masks, gowns, and gloves they knew they could help. Moore's cache of 200 N95 masks and 250 gowns will be going to Thomas Jefferson University Hospital, where the school sends ill or injured students in normal times.

At the University of Pennsylvania Museum, officials knew they had a stockpile of PPE stashed away. "The head of conservation went down into the museum's basement storage "and basically gave them everything," said a museum spokesperson. As a result, the Hospital of the University of Pennsylvania (HUP) has received a powered air-pressure respirator, used by the museum in laser

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*In the cool morning  
I fry up a slab of Spam  
A dog barks next door*

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*Pink tender morsel  
Glistening with salty gel  
What the hell is it?*

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*The color of Spam  
is natural as the sky:  
A block of sunrise*

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## AYMHM, continued

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cleaning, plus 50 boxes of nitrile gloves, goggles, safety glasses, four boxes of N95 mask respirators, and one box of 8210 respirators.

Charlotte Tisch, a first-year med student at Penn, studied Egyptian archaeology in college and was well-aware that art museums would most likely have supplies of PPE. She hit pay dirt at the Philadelphia Museum of Art, the Barnes Foundation, and the Pennsylvania Academy of the Fine Arts. These institutions contributed a significant supply of masks, respirators, gloves, shoe covers, and Tyvek suits to front-line health-care workers at HUP.

As of last week, the students had solicited and delivered more than 5,650 face masks, 1,700-plus N95 respirators, more than 380 face shields and safety glasses, more than 500 boxes of gloves, and 1,100 pairs of sterile surgical gloves.

### **“Germany Offers Help in Restoring Notre Dame’s Stained-glass Windows,”** *The Art Newspaper*, 04/15/2020

A year after the devastating fire at Notre-Dame cathedral in Paris, Germany has put forward concrete proposals for its role in the reconstruction including funds from the government and donors and expertise in stained glass and cathedral restoration.

A fund-raising campaign launched in Germany a day after the fire has raised more than €450,000 according to a statement issued by Armin Laschet, the prime minister of the state of North Rhine-Westphalia, and Culture Minister Monika Grütters. “The reconstruction of Notre-Dame offers an opportunity to become a European symbol of hope,” Laschet said. “For me this reconstruction is also a symbol of German-French friendship.”

Germany’s contribution is to be coordinated by Barbara Schock-Werner, formerly the official in charge of conservation at Cologne Cathedral, the statement said. “German cathedrals’ glass workshops can offer real help,” Grütters said.

The exact scope and nature

of Germany’s contribution will be determined in the coming months on the basis of studies on the ground, the statement said, adding that three glass workshops at German cathedrals have the extensive expertise and experience necessary to undertake the restoration of the clerestory windows. Germany would cover the costs of restoring the upper windows, Grütters said.

### **“‘Absolutely Unconscionable’: Macon Art Community Blindsided as Mercer University Paints Over Black History Mural,”** *The Cluster*, 04/30/2020

Three years ago, Mercer University commissioned Joerael Numina to paint a mural on the side of Indigo Salon & Spa on Coleman Avenue. The mural, titled “Cultivating New Tones on the Spectral Stage of History,” featured prominent figures from Black history.

Tuesday morning, Mercer’s administration unexpectedly replaced Numina’s mural — not with new art, but with solid white paint. Numina was invited to paint the mural in 2017 by the College Hill Art Alliance, Art in the Park, and Mercer’s women’s and gender studies and art departments with funding from The Knight Foundation. None of these groups, Numina said, were told that the painting would be removed.

“All the departments’ funding went toward this, and they were all contributing for this mural to happen as a permanent installation,” Numina said. Natalie Bourdon, department chair of both anthropology and women’s and gender studies, wrote that removing the mural is “absolutely unconscionable and the epitome of whitewashing.”

Bourdon, along with associate professor of art Craig Coleman, approached Numina about the mural back in 2017. Sanaa Yusuf is a sophomore who took Bourdon’s Applied Social Justice course as a freshman. “To say that the mural on campus that commemorates Black history was only temporary and was a pop up project in and of itself is disrespectful,” they said. “They quite

literally painted over Black history.”

Mercer responded briefly to the backlash. “Mercer Village mural was commissioned and funded by the College Hill Corridor Commission several years ago as a ‘pop-up’ public art demonstration project,” Mercer administrators said in a statement released to local news outlet 13WMAZ. “It was never intended to be permanent.” In an email to The Cluster April 30, Director of Media Relations Kyle Sears said that statement “is all that will be provided at this time.”

### **“Spongy Hydrogels Clean Textured Paintings”**, *Physics Today*, 05/01/2020

Even under the best of conditions, a painting on display for decades accumulates dirt and dust that mar its appearance and dull its colors. Although cleaning everyday grime from ordinary objects isn’t technically challenging, priceless works of art require a gentler, more sophisticated touch to avoid any risk of damage.

Now Piero Baglioni and colleagues at the University of Florence in Italy have developed a polymer hydrogel—a network of polymer chains bound together into a porous, water-bearing solid—that safely removes dirt from the roughest of painted surfaces.

A sheet of gel, imbued with water, surfactant solution, or other solvent, is gently placed onto the surface to be cleaned and left there for a minute or two. During that time, tiny amounts of fluid seep out of the gel and loosen the dirt particles. The gel is then peeled away, and with it, one hopes, comes the dirt.

But gels aren’t all created equal; their diverse chemical, mechanical, and structural properties affect their cleaning performance. Baglioni and colleagues’ idea is to use the tools of soft-condensed-matter physics to design new materials tailored to the needs of art conservation.

In search of a mechanically compliant gel, the Florence researchers turned to polyvinyl alcohol (PVA), a material long known in the biomedical field for being soft yet sturdy, resilient,

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*Oh tin of pink meat  
I ponder what you may be:  
Snout or ear or feet?*

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*Slicing your sweet self  
Salivating in suspense  
Sizzle, sizzle..Spam*

---

*Cube of cold pinkness  
Yellow specks of porcine fat  
Give me a spork please*

and chemically benign. Some of its advantageous properties stem from its gelation mechanism. A PVA hydrogel can be solidified simply by freezing and thawing a solution of PVA in water.

As ice crystals in the mixture grow and expand, they press the PVA molecules closer together. And by some mechanism that's not totally clear, that compression is enough to lock adjacent PVA chains together permanently.

A PVA hydrogel is soft enough to drape over the peaks and into the troughs of a rough painted surface. It is not, however, effective at cleaning. The problem, Baglioni and colleagues hypothesized, is the gel's pore structure. Ice crystals in PVA grow long, thin, and straight, so the hydrogel is thus honeycombed with narrow, parallel pores—hardly ideal for fluid mobility and dirt pickup.

It's known that a PVA gel's properties can be tuned by repeating the freeze-thaw cycle more than once. But repeated cycling also makes the PVA walls a bit thicker and thus more rigid—exactly the opposite of what the researchers wanted.

Baglioni's pivotal idea was to try making a hydrogel out of a mixture of PVA molecules of two different lengths. As a watery mixture of long- and short-chain PVA is cooled, the short polymers become insoluble before the long ones do. The difference in miscibility would push the short- and long-chain molecules to phase separately, but their sluggish motion would keep them at least partially intertwined.

The resulting tangle, Baglioni reasoned, must have some effect on the size and shape of the ice crystals and thus on the gel's pore structure.

That effect turned out to be surprisingly dramatic. The twin-chain PVA gel, as it's come to be known, looks more like a sponge. When tested on a mock painting, the twin-chain gel proved excellent for cleaning. What is it about the sponge-like structure that makes it so good for cleaning? Baglioni and colleagues aren't sure, but they suspect it has to do with the ease with which the

gel both releases fluid and reabsorbs it.

As the gel rests on the soiled painting, water gradually evaporates from its upper surface. To compensate, water from the lower surface gets pulled through the interconnected pores into the gel bulk—and the dirt from the painting get pulled with it. Dirt particles are more reliably removed when they're lodged in the gel's pores rather than clinging to its surface.

"But this is all still a hypothesis," says Baglioni. "We were working on testing it when the coronavirus hit."

Beyond demonstrations on mock-ups, the twin-chain PVA gels have already been used to clean real works of art. In collaboration with conservators at the Peggy Guggenheim Collection, the Florence researchers used their gels to restore two Jackson Pollock paintings, *Two and Eyes in the Heat*, to their original 1940s glory. Both paintings have rough surfaces that were difficult to clean.

Baglioni's group has also collaborated with Bronwyn Ormsby, the principal conservation scientist at Tate, to clean *Whaam!*, a large two-panel painting by Roy Lichtenstein that the gallery bought in 1966. As with the rest of Lichtenstein's comic-book-inspired pop art, the surface of *Whaam!* isn't especially rough, although its cotton canvas has a texture to it. The main cleaning challenge it poses is Lichtenstein's use of three kinds of paint, each with its own chemical properties and distinct finish to maintain.

A version of Baglioni's new PVA gel—frozen and thawed a few more times to give it different mechanical properties—proved the best tool for the task. "Each work of art degrades in a different way and needs different conservation," says Baglioni. "With different tiny modifications, our versatile family of gels can address many needs."

**"Gainsborough's Newly Restored Blue Boy Awaits the End of Lockdown,"** *The Art Newspaper*, 05/11/2020

After months in the conservation lab at the Huntington Library, Art Museum and Botanical Gardens, in San Marino,

California, Thomas Gainsborough's *The Blue Boy* (around 1770) is ready to go back on display, although the galleries are closed because of the coronavirus (Covid-19) pandemic until at least 15 May.

In the meantime, the museum has posted a video about the restoration on its website. The project began in 2013, when Christina O'Connell arrived at the Huntington as the institution's first ever paintings conservator. She undertook a full survey of the museum's art collection, examining around 600 paintings to assess their physical condition.

In 2017, O'Connell and Melinda McCurdy, the associate curator for British art, closely studied the work using the latest technologies, including infrared reflectography and multiple high-resolution X-rays that were digitally stitched together. The painting needed considerable work, given its flaking paint, darkened varnishes and structural weaknesses.

One surprise was an early 11-inch tear in the lower left side of the canvas, which was revealed through the X-rays. Fortunately, says O'Connell, the tear was so well mended that she did not need to repair it again, but she did have to remove some earlier overpainting to reveal Gainsborough's brushwork.

O'Connell spent a year and a half working on *The Blue Boy*, including 12 months in public in the Thornton gallery, where she sat in a mini-lab behind a small exhibition that attracted more than 217,000 visitors.

O'Connell started the conservation work by gluing down flaking paint and then undertook a thorough cleaning. Slowly, she uncovered a brighter blue in the subject's outfit—thought to be a costume for a ball—and details in the landscape on the lower left side that had darkened over the years.

Last autumn the painting was brought into her lab for the finishing touches. O'Connell says she is pleased with how the conservation has gone, remarking that few visitors will notice what she has done. "I've done my job when it's invisible," she says.

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*above all others  
porcine treat without equal  
there is but one Spam*

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*Little slab of meat  
In a wash of clear jelly  
Now I heat the pan*

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*Pink porky temptress  
I can no longer remain  
Vegetarian*