Association of North American Graduate Programs in the Conservation of Cultural Property

Abstracts and Speaker Biographies for the 44th Annual ANAGPIC Student Conference

Kingston, Ontario, Canada
April 5-7, 2018

The Art Conservation Program at Queen's University is pleased to host the 44th Annual ANAGPIC student conference in Kingston, Ontario. Students and Fellows from the eight ANAGPIC member institutions will be speaking about research, treatment, and/or technical assessments undertaken at their respective institutions. Please find below a list of this year's abstracts and student speaker biographies, organized by institution.

SUNY Buffalo State College, Patricia H. and Richard E. Garman Art Conservation Program

Adventures with Don Quixote: Exhibition and Treatment
Speaker: Katarzyna Bator
Advisors: Theresa J. Smith and Gary Frost

ABSTRACT The third edition of Miguel de Cervantes Saavedra's El ingenioso hidalgo Don Quixote de la Mancha from the collection of University at Buffalo Library was examined and treated. A proposed timeline of repairs was constructed based on information gathered through historical research, multiband imaging, x-radiography, and microscopy. The analysis identified at least four possible sewing events and revealed differences in fiber morphology of the papers composing the textblock. The study of past interventions guided the current conservation treatment. Old repairs were kept intact where possible, and the textblock was rebound in a conservation style hybrid structure that resembles the current state of the old book covers.

BIOGRAPHY Katarzyna is an Andrew W. Mellon fellow in library and archives conservation at the Patricia H. and Richard E. Garman Art Conservation Department at SUNY Buffalo State College. She is currently completing her third-year fellowship at the New York Historical Society and American Museum of Natural History Library. Before coming to Buffalo, Katarzyna worked as a conservation assistant at the New York Academy of Medicine Glady's Brooks Book and Paper Conservation Laboratory. She also completed numerous internships at other institutions in New York City, including the Pierpont Morgan Library & Museum, Metropolitan Museum of Art, and New-York Historical Society. Katarzyna holds a dual Bachelor's degree in Fine Arts and Art History from Adelphi University.

Analysis and Conservation of Portrait of a Young Man, Formerly Attributed to Édouard Manet
Speaker: Becca Goodman
Advisors: James Hamm | Co Advisors: Aaron Shugar, Jiuan Jiuan Chen, Rebecca Ploeger

ABSTRACT A painting that was formerly attributed to Édouard Manet, was researched, examined, and technically analyzed. Imaging techniques revealed a hidden inscription in the background that places the painting in Paris in the late nineteenth century. Scanning Macro-X-Ray Fluorescence Spectroscopy (MA-XRF), Optical Microscopy, Scanning Electron Microscopy-Energy Dispersive Spectroscopy (SEM-EDS), and Fourier Transform Infrared Spectroscopy (FTIR) confirmed that no anachronistic pigments, media, or materials were used in the work. The painting was separated from its warped backing board and mounted to a new secondary support. Overpaint was removed to reveal the original inscription.

BIOGRAPHY Becca Goodman has a wide range of experience in the field of art conservation, having worked at the Baltimore Museum of Art and volunteering at the Walters Art Museum in Baltimore, Maryland in addition to the National Gallery in Washington, D.C. In the summer of 2016, she traveled to Belgium to work at the International Platform for Art Research and Conservation (IPARC), where she treated paintings and frames both in the lab and in situ in the Saint Carolus Borromeus Church in Antwerp.

She completed her undergraduate studies at the University of Maryland in May of 2013 with two Bachelor of Arts degrees in studio art and art history. Currently, she is enrolled in the Patricia H. and Richard E. Garman Art Conservation program at SUNY Buffalo State College and is completing the last year of her education as a graduate intern at the Detroit Institute of Arts. She is expected to graduate with a Masters of Arts degree and Certificate of Advanced Studies in September of 2018.

University of California Los Angeles/Getty Program in the Conservation of Archaeological and Ethnographic Materials

Analytical Imaging, Visualization and Interpretation of a Byzantine Icon

Speakers: Austin Anderson, Emily Rezes, Karime Castillo
Advisor: Dr. Ioanna Kakoulli

ABSTRACT A Byzantine icon depicting a female saint against a gold background was examined noninvasively using analytical imaging. The construction of the icon shows the typical Byzantine tradition, composed of a wooden support with a white preparation layer applied directly on the wood, gilded, painted and varnished. For the analysis of the icon and to document the technique, condition and previous interventions at surface and subsurface, visible reflectance images using diffused light were initially taken using a DSLR Nikon D90. Imaging beyond the visible was supported by broadband reflectance and luminescence imaging at specific wavelengths from the ultraviolet region (~ 350 nm) to the near infrared region (~1000 nm) using a modified (with the hot mirror of the camera removed) Nikon D90. Illumination was provided by a Mini-CrimeScope (an alternate light source (ALS)). Reflectance Transformation Imaging (RTI) was also undertaken to highlight topographic details of the surface. Results from the analytical imaging were able to resolve and unmask important information on the ID of the female figure, identified as Virgin Mary, and to reveal technical and condition details in areas of varnish, pigment, and white preparation. The visualization of incisions and stamped elements indicated an intricate preparation to delineate the iconography, whereas, the mapping of cracks, flaking and losses revealed the fragile nature and condition of the icon.

BIOGRAPHIES **Austin Anderson** is currently in his first year at the UCLA/Getty Masters Program in the Conservation of Archaeological and Ethnographic Materials. He received his BA in Anthropology from University of San Diego, and later studied book and paper conservation at San Gemini Preservation Studies in Italy. Previously, he has completed internships at Texas A&M's Conservation Research Lab and the San Diego Archaeological Center, as well as volunteer work at the Oregon Historical Society and the archaeological dig at Bethsaida in Israel.

Karime Castillo is a PhD candidate at the UCLA Cotsen Institute of Archaeology. She received her B.A. in Archaeology from Universidad de las Américas Puebla and her M.A. in Artefact Studies from the Institute of Archaeology, University College London. She is primarily interested in Mexican historical archaeology and colonial material culture. As a historical archaeologist, she has done research in Colonial Mexican majolica, the Hacienda San Miguel Acocotla, Puebla, Mexico, and pharmaceutical glass from London. She received the 2012 Postgraduate Dissertation Prize given by the Society for Post-Medieval Archaeology. She has worked for archaeological projects in different parts of Mexico including Sonora, Mexico City, and Puebla, and has collaborated with the Franz Mayer Museum in Mexico City and the London Archaeological Archive and Resource Center in London. At UCLA her research focuses on glass production in Colonial Mexico.

Emily Rezes is a first year student in the UCLA/Getty Masters Program in the Conservation of Archaeological and Ethnographic Materials. She earned her BA in Archaeology and Art History from the Johns Hopkins University. Before beginning graduate school, Emily completed pre-program conservation internships at the Maryland State Archives, the National Museum of the American Indian and the Hirshhorn Museum and

Sculpture Garden. Her most recent position was at the American Museum of Natural History, in which she coordinated the written and photo documentation and surface cleaning of 500+ specimens from the museum's dry coral collection.

A Mask on the Move: Analysis and Treatment of an African Mask for Traveling Exhibition
Speaker: Lindsay Ocal
Advisor: Ellen Pearlstein

ABSTRACT An African mask was acquired by the Connecting Cultures Mobile Museum (CCMM), a Los Angeles non-profit organization with a diverse collection of global arts and artifacts. By bringing their exhibitions to local schools, CCMM's aim is to instill in students an understanding and respect for cultural diversity. This particular mask is in the form of an antelope and made of painted wood with a plant fiber ruff. Upon acquisition by CCMM, the piece had a broken horn, evidence of current pest activity, and was rapidly shedding plant fibers. As a result of an ongoing relationship between the UCLA/Getty Conservation Program faculty and the CCMM, the mask's condition prompted CCMM staff to contact the program for assistance. As very little was known about the object, art historical and anthropological research was carried out to identify the culture that made the piece, how it was made, and the context in which it was used. Scientific analysis and examination identified the materials used both in the initial creation of the piece and in later repairs to the broken horn. The object's condition issues required that it undergo several treatment procedures, including pest eradication, cleaning, removal of unsuitable previous repair materials, and reattachment and stabilization of the broken horn. Lastly, a mount and box were constructed that would be suitable for travel, storage, and display.

BIOGRAPHY Lindsay Ocal is a third-year student in the UCLA/Getty Master's Program in the Conservation of Archaeological and Ethnographic Materials. She is currently spending her third year as an intern at the American Museum of Natural History in New York, where she is working with archaeological and ethnographic materials from the Americas. She received a B.A. in Archaeology and History from Lycoming College and a M.A. in Art History, concentrating in Egyptian Art and Archaeology, from the University of Memphis. She has worked on several archaeological field projects at sites in the United States, Israel, Egypt, Greece, and Turkey as both an archaeologist and a conservation intern. In addition to fieldwork, she also completed a preventive conservation training course offered through the Foundation of the American Institute for Conservation of Historic and Artistic Works (FAIC) and interned at the Fine Arts Museum of San Francisco and the Fowler Museum at UCLA.

Columbia University, Graduate Program in Historic Preservation

New Materials for the Coating of Outdoor Bronze
Speaker: Erik Sandell
Advisor: Norman Weiss

ABSTRACT Bronze surfaces exposed to an outdoor environment face many conservation challenges. Dramatically varying conditions of temperature, moisture and pollution typically result in material loss (as pitting and dissolution) and chemical alteration, accompanied by color change. Without intervention, bronze left to weather outdoors will continue to deteriorate until little remains of the physical substance and appearance of the original patinated surface. However, the processes of decay can be slowed significantly through the use of coatings. While the use of waxes and lacquers have long been available to conservators, these coatings require annual maintenance to retain a high level of protection for the surface. With the development of a number of new coating systems, there seems to be the potential to combine a high level of protection with enhanced durability, considerably extending the time between conservation interventions. Several innovative coatings are being evaluated, in comparison to current and past practices. Some of the work has involved the preparation of coated coupons for long-term field exposure and for testing via accelerated weathering.

BIOGRAPHY Erik Sandell is a second-year student attending the Graduate Program in Historic Preservation at Columbia University in the City of New York. He holds a B.A. in Art History from Willamette University in Salem, Oregon with a concentration in Roman antiquity. He has worked as a conservator with the Central Park Conservancy where he completed the stripping and re-coating of the 7th Regiment Memorial, a Civil War monument to Union soldiers by the American sculptor John Quincy Adams Ward. Earlier he worked with the San Francisco firm Architectural Resources Group as a conservation intern.

Harvard Art Museums, Straus Centre for Conservation and Technical Studies

A Technical Study of Alexander Gardner's Sketchbook of the War

Speaker: Laura C. Panadero
Craigen W. Bowen Paper Conservation Fellow

ABSTRACT *Alexander Gardner's Sketchbook of the War* was published in 1865, immediately following the end of the American Civil War. The two-volume set contained 100 full-page photographs, each preceded by a printed page of descriptive text. The *Sketchbook* is one of the earliest examples of American documentary war photography, and one which introduced American audiences to the grim realities of war. Perhaps the best known image in the album is Timothy O'Sullivan's *A Harvest of Death*, which depicts the bodies of deceased soldiers on the battlefield at Gettysburg. The album occupies an important place in American history, and, as such, one volume is on semi-permanent display in the European and American Galleries at the Harvard Art Museums as part of the exhibition "Painting and Photography in an Era of Social Change."

Gardner's Washington D.C. studio printed all of the images for his two volume album. Approximately 150 copies were made, each containing 100 albumen photographs mounted to lithographically printed pages. Much scholarship has been devoted to the manufacture and aging of albumen prints, and to the structures and binding styles of photographic albums. However, little has been written about the material interactions between albumen prints, extremely common in photographic albums of the 19th century, and the printed components of these albums. In the *Sketchbook,* the lithographically printed elements of the pages have caused fading in the photographs, and the photographs have caused degradation in the paper of facing album leaves. These condition issues have prompted a more in-depth technical examination of the album. XRF and FTIR analysis of image material, coatings, and lithographic inks will seek to identify the nature of the interactions between the photographic and non-photographic elements of the album. The goal of this project is to better understand the manufacture, composition, and current condition of the Sketchbook.

BIOGRAPHY M.A., M.S., The Conservation Center, Institute of Fine Arts, New York University
B.A., Tufts University
Laura Panadero graduated from The Conservation Center, Institute of Fine Arts, New York University in 2017, specializing in the conservation of photographic materials. Laura is currently the Craigen W. Bowen Paper Conservation Fellow at the Straus Center for Conservation and Technical Studies at the Harvard Art Museums where she is responsible for the examination, treatment, and preventive care of works of art on paper and photographic materials. She has previously held positions at The Weissman Preservation Center, Harvard Libraries, the Museum of Modern Art, and The New-York Historical Society. Her past research includes work on Irving Penn's darkroom techniques, and Frédéric Flachéron's early paper negatives. Laura currently serves as a regional liaison to the AIC Emerging Conservations Professionals Network.

'Art Shapes': An Investigation of Hans Arp's Constellations II
Speaker: Madeline Corona

ABSTRACT *Constellations II* is a thirteen-panel, wooden wall relief designed by Hans Arp (also known as Jean Arp, 1886 – 1966) for Harvard University's Graduate Center in 1950. One of several artworks commissioned by Walter Gropius and The Architect's Collaborative for Harvard's first example of modern architecture on campus, the piece is unique in Arp's oeuvre as his only large-scale wood relief and his first architectural commission. In preparation for the relief's display in the upcoming exhibition *The Bauhaus and Harvard* at the Harvard Art Museums, a technical study was undertaken in order to better understand its condition history and to investigate the original surface appearance to inform treatment and interpretation.

Originally installed in the Graduate Center's dining room in 1950 with the title *Constellations*, the relief underwent a number of changes since its initial installation. Photographic documentation from the 1950s indicates that the panels were originally unpainted, although they likely had some sort of clear or tinted coating that created a "natural" finish and allowed viewers to appreciate the graining of the American redwood that Arp chose for his first commission in the United States. Archival records, photographs, and correspondence between Arp and Gropius reveal that the relief was rearranged and modified in 1958 as part of a revised design scheme that was meant to both protect the panels from damage caused by tables and chairs in the room, and also allow for unobstructed viewing. These changes, which included the permanent removal of two of the panels and cutting one of the larger panels into two pieces, were executed as part of a new arrangement designed by Arp. At this point the relief was renamed *Constellations II*. However, after this 1958 intervention, a series of undocumented painting, stripping, and coating campaigns were undertaken. Records of these changes survive only in sporadic photographs of the relief from the 1950s to the 1980s, and on the relief itself, where remnants of paint and coatings are present on the edges and backs of the panels, as well as within recesses, cracks, and other areas of damage in the wood. In 2004, the relief was deinstalled from the dining room as part of a larger renovation project within the building and was transferred to the care of the Harvard Art Museums.

Analysis of the paint and coating layers on the panels will provide more information about the timeline of changes that were made to the relief, the materials present, and any natural deterioration that has occurred. Investigation of the original finish on the panels will hopefully provide insight into their initial appearance, which will inform the conservation treatment of this monumental relief.

BIOGRAPHY Madeline Corona graduated with her M.S. from the Winterthur/University of Delaware Program in Art Conservation where she specialized in objects conservation with a concentration in conservation science. She earned her undergraduate degree in Chemistry and Art History from Trinity University. Madeline is currently the objects conservation fellow at the Harvard Art Museums' Straus Center for Conservation and Technical Studies. She completed graduate internships at the Michael C. Carlos Museum, the Walters Art Museum, and the J. Paul Getty Museum.

New York University, The Conservation Centre of the Institute of Fine Arts

From 14th Century Polyptych to Modern Easel Painting: the History and Treatment of Saint Paul and Saint Augustine by Giusto de' Menabuoi
Speaker: Hae Min Park
Advisor: Dianne Modestini

ABSTRACT The Terzago polyptych is one of the rare tempera on panel commissions Giusto de'Menabuoi completed in or near Milan before he became a renowned fresco painter in Padua. The polyptych has been dismantled since an unknown date and only fourteen fragments have been securely identified, five of which now form a part of the Samuel H. Kress Collection at the Georgia Museum of Art, Athens. As these five panels went through the hands

of various collectors, they were altered with an intention to present them as stand-alone easel paintings, drastically impacting several 20th Century interpretations of the polyptych. A recent examination of the five panels, specifically the punchmarks and barbed edges that had been concealed under fill and overpaint, revealed new evidence for a heptaptych configuration of the altarpiece. Based on these findings, I will outline the inaccuracies in the past reconstructions and illustrate the conservators' potential capacity to radically influence the function and meaning of an artwork. Furthermore, I will also discuss the treatment of the best-preserved panel of the series, which presented an interesting challenge. Underneath the thick layers of discolored varnish and overpaint, dark gray encrustations marred the painted passages of Saint Paul and Saint Augustine. These deposits, remnants of old retouches or coating, had chemically bonded to the painted surface and disrupted the refined gradation of vivid and delicate colors. While it was possible to mechanically remove larger deposits under the stereomicroscope, the remaining deposits were optically scumbled using dry pigments in PVA AYAB resin dissolved in ethanol.

BIOGRAPHY Hae Min Park is a fourth-year paintings student at the Conservation Center of the Institute of Fine Arts, New York University. Hae Min received her bachelor's degrees in biology and nutritional science at the University of Maryland, with minors in art history and classical literature. She has had conservation experience at the Metropolitan Museum of Art, Kunsthistorisches Museum in Vienna, Wallraf-Richartz Museum in Cologne, and at the Excavations at the Sanctuary of the Great Gods in Samothrace, Greece. She is currently completing her fourth-year Internship at the Walters Art Museum where she is treating a diverse range of painted materials including a 1st Century encaustic mummy portrait and a 19th Century Thai artwork created with gum-based paints.

At once the most delicate and lasting of our materials – Considerations in the Treatment of a 19th Century Cut-Hair Memorial

Speaker: Andy Wolf
Advisor: Michele Marincola

ABSTRACT The treatment of a cased cut-hair memorial on ivory has inspired research into its process of manufacture and its social context. It is one of a class of composite objects created for the express purpose of commemorating important personal events like weddings, baptisms, anniversaries, and especially the deaths of loved ones. Hair carried symbolic weight as an authentic, persevering token of the "true" self, a static memento of a relationship. The use of the hair of individuals, once familiar but now anonymous, to create design components in these memorials complicates their conservation treatment both materially and ethically.

These memorials, popular in the late 18th to late 19th centuries in Europe and America, often functioned as public displays of grieving. They were both personal and consumer objects, sentimental reminders of loss and symbols of middle-class status. Hairworkers, both amateur and professional, employed techniques that were published widely in women's magazines of the day. These techniques had grown out of a related industry: the painting of portrait miniatures on ivory, the methods of which were also heavily documented in treatises. Using these historic texts to reconstruct mockups of the hairwork, it will be possible to better understand both the manufacture and the stability of the memorial's constituent parts. Identification of materials will be supplemented with instrumental analysis. Ultimately, an understanding of the significance of the memorial and its materials is instrumental in guiding decision-making during its treatment, namely, the questions of which lost elements to replace, and how.

BIOGRAPHY Andy Wolf is a second-year conservation student at the Conservation Center of the Institute of Fine Arts, New York University, specializing in objects. After earning his BFA at Rutgers University in print- and- papermaking, Andy worked as a framer and art handler in New York before deciding to pursue graduate studies. He has treated polychrome sculpture at NYU's Villa La Pietra in Florence and spent this past summer at the Excavations at the Sanctuary of the Great Gods in Samothrace, Greece.

University of Pennsylvania, Graduate Program in Historic Preservation

Condition Assessment and Recommendation for Treatment for the Makrana Mable of the Picture Wall, Lahore Fort, Pakistan

Speaker: Noor Jehan Sadiq
Advisor: Frank G. Matero

ABSTRACT The Picture Wall at Lahore Fort is considered by most scholars to be a crowning achievement of Mughal art and architecture of the 17th century. Measuring 1450 feet in length and 50 feet in height, it is one of the largest murals in the world. Designed as a mosaic of stone, glazed ceramic tiles (kashi kari), fresco (naqqashi), brick imitation (taza kari), pietra dura (parchin kari), and stucco, the wall is considered a key feature of the fort that was crucial to its recognition and designation as a UNESCO World Heritage site. Its current conservation plan focuses on ceramics and other decorative surfaces, while less research and analysis has been done on the architectural marble elements of the wall. This research aims to contribute to the marble component of the conservation of the Picture Wall. These marble elements include latticed screens, marble frameworks, and panels with pietra dura, all located on the upper story Naulakha Pavilion. Investigations involved analyzing and characterizing the marble and its use in the pavilion as well as determining it performance and deterioration.

Currently the marble displays a wide array of deterioration such as cracking, detachment and spalling, disaggregation of latticed screens and gypsum encrustation. There are panels that show structural deformation across/along the façade; some that are dislocated, and areas with severe material loss. While some sense of natural weathering and deterioration of marble is inevitable, there are many man-made factors that have exacerbated the conditions at play. The stone has suffered loss from war, changes through Sikh and later British interventions and neglect and deferred maintenance. Previous efforts to repair the monument by disassembly, pinning, and reassembly has added to the long-term displacement and material loss. The research will be exploring and subsequently developing a treatment testing program for the marble with a focus on evaluation of reversible mechanical pinning methods.

BIOGRAPHY Noor Jehan Sadiq is a second-year graduate student specializing in Architectural Conservation from the University of Pennsylvania's Master of Science in Historic Preservation program. She received her bachelor's degree in Interior and Spatial Design with a focus in Adaptive Reuse from Chelsea College of Arts, London. Prior to pursuing her degree in conservation, Sadiq worked in Pakistan for two years for a local heritage preservation firm. Additionally, she has been involved with Penn's Architectural Conservation Laboratory (ACL) on multiple projects such as the Historic Structures Report for two residential quarters, part of the administrative loop at Mesa Verde National Park and Restoration of historic log cabins at Bar BC Dude Ranch in Grand Teton National Park.

Evaluating the Deterioration of Historic Cement Stucco Using Traditional Condition Assessment Methodology and Digital Analyses

Speaker: Sara Stratte
Advisor: John Hinchman

ABSTRACT The John Moulton homestead, constructed in 1934, is one of four intact homesteads in the Mormon Row Historic District within Grand Teton National Park in Wyoming. The homestead is a vernacular one and a half story wood frame structure finished with pink-painted cementious stucco. The National Park Service has passively preserved the structure since 1990: it still maintains a high degree of integrity and it is a popular roadside tourist attraction. At the present, however, the stucco exhibits severe cracking due to a number of causes, including a lack of designed expansion joints, structural shifts, and uneven settlement, and may pose a safety hazard if left untreated. To date, there has been no substantial inquiry into the preservation state of the cement stucco or the mechanisms of its decay.

This paper focuses on the process of evaluating the condition of historic cement stucco using traditional recording methodologies augmented with high-tech software programs to complete a comprehensive conditions assessment. In the recording process, conservators typically annotate architectural drawings to map the extents of conditions and contextualize these spatially with respect to each other and extrinsic factors. Based on the highly regular distribution of cracks evident on the stucco, we have elected to experiment with geographic information systems (GIS), which can be used to statistically evaluate the spatial relationship of selected variables. In the process of creating and analyzing the conditions, this project presents the opportunity to test the degree to which GIS and other digital tools (like photogrammetry and infrared thermography) can clarify and better illustrate conditions beyond traditional conditions documentation. Ultimately, these efforts will help to identify the primary causes of deterioration and guide future treatment interventions.

BIOGRAPHY Sara Stratte is a second-year master's candidate in the University of Pennsylvania Historic Preservation program. She received her bachelor's degree in Anthropology at the University of California, Los Angeles, where she studied archaeology, heritage, and digital humanities. More recently, she has been involved in the preservation of rural wood, stone, and adobe structures in the American West through the National Park Service and the University of Pennsylvania.

Queen's University, Art Conservation Program

Plump and Pliant: Experimental Preservation of Fluid and Flexibility Within Biofilms Used in Textile Art

Speaker: Courtney Books
Collaborator: WhiteFeather Hunter | Advisor: Alison Murray

ABSTRACT Intersecting spheres of heritage conservation and material creation, this research presents the results of collaboration between the department of Art Conservation at Queen's University and textile artist WhiteFeather Hunter at the Speculative Life Biolab, Concordia University. As a preliminary study, the operative goal is to create an immersion treatment for bio-film based material to exist externally from encasements while preserving life-like qualities of pliancy and fluid retention.

Bioartists seek to extend life spans of plant-based biomaterials subject to quick deterioration (e.g. rose-petal tapestries, Kombucha leather) and liberate them from solvent baths or glass cages. In compliance with environmental safety of open-gallery display, bio-art must be neutralized of biological activity, demanding the development of creative preservation methods that provide: 1. for the artist, retention of the textile material as a plastic and pliant form and 2. for the conservator, the transfer of non-toxic, anti-biodeteriogen, and non-hygroscopic properties to the material.

The physiochemical performances of collagens (plasticizer), polyols (humectant/preservative), and sugars/polyether compounds (structural stabilizer) are analyzed for reduced hygroscopy and cellular wall damage experienced by cellulosic biofilms during and after dehydration. Procedural testing includes sterilization and cyclic osmotic treatments (dehydration and immersion transfer of fluids via capillary suction) applied to two lab-produced biofilm substrates: 1. acetic-acid cellulose (yeast derived) and 2. hydrocolloidal polysaccharide (aerobic bacterium derived). Rudimentary ASTM tensile standards examine pliancy, mass/weight calculations indicate fluid retention, and optical microscopy of surface structure and cross-sections offer macro views of cell integrity. Successful treatments may offer applications within textile arts, art conservation, and biomedical fields.

BIOGRAPHY Courtney Books is a second-year graduate student at Queen's University in the Art Conservation Program, specializing in paintings conservation. Courtney graduated from McGill University in 2013 with a MA in Art History and from the University of Wisconsin-Madison in 2008 with a BS in Fine Arts and a BS in Spanish. Prior

to her studies at Queen's, she spent two years as a conservation intern at Parma Conservation, Ltd (Chicago, IL), participating in projects spanning from the restoration of St. EOM's outdoor art environment in Georgia to conserving three-story high La Farge murals in the Minnesota State Capitol. Her first program internship was in the paintings conservation department at the Museo del Prado, Madrid. Courtney is currently a visiting scholar at the Speculative Life Biolab at the Milieux Institute for the Art, Culture, and Technology (Concordia University), working in collaboration with bioartist WhiteFeather Hunter to research biofilm preservation.

An Investigation into the Use of Ionic Liquids for the Removal of Surface Coatings: Improving the Cleaning Efficacy of Low-toxicity Molecular Solvents with 1-Ethyl-3-methylimidazolium Ethyl Sulfate

Speaker: Brandon Finney

Advisors: Alison Murray, Ross Jansen-van Vuuren, Philip Jessop, Patricia Smithen

ABSTRACT Room temperature ionic liquids are a novel class of fluids set apart from aqueous solutions and organic solvents by their unique range of properties. The substitution of toxic, volatile organic solvents for ionic liquids may hold several advantages for practicing conservators, as ionic liquids like 1-ethyl-3-methylimidazolium ethyl sulfate are practically non-volatile, completely non-toxic, and non-irritating. In 2013, Pacheco et al. published their results on the first use of ionic liquids as alternatives for organic solvents in the removal of varnish from painted surfaces. The results showed promise, but the study fell short of expressing practical uses for ionic liquids; several time-consuming applications of prohibitively expensive ionic liquids were necessary to remove test coatings. Recent research on the properties of ionic liquids as solvents suggests that binary mixtures of ionic liquids and organic solvents may prove more effective at solvating these coatings than ionic liquids alone, while only using a fractional proportion of ionic liquid. By combining the well-known properties of isopropanol with the ionic liquid 1-ethyl-3-methylimidazolium ethyl sulfate, new low-toxicity solvent mixtures may be formed that mimic the qualities of so-called 'stronger,' and often noxious, organic solvents. Mixtures of isopropanol and 1-ethyl-3-methylimidazolium ethyl sulfate are first characterized by spectroscopic determination of Kamlet-Taft (KAT) parameters. Solvent mixtures are then tested on naturally aged varnish sample boards made at the Canadian Conservation Institute in 1994. Spectrophotometer and glossmeter data are reported.

BIOGRAPHY Brandon is a second-year paintings stream student at Queen's Master of Art Conservation Program. He has an honours Bachelor of Science from the University of Toronto (2016), where he studied Art History, Environmental Chemistry and Evolutionary Biology and Ecology. Before starting his studies at Queen's Art Conservation Program, Brandon gathered pre-program experience from a number of Toronto institutions. At the Royal Ontario Museum, he volunteered in the Schad Biodiversity Gallery before interning in the Conservation Department. He was first exposed to hands-on paintings conservation while working with Toronto Art Restoration Inc. Additionally, Brandon has interned at the University of Toronto Art Centre, cataloguing objects and condition reporting outgoing museum loans. Last summer Brandon interned with Legris Fine Art Conservation in Ottawa. He also had the chance to work with the Walker House Museum, in Kincardine, Ontario, as their conservation advisor. Brandon will be interning at National Gallery of Canada this summer.

Winterthur/University of Delaware Program in Art Conservation

Investigation into the Reduction of Foxing Stains in Paper

Speakers: Emily Farek and Madison Brockman

Advisors: Richard Wolbers, Joan Irving

ABSTRACT Foxing is pervasive in works on paper and is difficult to reduce or remove, especially when full aqueous treatment is not a feasible option. Some local or restricted aqueous methods, however, might be useful to better control the process of foxing reduction or removal. Foxing has an organometallic nature: it is part metal and part fungal. The treatment of two foxed chine collé lithographs by Puvis de Chavannes, which were

severely disfigured and could not be immersed, prompted this investigation. In the aqueous cleaning seminar with Richard Wolbers at WUDPAC the following bathing procedures were compared in preparation for treating the Puvis prints.

Expendable examples of foxed chine collé prints were used to test reducing agents, chelators, and enzymes that could effectively remove foxing stains from paper. Previous student work has explored the use of combinations of chelators and enzymes, however this is the first study to incorporate a reducing agent that targets the metal component, reducing Fe^{3+} to Fe^{2+}. This reduction renders Fe into a more soluble form, enabling the use of common and accessible chelators for its removal. The reducing agent and chelator target the metal component, and the enzyme targets the fungal component. Two novel reducing agents and enzymes were used in various combinations for this study to comparatively test their efficacy. Ascorbic acid and sodium hypophosphite were tested as reducing agents, along with EDTA and DTPA, respectively, as chelators. Two enzymes were employed as well, a commercial lysing enzyme preparation (a combination of enzymes that target the proteins and carbohydrates of a fungal cell wall) and lyticase (an enzyme that targets the 1,3 link on polyglycoside chains, a specific cell wall component for yeast and fungi). Preliminary testing indicates that sodium hypophosphite is effective and the lyticase is slightly more efficient than the lysing enzymes. This is likely due to the higher specific enzyme activity in the lyticase.

Building on the preliminary testing, this study will offer a restricted bathing option for the two Puvis de Chavannes prints -- incorporating a new combination of reducing agent, chelator, and enzyme. The new protocol will provide wider applications for works on paper that cannot withstand aqueous treatment via full immersion bathing by using rigid agarose and gellan gels. It also includes safer, more sustainable reagents than traditional foxing treatments, which have included Dithiothreitol (DTT) as a reducing agent, high pHs, or traditional bleaching agents.

BIOGRAPHIES

In 2011, Madison Brockman graduated cum laude from the University of California, Berkeley, where she earned a BA in the History of Art with a minor in German. While still an undergraduate Madison began her pre-program conservation training at the Phoebe Hearst Museum of Anthropology, working on projects including the rehousing, mounting, and consolidation of several objects from the museum's extensive ancient Egyptian collection. She also enjoyed studying art in situ during a year abroad in Rome and Berlin. After graduation, Madison began an internship at Zukor Art Conservation in Oakland, CA, working on a variety of paper-based artworks and documents. After relocating to Los Angeles, Madison received the bulk of her paper conservation training as a Technician at the Academy of Motion Picture Arts and Sciences' Margaret Herrick Library, where she combined her love of paper and film. Her treatments there included posters and production art, photographs and negatives, books and manuscripts, pressbooks and periodicals, scrapbooks, and other special collections items. Madison rounded out her pre-program development with an internship at the Fowler Museum of UCLA, working with a variety of non-Western ethnographic objects. The summer after her first year at Winterthur, Madison interned with Chela Metzger at the UCLA Library Conservation Center, where she treated and rehoused several objects from the University Archive and Biomedical Library. Her second year studies at Winterthur include treatments of diverse works on paper and an 18th c. textile sample book, as well as a technical study of an early 20th c. sculptural study by George Gray Barnard. A Los Angeles County native, Madison takes advantage of the area's mountains, beaches, food culture, and diverse art and film offerings when home from graduate training on the East Coast.

Emily Farek is a second-year Graduate Fellow at the Winterthur/University of Delaware Program in Art Conservation with a major in Paper and minor in Library/Archives. She graduated from Emory University in 2014 with a BA in Art History and a minor in Italian. While studying abroad in Rome, she completed cataloguing and rehousing the archive for a collection of documents and photographic negatives from the American Academy's excavations at Cosa. She worked at the Carlos Museum at Emory University during her time as a student and after graduation, treating objects in the conservation lab under the supervision of Chief Conservator Renée Stein, creating a conservation-themed tour that is offered to school groups at the museum,

and working in the lab and on campus treating the public art. As a participant of the FAIC workshop in preventive conservation at Ossabaw Island, Ga, she expanded her conservation knowledge to more specialties. An opportunity to work with Elizabeth Kaiser Schulte gave Emily her first experiences treating works on paper. She went on to intern at the Georgia Archives, where she treated works on paper and books, and created a tour for visitors and patrons. The summer after her first year at Winterthur she interned at the Conservation Center of Art and Historic Artifacts in Philadelphia (CCAHA), where she treated a large collection of 18th-century iron gall ink documents, and a 19th-century map of Nantucket. Now in her second year at Winterthur, she is managing multiple treatments of works on paper and the treatment of one photograph album, as well as completing a technical study of a group of 19th-century wallpaper fragments.

A 19th Century Aquarium: How Collaboration Informed the Technical Study and Treatment

Speaker: Haddon Dine
Advisors: Lauren Fair, Dr. Jocelyn Alcántara-García, Lara Kaplan, Bruno Pouliot

ABSTRACT There was a parlor aquarium fad in the 19th century, and much was written at the time on what type of aquarium was best, what fish and plants to purchase, and how to care for them, but these aquaria have not been well researched technically. Winterthur has an unusual 19th-century aquarium consisting of a splash pan, octagonal tank, and a central architectural structure. It is constructed primarily of painted tinned iron, galvanized iron, and glass, with mirrors, silk curtains, glass and wood fish, pebbles, and faux plants. While the octagonal shape of the tank was common for aquaria, there are no known comparables for this object as a whole. It is not known if the Winterthur object was constructed to function as an aquarium or for decorative purposes only. It is possible that the pieces are not original to one another and were assembled as a decorative object, perhaps using an aquarium tank. The aquarium is the subject of a second-year technical examination and conservation treatment. This work is being done in parallel to the research of a second-year fellow (Rebecca Duffy) in the Winterthur Program in American Material Culture (WPAMC) on 19th-century parlor aquaria. Her scholarship has allowed interesting discussions on the context of the aquarium, and influenced sampling, analysis, and interpretation of results for the technical study. The exchange of Rebecca's extensive historical knowledge with the information gained during the technical examination has led to a deeper understanding of this object. The technical examination of this aquarium aimed to more thoroughly characterize and understand the materials and construction. Techniques used in the analysis include examination in ultraviolet light, XRF, cross-section microscopy, SEM-EDS, FTIR, GCMS, Raman, and XRD. Among the interesting analytical findings were compositional differences in the glass panes in the tank that correspond to visual differences, mercury-tin mirrors, bronze powder paint, and a tank sealant containing a drying oil and a lead component. The treatment of the aquarium will provide stabilization and some aesthetic compensation; flaking paint will be consolidated, corrosion will be reduced, bent and detached metal decoration will be repositioned and secured, and missing elements will be reproduced. This study will add to the body of knowledge on 19th-century aquaria and a greater understanding of Winterthur's unusual object.

BIOGRAPHY Haddon Dine is a second-year graduate fellow in the Winterthur/University of Delaware Program in Art Conservation, majoring in objects. She graduated summa cum laude from the University of Pittsburgh in 2013 with a BS in Chemistry, a second major in History of Art and Architecture, and a minor in Studio Arts. After graduating, Haddon was an intern and then a technician in the Scientific Research Laboratory at the Philadelphia Museum of Art (PMA), where she analyzed paintings, furniture, and objects including Augustus Saint Gaudens's Diana, a Ming-dynasty painted wood figure, and the Liberty Bell. With PMA colleagues, she undertook research on 16th-century- Italian Renaissance chiaroscuro woodcut printing inks and coauthored a chapter in the 2015 book Printing Colour 1400-1700: History, Techniques, Functions and Receptions. She helped secure a Kress Foundation grant to continue analysis of these woodcut printing inks. While at the PMA, Haddon was an editor for the Infrared and Raman Users Group (IRUG) and presented on the IRUG database at the IRUG11 conference at the Museum of Fine Arts, Boston, and at IRUG12 at the Ormylia Art Diagnosis Centre in Ormylia, Greece. Haddon was a technician in the PMA Objects lab for over a year, where she treated over 100 firearm barrel bores in the Kienbusch Collection of Arms and Armor, Indian stone sculptures, and American presidential china; she

also performed the weekly sculpture garden maintenance rounds at the PMA. She began interning with Adam Jenkins Conservation Services, LLC in 2015, where she treated a wooden model ship, lead outdoor sculptures, and a wire model bridge. During the summer of 2017, Haddon was a graduate intern at the Lunder Conservation Center at the Smithsonian American Art Museum where, among other projects, she assisted with the treatment of the Nutshell Studies of Unexplained Death.