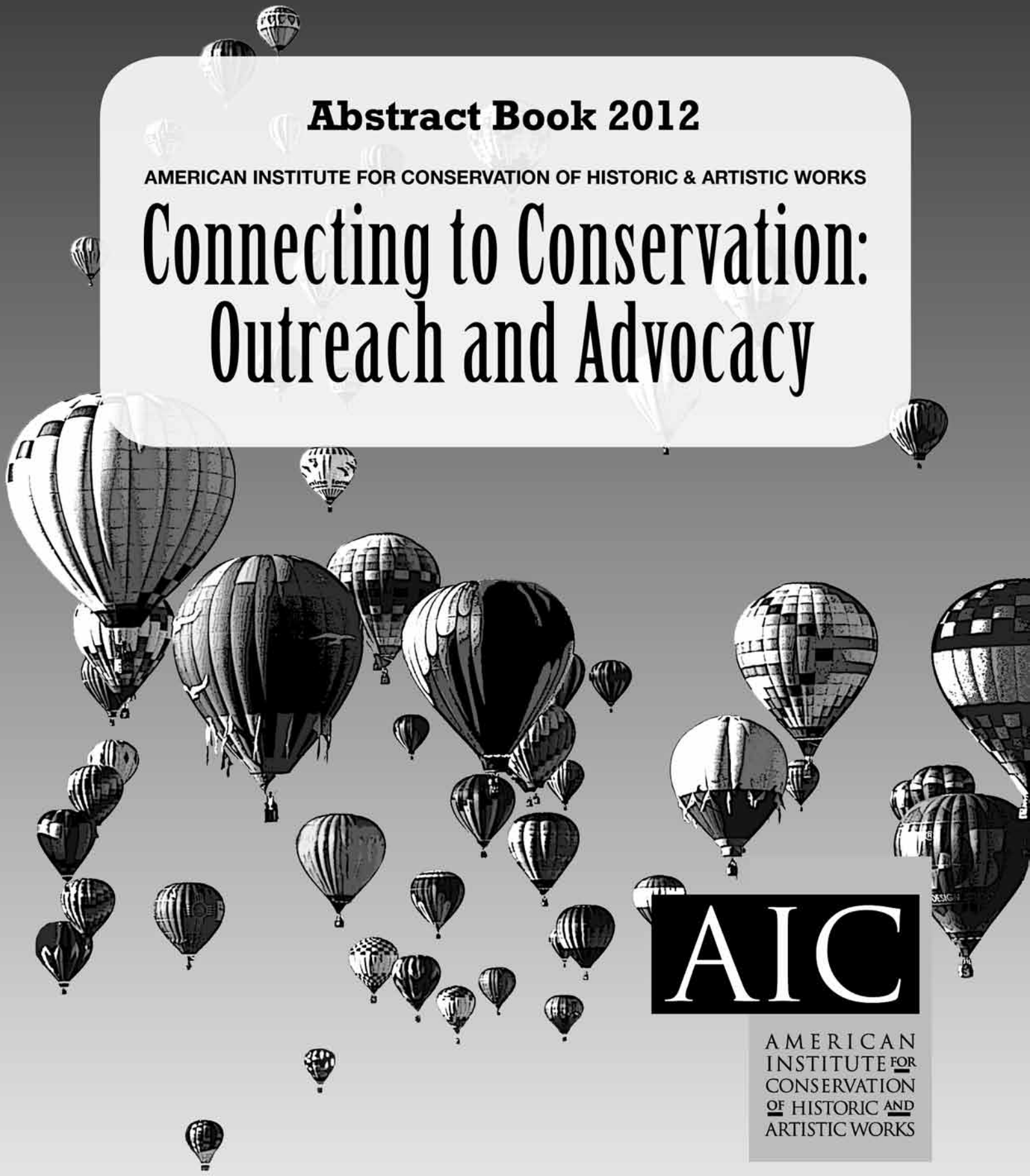
Abstract Book 2012

AMERICAN INSTITUTE FOR CONSERVATION OF HISTORIC & ARTISTIC WORKS

Connecting to Conservation: Outreach and Advocacy



AIC

AMERICAN INSTITUTE FOR CONSERVATION OF HISTORIC AND ARTISTIC WORKS

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ABSTRACTS 2012

THE AMERICAN INSTITUTE FOR THE CONSERVATION OF HISTORIC & ARTISTIC WORKS

The American Institute for Conservation of Historic & Artistic Works (AIC) is the national membership organization supporting conservation professionals in preserving cultural heritage by establishing and upholding professional standards, promoting research and publications, providing educational opportunities, and fostering the exchange of knowledge among conservators, allied professionals, and the public.

The Foundation of the American Institute for Conservation (FAIC) supports the preservation of cultural materials through education and research initiatives for conservators and allied professionals. FAIC advocates public appreciation of conservation and the primary role it plays in increasing understanding of our global cultural heritage.

1156 15th Street NW, Suite 320, Washington, DC 20005-1714
202-452-9545 | fax: 202-452-9328
info@conservation-us.org | www.conservation-us.org

40TH ANNUAL MEETING

Connecting to Conservation: Outreach and Advocacy

May 8–11, 2012
Albuquerque Convention Center
Albuquerque, New Mexico

The theme of this annual meeting will be outreach and advocacy in conservation, an exploration of how conservation connects with allied professionals, the press, our clients, and the general public. This meeting will feature a General Session format very different than in years past. For the 40th Annual Meeting, in addition to four sessions where all attendees gather to hear a selection of presenters, there will be other breakout sessions where a wide array of topics pertaining to the overall theme will be addressed in topical conversations presented in smaller group settings rather than a large lecture format.

Back cover photo: Virginia Avenue Skyline, courtesy of the Indianapolis Convention & Visitors Association; visitIndy.com

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Keynote Speakers

TYLER GREEN

Tyler Green, an influential arts journalist, will speak on the current state of arts journalism today and his perspectives on what makes conservation projects worthy of public attention in the news.

Tyler Green is based in Washington, DC where he edits and writes "Modern Art Notes" (MAN) and is the U.S. columnist for Modern Painters magazine. Green's newest venture is The Modern Art Notes podcast, a weekly program which he independently produces and hosts. It is distributed each Thursday via MAN, iTunes, RSS feed and on MANPodcast.com. The Washington Post has named Tyler Green one of Washington's 14 "young and influential" cultural figures.

Away from MAN, Green has written for Fortune, Conde Nast Portfolio, Smithsonian, Washingtonian, The New York Observer, LA Weekly, Black Book magazines and has contributed op-eds to newspapers such as the *Los Angeles Times*, *The Boston Globe*, *The Philadelphia Inquirer*, and to *The Wall Street Journal*'s arts op-ed column, "In the Fray."

Why and How Museums and Conservators Should Nudge Conservation Forward

Presented by Tyler Green

At a time when journalism is struggling and when journalism about art is increasingly falling away, how can conservators present stories about art and about their practice to the public? Green will discuss why museums should reconsider the role conservators play in the museum—and how conservators can present their practice to the public at-large both independently and in conjunction with art museums.

SAMUEL JONES

Samuel Jones, an associate of Demos, an independent British think tank, will focus his talk on the place of culture in society. Jones primary interests include the arts, culture, and creativity. Jones has worked in the commercial fields of branding and consumers as well as with media organizations such as the BBC to research audiences for the arts. He is also an accomplished art historian who has studied the role of culture in international and intercultural dialogue and the importance of creativity and visual development in education. In 2008, he co-authored *It's A Material World: Caring for the Public Realm*, which emphasized the importance of caring for cultural material. His other work includes co-authoring *Cultural Diplomacy and Knowledge and Inspiration* and contributions to the Demos collection *Production Values*. He also sits on the UK Executive Board of the International Council of Museums (ICOM). He has a degree in history from Cambridge and an MA in the history of art from the Courtauld Institute of Art.

It's a Material World

Presented by Samuel Jones

Outreach and advocacy are familiar words to any organisation seeking public support and funding. However, they are about more than simply making a case: thinking about just what the conservation sector provides and how it can change the profession and reinvigorate it as an important part of the public realm.

This speech is based on *It's a Material World*, which Samuel Jones published with John Holden in 2008.It will examine conservation in wider social and political contexts. Conservators deal on a daily basis with ideas and concepts that are at the very heart of the public realm, caring for the values around which society is built. Telling this story is not just a vital part of outreach and advocacy, but can also help policy-makers and society meet some of the most significant challenges that we, collectively, face.

DR. ANNE-IMELDA RADICE

Dr. Anne-Imelda Radice will speak on the subject of advocacy, about impacting public policy, and injecting importance for caring of cultural heritage into the lives of the public. Prior to joining the Dilenschneider Group, Radice was director of the Institute of Museum and Library Services (IMLS) from 2006 to 2010. Previously acting assistant chairman for programs at the National Endowment for the Humanities (NEH), she served as chief of staff to the secretary of the United States Department of Education. In the early 1990s, she was acting National Endowment for the Arts (NEA) chairman and senior deputy chairman. From 1989 to 1991, Radice was chief of the Creative Arts Division of the United States Information Agency and also served as the first director of the National Museum of Women in the Arts (1983–1989). In 2008 Radice was awarded the AIC Forbes Medal as recognition of her contributions to the field of conservation.

In Praise of Conservators and Conservation

Presented by Dr. Anne-Imelda Radice

Once again, we go back to the drawing board to think of ways to affect public policy and convince people of the importance of caring for their own heritages. We need to regroup and become part of the discussion in every discipline. This is more than a call to action but the launch of another, invigorated phase of conservation/preservation/protection. Let us work this out together. I have a few ideas.

Articulating Value Session

While all of us who work in cultural heritage management understand the intrinsic value of heritage resources, we are often challenged to articulate this value in economic terms, and to audiences that might not share our point of view. This session will explore how cultural heritage and the conservation thereof, is valued and articulated by conservators and others under normal circumstances and in the face of disaster.

This theme will be explored through four presentations: managing collections as non-renewable resources from an economic perspective, determining economic value of heritage resources impacted by natural disasters, strengthening heritage values communication and outreach, and finally, presenting an academic program that embraces and prepares students for the complexity of communicating heritage values to politicians and other stakeholders.

The panelists represent a multitude of perspectives and experiences, coming from museums, government entities and academic institutions from the United States, England, and Taiwan. Taken together these presentations aim to present pragmatic approaches to valuing and articulating cultural heritage.

Communication—A Complexity Issue

Fei Wen Tsai, Associate Professor, Graduate Institute of Conservation of Cultural Relics and Museology, Tainan National University of the Arts, Tiawan; Yung Chin Lin and Chun Mei Lin

The conservation education program at the Tainan National University of the Arts (TNNUA) has been a major development for the conservation movement in Taiwan since 1999. The TNNUA program is the only program, mandated by the Education Ministry, combined theory and hands-on practice with the mission of conservation training to establish treatment standards as well as to promote conservation professional education in Taiwan.

Due to its rather recent development in the field of conservation, various methods of efforts, such as personal communication, official meeting, peer review, and government evaluation, etc., has been applied to achieve well-rounded understanding and to advocate importance as well as appreciation of appropriate treatment decisions among conservation related professionals and the publics. This paper discusses the cultural influence of treatment decision-making for conservation projects and communication efforts among religious groups and museum professionals. In addition, the challenges of communication efforts will also beaddressed in this paper.

An Interdisciplinary Look at Valuation of Cultural Heritage in the Face of Disasters

Dr. Mary F. Striegel, Ph.D., Chief Materials Research, National Center for Preservation Technology and Training; and Dave O'Brien, Ph.D., Leeds Metropolitan University, UK

Manmade disasters can result in injuries to cultural heritage in a wide variety of ways. From the effects of vandalism in historic cemeteries to the effects of crude oil contamination on historic structures after marine and terrestrial oil spills, cultural heritage suffers. Laws exist that provide certain protections to natural and cultural heritage, but in order to hold parties responsible, monetary damages must be accessed. What are the most appropriate ways to place value on irreplaceable cultural heritage?

In the art and architectural conservation world, the concepts of placing monetary value to intangible or non-market benefits are remote, confusing, or off-putting. Conservation by its definition is the attempt to prolong the lifetime of an object because of its significance or cultural importance. Those who do the conservation work are sometimes surprised by those who don't value it.

What are the practical aspects of determining damages to a cultural object when the object can have many types of values—not just economic value, but cultural value. For this discussion, we define damages as the amount of money or the value of restoration actions sought as compensation for injuries caused to resources and resource services, plus assessment costs.

Working together, we will explore the intersection between emergency response and cultural heritage valuation. Different valuation methods will be examined and discussed in relationship to assessing damages in large and small disasters. For example, in very large cases, such as with the Exxon Valdez Oil Spill or the BP Gulf Coast Oil Spill, there may be resources to conduct extensive, special purpose studies to determine damages to natural and cultural heritage. But what happens in the smaller cases, when funds may not be available for additional economic studies?

Cultural value is a complex and difficult term, with cross-disciplinary consensus on how to best measure or narrate it. This presentation will address a pragmatic approach to cultural value in the context of damage assessment.

Making Strides in Outreach and Advocacy—or How to Make Conservation and Conservators Stronger

James Janowski, Department of Philosophy, Hampden-Sydney College

This session takes as its point of departure a comment by conservator Frank Matero: "…we've neglected to convince the public and the politicians of the importance of the work." (*GCI Newsletter* 18:3, Fall 2003) The goal of the discussion here is to talk about what might explain this negligence and to generate practical ideas about how to rectify things. How might conservators make strides in outreach and advocacy, rallying others to the cause?

Conservation is about artifacts. But understood differently it is about safeguarding and perpetuating meanings and values. And of course conservation is also, ultimately, about people—about seeking to ensure the accessibility of these meanings and values, transmitted as they are through things, for future generations.

Conservators lead a double life and have a hard job. They are trained in "the language of objects." But they are also trained in and learn, if somewhat less consciously, "the language of meanings and values." And it is perhaps the latter facility, becoming more fluent in this second language, which will be particularly useful if conservators are to be their own best allies.

Why? Because many of those that AIC outreach and advocacy targets have this second language as their native tongue. Indeed, conservation connects—and thus conservators should connect—to allied professions, clients, the press, and the public via smart talk about the profound and invaluable significance in objects and places. Politicians, policy makers, historical society directors, funding agency heads, as well as students and teachers in K-12 classrooms will have an intuitive sense of the deep rationale underlying conservation. The allies conservators need, typically anyway, will be better able to "hear" the language of meanings and values than the language of objects. ("The preservation of historical and artistic value" resonates in a way that "back-scattered electron image" does not. The language of objects is of obvious and critical importance to conservators; but it is not as immediately persuasive as this more colloquial way of speaking.) In short, conservation connects with potential conservation-sympathizers and conservation-supporters most readily via informed, powerful talk about artifacts—and, more particularly, about the significance those artifacts have for human beings.

To amplify: Conservators know what to do in treating artifacts. But forging productive relationships with advocates will be enhanced if conservators are further enabled to say why they do what they do. So increasing the effectiveness of outreach seems to presuppose both a reaching in—some introspection and reflection about tangible ways to extend and deepen conservators' educations in this second language—and then, afterward, a reaching out (with newfound abilities not so much in hand as in brain and heart and mouth) to individuals and groups that tend to have a facility with this alternative idiom. Convincing relevant constituencies of the importance of a conservator's work turns on the ability to say something forceful about the why and the what for of the work. And this, again, requires talk about meanings and values and—ultimately—people. Becoming more adept at this second language—learning over time to hear and speak it as if it were one's first language—promises to increase the efficacy of outreach and advocacy. It also promises—a happy side-benefit—to further develop both the personality of the profession and the personalities of its professional practitioners.

This session aims to make real progress toward these exciting and promising ends. How—in what specific ways—might conservators' linguistic skills be fostered? What practices, strategies, mechanisms, and forums will enable conservators to further develop this second fluency, thereby promoting their own—and their own profession's—interests? We'll have a lively and spirited discussion about these and related questions.

Managing Museum Collections as Non-Renewable Resources: An Examination of Conservation through an Economic Lens

Katherine Sanderson, Research Scholar in Photograph Conservation, The Metropolitan Museum of Art

The goal of museums is a noble one: to preserve cultural heritage and provide public access to it. Remaining viable in a modern market society has become increasingly difficult and, in some cases, museums have adapted by employing leadership models that have more in common with big business than non-profit management. Although this may sometimes lead to actions that fall into moral gray areas, it is not a desire for raw profit that has driven this shift. It is about survival in our global market society. Survival protects the collection, but the collection in turn, is a museum's greatest asset in its struggle to remain viable.

Over the course of the last 30 years, the emphasis of museums has often shifted away from their permanent collections towards special exhibitions. Shows have become larger and, in some cases, more spectacle than educational experience. For many museums, this has manifested itself in the form of large blockbuster exhibitions with subsequent touring schedules, often including many loans.

With capital campaigns for prodigious expansion projects coupled with the recent global recession, many museums are tightening their belts while attempting to increase, or at least maintain, their visitorship and their bottom line. In some cases, the attempt to conserve resources and increase income is resulting in fewer exhibitions. On the surface, this appears to be a positive response, however as the number of mounted shows has decreased, their durations have increased. Although this may improve an institution's bottom line on paper, a factor that is often overlooked is the cost to the individual artworks. A portion of an object's existence or "life" is spent with each instance of use. Since much of the damage incurred by art objects on display is gradual, cumulative and not reversible, extended periods of display often lead to a larger portion of the object's lifespan being consumed during a single exhibition.

Many of these concepts are familiar to conservators, who are confronted daily with the problems resulting from the tension between museum mandates to display and preserve the artworks in their care. This talk suggests a new way to explain to non-conservators the problem of art consumption through exhibition and loan. Using rudimentary economic theory, it will address the often-overlooked status of museum objects as non-renewable resources by examining methods of assigning value to works of art and the concept of the "lifespan" of an object followed by a discussion of current museum exhibition and loan practices.

A primary role of the custodians of an art collection—and the museum as a whole—is to preserve works of art for future use and appreciation. Yet, without an understanding of the possible and desired lifespan of a given object and how that lifespan is affected by use, a preservation plan is more difficult to implement and even more challenging to enforce. With a museum's dual mission to provide access and long-term preservation in mind, a more holistic approach to understanding this problem is in order.

Communicating Conservation Session

With increased visibility and greater access to our written work, are we building support for our efforts or encouraging consumers to take matters into their own hands? What are the key issues that should be brought out when talking to a general audience about our work in the media or online? How much detail is too much?

Join conservators experienced in developing content for print, social media, and television for a conversation exploring what makes for effective, engaging, appropriate content in various arenas. We will consider what web analytics and other metrics can tell us about who is consuming our content and how participation in an organization's blog or social media efforts affects the manner in which conservators are viewed within institutions and by the world at large.

Panelists will present statements to help frame our discussion before it is opened up to the floor.

Anatomy of a Blog: Conservation as Content

Heidi Sobol, Senior Conservator, and Mark Farmer, Web Design Manager, Royal Ontario Museum, Ontario

Weblogs (blogs) are a form of internet-based exposition that marry the personal essay to experience-driven content. They aim for an informal, conversational prose style, and frequently are supported with embedded links to other websites, photos, or archives. Blogs are now a mainstay of museum marketing, offering behind-the-scenes entrée to curatorial and conservation departments, as well as information about events and exhibitions. As blogs become an ever-more-necessary forum to reach audiences new and old, museum conservators need to learn the hows and whats of posting.

A museum-based blog must support the mandate of the institution, and work in concert with exhibition schedules, marketing and education. Shaping content to the needs of a broad audience also presents challenges. A good post requires an engaging presentation but one that still maintains the conservator's authority and demonstrates the depth of knowledge. Achieving this balance is frequently at issue: must a good conservation blog post highlight personal opinion, or should it stick only to the facts?

In this presentation, we focus on conservators' contributions to institutional blogs, deconstructing elements to show what makes certain themes or styles more effective than others. Using the authors' museum as a case study, we will look closely at content issues for conservators and review the evolving forms of blogs (including video blogs). Finally, we will provide a statistical analysis of how people find a blog, why they return and what happens next for the reader and the conservator-author.

Outreach Online: Shaping a Preservation Presence with Social Media

Melissa Tedone, Conservator, Preservation Department, Iowa State University; and Beth Doyle, Head Of Conservation Services Department, Duke University Libraries

Social media has transformed the way we communicate within and across communities, both real and virtual. The various platforms that define "social media"—blogs, Facebook, Twitter, photo-sharing sites like Flickr and Picasa, video-sharing sites like YouTube—offer a rich ground for professional outreach and collaboration. Duke University Library Preservation and Iowa State University Library Preservation were two of the first university preservation departments to use these tools comprehensively to connect their conservation programs with their academic communities, with a local and global public, and with other professionals in the preservation field. This approach to professional and educational outreach not only contributes to the larger preservation community in an innovative way, but has influenced and shaped social media use at their respective institutions.

At Duke, we use our blog, Preservation Underground, to increase awareness of what library conservation is and how our department fits into the greater library mission. We use the blog, Flickr, Facebook and Twitter to get our messages and images out to local and national audiences that include the general public, students, librarians, archivists and fellow conservators. Our blog has been covered in our university press, received national attention from the American Library Association, and was nominated for a Salem Press Library Bloggers Award in 2010. At the library, we have started a grassroots Bloggers Forum that promotes blogging best practices and the use of new social media tools throughout the library. The use of social media has raised our profile within the library, and allows us to collaborate among library and other campus departments and with conservators from all over. It helps us promote library conservation issues to a wide audience and connects us in ways other types of on-site programming simply cannot do.

At Iowa State, networking our various social media sites allows us to present an integrated public image online. We use Facebook and Twitter to push our blog, share topical news articles, promote events, and provide a forum for feedback. Our Flickr site gives us a centralized, public storage space for images to which any of our other social media sites can link. Our blog, Parks Library Preservation, reports our everyday activities and reliable preservation information to the public, as well as sharing ideas and fostering discussion with our professional colleagues at other institutions. The blog has increased our profile in the ISU community and the greater preservation community. As an ongoing, collaborative project, the blog has also built a stronger working relationship among our Conservation staff. In response to these successes, the Dean of ISU Library named me to chair the newly-formed Library Social Media Working Group, which produced a 20-page report recommending guidelines for social media usage at the Library. These recommendations led to the Library's establishment of its own Facebook page, and the coordination of social media activity across Library departments, so we can all promote and support one another.

Writing About Repairing—Thoughts on Telling the Story of Conservation

Rosa Lowinger, Principal and Chief Conservator, Rosa Lowinger & Associates

In 1995, I authored my first conservation essay for a general public venue. Written after my first trip back to Cuba since my family left in 1961, "Repairing Things" published in a University of Michigan Press book titled *Bridges to Cuba*, explored the ways in which my work as a conservator tied me to the country of my birth. Conservation served as a bridge-building stance and a reparative metaphor—the fundamental topic of the volume itself. At the time, I had been a practicing objects and sculpture conservator for 12 years. I had written countless examination reports, proposals, and treatment summaries, as well as a half dozen or so general museum survey reports and technical essays. I had presented papers at conservation conferences on topics that ranged from selection of coatings for outdoor sculpture to the consolidation of porous paint. I had also had a play produced off Broadway in 1991 and had just been hired by *Preservation* magazine to write a story about how Cuba was using the preservation of its built heritage as a means of fueling their floundering economy. In other words, by 1994 I was both a conservator and a burgeoning writer. However, the publication of "Repairing Things" demonstrated to me that all writing about conservation tells a story about the field itself.

For the past 15 years, I have devoted myself to telling that story. In literary nonfiction, magazine articles, newspaper editorials, artist monographs, in the book *Tropicana Nights: The Life and Times of the Legendary Cuban Nightclub,* and most recently as the "Art Nurse" on the award winning art blog www.c-monster.net, I have made the conservation narrative—explaining what our profession entails, describing the intricacies of the material world as we experience it, and most importantly, trying to raise public awareness of the unique set of skills that our practitioners possess—the centerpiece of all my writings. In the process I have learned a great deal not only about how to tell that story, but also about how our common daily reportage—in proposals, memos and lab notes—can constitute small tales with dramatic arcs, plot surprises and recalcitrant characters.

This paper aims to disseminate aspects of the processes I have used for telling our story in different arenas. I will describe the types of writing I have done within and outside of the field and how I tailor the approach to narrative for a particular audience (newspaper, blog, academic communication). Using examples my own and others' work, I will attempt to demonstrate methods of finding the appropriate tale within a conservation issue or treatment and some "best practices" for its divulgation. The goal is to provide guidance about conservation writing gained from my experience and encourage well-written material about our profession by our own practitioners. I will include tips that I give to students in my writing classes and some suggestions for making sure one is properly quoted in the press.

Communicating the Haiti Recovery Project Session

This panel will consist of presentations and a discussion about the different ways in which the Smithsonian Institution Haiti Cultural Recovery Center project was reported and communicated—both to the conservation field and the general public. The panel will consist of individuals who worked on the project in different capacities and wrote about it and/ or reported it through conferences, seminars, blogging and other reportage.

In particular, we will aim to discuss the ways in which information about the project was tailored to a specific audience and why that is necessary to properly disseminating the information on a project. We will touch upon the roles of conservators as communicators in sensitive, cross- cultural environments, and the ways in which lack of information control can be problematic. The idea is to discuss how conservation information is disseminated and portrayed in diverse media and how we as conservators who were involved with this project helped to disseminate particular aspects of the project and dealt with how the information was and continues to be disseminated.

Communicating the Haiti Recovery Project—Outreach and Reportage

This panel will consist of presentations and a discussion about the different ways in which the Smithsonian Institution Haiti Cultural Recovery Center project was reported and communicated- both to the conservation field and the general public. The panel will consist of individuals who worked on the project in different capacities and wrote about it and/or reported it through conferences, seminars, blogging, and other reportage. Each panelist will be introduced by the moderator prior to speaking and their involvement with the project described. Stephanie Hornbeck will present for seven minutes and each additional panelist will present a five-minute talk on the ways in which they reported and/ or communicated about the project. In particular, we will aim to discuss the ways in which information about the project was tailored to a specific audience and why that is necessary to properly disseminating the information on a project. We will touch upon the roles of conservators as communicators in sensitive, cross-cultural environments, and the ways in which lack of information control can be problematic. Among the places where this project was reported or communicated include print (*The New York Times*, Haitian newspapers), television (Reuters, CNN, Smithsonian Network), blogs and internet (c-monster, Smithsonian, WNYC.com, Episcopal News Service, and other blogs), Facebook posts, the AIC Cert reports, conference sessions, basic treatment reports, and the book *Saving Haiti's Heritage: Cultural Recovery after the Earthquake*, by Richard Kurin of the Smithsonian Institution. The idea is to discuss

how conservation information is disseminated and portrayed in diverse media and how we as conservators who were involved with this project helped to disseminate particular aspects of the project and dealt with how the information was and continues to be disseminated.

Panel Discussion

Following the five minute presentations (totaling 25–30 minutes including introductions) there will be a 15-minute panel discussion, moderated by Rosa Lowinger and then a 15-minute Question & Answer Session.

Panelists: *Rosa Lowinger, Principal and Chief Conservator, Rosa Lowinger & Associates; Stephanie Hornbeck, Chief Conservator, Haiti Cultural Recovery Center; Viviana Dominguez, Senior Paintings Conservator, Art ConservationLA; and Eric Pourchot, Institutional Advancement Director, Foundation of the American Institute for Conservation*

Conservation & Education I Session

Art Conservation's combination of science and art is a natural fit with the interdisciplinary focus of today's K-12 educators. Conservation topics provide ample opportunities to engage and appeal to student learners of all levels and interests, and teaching conservation fundamentals to students of all ages provides much-needed practical science education while promoting the value of preserving our cultural history. AIC's K-12 Education Working Group will present a panel of professionals, including conservators, museum educators, and classroom teachers, who are engaged in exciting projects designed to reach these new audiences. Join us to learn about ways you can collaborate with your local museums and schools, then brainstorm with your colleagues to develop new ideas for imparting our knowledge and inspiring the next generation.

Panel Discussion

Panelists: *Kate Ottavino, Sarah Barack, Erin Kelly, Jason Church, Helen Ingalls, and Jackie M.*
Coordinator: *Beth Edelstein*

Conservation Education and K-12 Audiences

Beth Edelstein, Associate Conservator, Objects Conservation Department, Metropolitan Museum of Art

The conservation profession has been abuzz of late with thoughts and ideas about how to reach a wider public, raise awareness of the field and promote the values inherent within. A number of these outreach efforts center around K-12 programming, and the conservator's focus on examination and observation are a natural fit with the growing interest in and demand for inquiry-based learning approaches in today's schools. However, little opportunity exists for conservators working with these audiences to discuss successful strategies, share experiences, or engage directly with arts education professionals. As the K-12 Outreach Working Group, we feel AIC's 40th Annual Meeting Outreach and Advocacy offers the perfect forum for this conversation.

We propose a two-part general session, first to facilitate presentations from those already engaged in this arena, and then to draw on our collective knowledge to create a body of concrete ideas about how conservation topics can be translated for K-12 audiences. The first half will provide a structure for conservators, both in museums and in private practice, who are involved in K-12 educational outreach to share high-level overviews of their programs, with a focus on their audiences, approaches, topics and ways of engaging their students. In order to provide a view into best practices, we are currently soliciting interest from local New Mexico museum educators such that we might engage their participation as well. Additional concerns to be addressed by both parties include: a) networks—how interested conservators might be able to tap into their local schools; b) assessment —how to

evaluate programming effectively for educators, schools or museums interested in participating, as well as funders looking for impact; c) funding—how to research and take advantage of funding sources aimed at supporting interdisciplinary educational approaches, and whether the development of these outreach programs and curricular resources can serve as an income source for private conservators.

The second half of the session will experiment with the idea of crowd-sourcing to draw on the collective professional knowledge and expertise of the membership in devising new and creative ways to intersect with the K-12 audiences. We envision a workshop atmosphere where participants divide into breakout groups organized around a particular parameter such as age level, classroom subject (history, science, math, art, writing), or specialty area—the particulars of this division may depend on the attendees' interests, or can be further defined before the meeting begins. Each group will be asked to come up with lesson plan or activity ideas, following a general template provided by the Working Group. These ideas can later be further developed by the Working Group into useable, accessible lesson plan/activity plan documents available to AIC members through the website.

Ultimately, we aim to support the development of new or refined models of K-12 outreach, while also highlighting the benefits of this type of outreach to the conservation community.

Creating a High School Curriculum for the Preservation Arts

Kate Burns Ottavino, Director, Preservation Technology, The New Jersey Institute of Technology/Center for Building Knowledge

This paper will present the design and implementation process for the creation of the first high school Preservation Arts curriculum in the United States. The interdisciplinary approach to secondary school education is the first in the United States to teach utilizing the interdisciplinary methodology of historic preservation. The goal of the Preservation Arts major is to provide students with a high quality academic and hands-on educational experience that is geared toward future training in the preservation arts and professions such as conservation, architecture, city planning, and engineering.

The curriculum, designed by curriculum specialists at the New Jersey Institute of Technology's Center for Building Knowledge, is constructed to allow students to view traditional academic subjects through the lense of historic preservation by focusing on a specific historic structure or artifact through which to study the elements of its creation, preservation, and interpretation. These serve as the benchmark for the study of all aspects of a particular period and place. Using this model, teachers can work together using this common benchmark as an expression of the period under study through which they can integrate their respective academic disciplines.

A high school curriculum for the preservation arts consists of two components, the academic and the "hands-on." Within the reciprocal nature of these two components lies the essence of historic preservation. Unique to the artisanship that is applied to an historic preservation project is the compound nature of its requirements, including: knowledge of the physical means used to create the artifact being worked upon; its significance relative to similar artifacts; an understanding of the context in which it was created, and the process of its evolution. Each of these requirements will factor into which materials are conserved, restored, replicated/substituted or altered. The means and methods for each of these processes will be many and varied depending upon the structure/object and its design/composition. Within these broad yet subtle parameters lies the inspiration and development of the conservator and preservation artisan. The goal of the Preservation Curriculum is to educate, inspire, and further qualify students to go onto higher education in historic preservation or to begin an artisan apprenticeship within the preservation industry. The curriculum received New York State certification in 2005.

This paper will present the four year traditional curriculum including the inception of its design, its preservation based methodology for teaching the academic (math, science, English, and history) subjects, the preservation arts and technology course sequence, and the internship component of the curriculum. Slides and brochures will be used to illustrate the curriculum. A seven-minute video of the internship program in action is recommended as part of the presentation.

Conservation & Education II Session

This session will address teaching to fine art, art history and museum studies undergraduate and graduate students at several American universities and colleges including Princeton, Tufts, Colby, and Rhode Island School of Design. The interdisciplinary nature of the college and university structure has led to the natural development of practical and germane instruction focusing on principles of art conservation that effectively merge the study of liberal arts, fine arts and scientific disciplines to a broader pre-professional audience. These exciting opportunities to unite interdisciplinary fields to develop new networks composed of untapped professional colleagues within allied professions that can potentially move our field significantly forward. A wrap-up discussion period will evaluate the goals and objectives of past and present teaching by members in our field to non-conservators. Subsequent discussion will delve into how these collaborations with allied fields could be improved in the future to move the field of art conservation into a broader context.

Possible discussion points

What are the most important concepts to teach non-conservator professionals employed in a museum setting? What do conservators feel is the most important material to teach future museum professionals (non-conservators) about our profession? Which museum professionals do we need to reach and why? What is the best way in which to convey these ideas? What would we consider the essential body of knowledge for non-conservator museum professionals?

Moderator: *Beverly Nadeen Perkins*

Education and the Allies: Combining Forces for Preservation

Katharine A. Untch, Director, Conservation Division, ARG Conservation Services, San Francisco

For most of its existence, AIC and its members have identified allied professions, worked in the tranches together, and collaborated on various projects and strategies that advance conservation and preservation of cultural heritage. Allied organizations, such as the American Association of Museums, the American Institute of Architects, the American Association for State and Local History, the College Art Association, and many others represent curators, collection managers, registrars, museum educators, exhibit preparators, architects, and an ever-growing number of potential allies and collaborators. Venues such as the Campbell Center, the Northern States Conservation Center, and several other institutions and organizations have provided platforms for education and training of conservation principles and techniques for our allied colleagues.

This presentation provides an evaluative look at current education and training outcomes. Issues to be addressed include: How to evaluate educational efforts?, Has it been effective?, What are we teaching?, What needs to be taught?, What messages are being transmitted?, How effective is the message? The presentation will touch upon current perceptions of the conservation profession and offers suggestions for future educational strategies.

Empowering Fine Art Students to Make Educated Choices Regarding the Longevity of Their Own Art Work

Ingrid A. Neuman, Museum Conservator, Rhode Island School of Design Museum of Art

This presentation will focus on current strategies to teach college level fine art students at the Rhode Island School of Design about art conservation concepts relevant to the long-term preservation of their own art making practices. Reflections on several years of developing and teaching a new course entitled "The Art of Art Conservation" held at the Rhode Island School of Design Museum of Art will be presented. How much and what kind of art conservation information should be ideally presented to contemporary art makers? How involved and towards what end should professional art conservators become integrated into the education of developing artists? Currently in our profession, we value the importance of documenting living artists' preservation attitudes into the conservation record or data base, this presentation will discuss the unique and timely opportunities to develop a positive rapport about the relevance of the field of art conservation with undergraduate early in their professional education. Additional concepts to be presented include the creation of "art conservation for non-practicing conservator courses" on the foundation level in art schools. Such courses could potential de-mystify the field of art conservation creating more appreciation for, and tolerance of, our mutual concerns about the long-term care of contemporary art. Personal experience with contemporary art students has allowed me to reflect on how we can come together within the arts, both as art makers and conservators, in order to disseminate information which will be beneficial ultimately to us all in the future.

Engaging Undergraduates with Art Conservation

Nina Roth-Wells, Conservator in Private Practice, and Instructor, Colby College; and Lauren Lessing, Mirken Curator of American Art, Colby College Museum of Art

This talk will describe ways that the Colby College Museum of Art and Department of Art have engaged undergraduates in art conservation and collections care. Since 2006, Colby has offered a one-month two-credit course in Art Conservation and Preservation. In this course students are taught the basic ethics and practices of conservation with an emphasis on preventive conservation. During the course, students tour museum storage

and learn skills to perform basic condition reports. Due to the interdisciplinary nature of conservation, trips to museums are augmented with a tour of the instrumental analysis labs in the Chemistry Department at Colby College. The course culminates with each student presenting a condition report on a museum artifact and suggesting treatment plans appropriate for that artifact.

In addition, the Colby College Museum of Art has worked with students enrolled in the chemistry course "Instrumental Methods of Analysis" to analyze light levels and light spectra in the museum. In 2012 and 2012, students in this course also had the opportunity to view and compare drawings hidden beneath the surfaces of paintings using a Sony Infrared Nightshot camera.

Finally, the talk will outline the process used to build the course content and how as a conservator in private practice and a curator of education we built relationships necessary to reach out to the academic community.

Introducing Art Historians to Art Conservation Concepts through Object Based Analysis of Materials and Techniques

Norman Muller, Conservator, Princeton University Art Museum

Although the teaching of conservation principles to graduate art history students has been the general rule for decades, this presentation emphasizes the appropriateness of teaching them about the materials and techniques of art before exposing them to aspects of art conservation. Over a career spanning nearly fifty years, I have spent the past thirty years teaching a course on historic art materials and techniques to graduate and undergraduate art history students at Princeton University. Paintings have ben the main emphasis, but I have also taught students about the materials and techniques of Master Drawings. The idea for such a course was influenced by the teachings of Edward Waldo Forbes and his associate Paul Sachs at Harvard University's Fogg Art Museum in the last century, both of whom educated a number of future curators, art historians and museum directors through object related analysis and workshop practice; and the teaching methods of Daniel V. Thompson, Jr., at Yale University. At Princeton, a short slide lecture summarizing the points to be covered was followed by a laboratory presentation, during which the student was exposed to various materials and techniques found in paintings and drawings through the study of actual works of art. Emphasis was placed on a thorough examination and interpretation of the object, studying every aspect of it from back to front, and viewing it in comparison with other objects from the same workshop or school. I call this technical connoisseurship. Knowledge of materials and techniques not only provide the art historian with tools that can aid in research, but it can also smooth avenues of communication between him/her and art conservators.

Conservation Conversations Session

Tuning the Approach

Sari strategizes about message and image; Carmen turns to social media to fundraise for preservation; Scott and colleagues discuss career paths; and the Attingham Re-discovered project quantifies the positive feedback effect of conservation in the public eye. Using a talkshow format that incorporates case studies, talks, and interviews, this session will provoke discussions of audience, fundraising, outreach successes and failures, and draw upon compelling stories from conservators whose career paths have diverged from hands-on treatment.

Connecting to Connections

Julie Heath, Museum Market Manager, Tru Vue, Inc.

As our federal, state, and local governments deal with the sluggish pace of our economic recovery, we will likely see cuts in public funding that supports conservation. If the field of conservation is to sustain its same level of service for our collections, it will need to supplement these diminishing resources. Funding sources beyond public and foundation grant money—such as individual gifts and corporate gifts—may be a key component toward addressing this challenge, but have often been the purview of directors and development offices. Major Gifts and Corporate Relations officers posit that the keystone to these gifts is relationships. A frequently cited axiom among successful fundraisers, "People give money to people, not programs," lays the groundwork for success in securing private funding. Can conservators play a role in developing these relationships? If so, how? What does this type of outreach look like? This panel discussion, interspersed with mini-presentations, will explore various approaches to building relationships, and will examine how these relationships, in turn, can support conservation and collections care efforts. Questions, comments, and anecdotes from the audience will be encouraged, as the nature and challenges of cultivating donors can vary widely from institution to institution.

Conservation is a Mindset Not a Job Title: Conversations with Conservators who are Saving the World through Outreach and Advocacy Not Benchwork

Scott Carrlee, Curator of Museum Services, Alaska State Museum

This will definitely be a different, if not radical, kind of session. No death by PowerPoint, no reading from the podium, this breakout session will be engaging and participatory. The conversation will start with short interviews with 5 conservators whose career paths have led them away from the bench and into the realm of outreach and advocacy. The interviews will take place talk show style with each interviewee joining the group and adding to the conversation. What could be more compelling than to hear the personal story of those in our profession who have made an unexpected career choice and yet still found satisfying and fulfilling work? In fact their conservation skills are what sets them apart and makes them really good at their jobs. The conversation will continue with over half the session being devoted to participants sharing their own career arcs, and concerns for their future and the future of the profession. This will be the session for Gen X and Y fresh out of training, looking for that first job or for Boomers contemplating a career move. This session will answer the questions "is there life outside of the lab? and "when is a conservator still a conservator?". Come to find the answers but only come if you are willing to participate and be challenged.

It Takes a Social Media Village to Save a Pot: Lessons Learned from a Failed (Ok, Limited Success) Project

Carmen Li, Preventive Conservation Manager, University of Alberta Museums, Edmonton

This presentation comes out of a failed social media project.

The Save-A-Pot project was launched at the Museum of Northern Arizona (MNA) in 2010 during the midst of a major move initiative. The Easton Collections Center, an award winning LEED-certified platinum building, had been built through the generosity of donors Harry and Betsey Easton. Several major grants provided much needed funding for cabinetry, a project staff member, and some supplies. Nevertheless, we were constantly struggling financially for daily needs. We decided to try the appeal of soliciting very small scale monetary donations amongst the tightknit Flagstaff community, and in doing so, inform the community about an aspect of museum work they may not be familiar with, and hopefully excite them with the developments taking place at MNA out of sight of the general public. Thus, the Save-A-Pot video and social media campaign emerged.

With modern technology at our fingertips, and social media infrastructure well established and gaining momentum by the day, it no longer requires much investment to generate simple campaigns for outreach or fundraising. For example, the cost to MNA for the creation of Save-A-Pot (from conception, to production, to its launch on free platforms such as youtube) was $0. Much of the work was completed outside of work hours, freeing the institution from even contribution of staff time. Furthermore, conservators are good content providers, and preservation issues generate great public interest, as evidenced by the number of conservation blogs that have appeared over recent years, as well as the popularity of visible galleries where conservation work takes place in full public view. So in presenting preservation issues to the public, the project was very much within the contemporary zeitgeist. So why did our project not achieve the goals that we'd set out?

We identified a few key factors in the limited success of the Save-A-Pot Campaign:

1. Lack of administrative support for the social aspect of the campaign
2. An institutional focus geared towards key individual supporters rather than embracing a community of support
3. Institutional culture that presents difficulties for interdepartmental collaboration and for staff to act outside of their traditional roles and be stewards of the campaign

Clearly, social media is not quite as easy as its usability and accessibility would make it seem. In fact, for institutions (and departments within institutions) to engage with it fully, deep philosophical shifts are required. Among other things, social media represents an opportunity for conservators to engage with the public without knocking down a wall and turning it into a visible gallery, a huge advantage for those of us working in smaller, less well-funded museums. However, to leverage social media to its full potential, institutions and their administrators must minimally be comfortable with staff taking on creative dynamic roles outside of their traditional job duties, and ideally be actively encouraging it and fostering an environment for staff to be creative and vocal.

Although Save-A-Pot never took flight as a social project, it nevertheless achieved success as a fundraising initiative.

The Power of Conservation in Action— A Virtuous Circle

Sarah Kay, Curator, and Catriona Hughes, Conservator, UK

The National Trust, the UK's largest conservation body, is a charity, whose funding depends on the support, both financial and metaphorical, of its members, visitors, volunteers and benefactors. It has recognised that show-casing the fascinating skills of conservation in a transparent and engaging way can engender huge support for its vital work, by deepening relationships and increasing understanding.

Drawing our supporters into the complexities of the

work and the decision-making processes by carrying out conservation-in-action has shown itself to be so effective that this approach is now de rigueur and is written into almost all our conservation contracts. At those properties where it has become an accepted way of working, embedded into the staff, management and volunteer teams' psyche, it has shown itself to be extremely successful.

Its power to inspire and build support is recognised at the organization's management level and its benefits are now measured, with equal weight, alongside the pure financial results of income generation and visitor numbers. The organization rewards and celebrates those projects where significant public engagement through conservation is achieved.

Our presentation will highlight hard facts and real examples that prove the benefits of the conservation-in-action approach, in terms of offers of funding, increased visitor numbers, regular repeat visits and greater visitor enjoyment.

So long as the vital ingredients of staff and management buy-in, interdisciplinary working, creativity, and enthusiasm are in place, conservation-in-action can act as a powerful lever to generate support and funding. This enables more conservation work to take place, with more opportunities to inspire, instruct and intrigue, and so the virtuous circle continues.

Promoting Conservation

Sari Uricheck, Objects Conservator, Acanthus Conservation

Fundamental concepts of marketing, public relations and social movement theory provide a strategic lens through which to examine Outreach and Advocacy initiatives within the field of Conservation. How effective are efforts in nurturing interest and communicating the profession's "message"? What is the message, and can the discipline capitalize on Outreach and Advocacy to deliver it? This paper examines current and potential landscapes of audiences, objectives and practices for initiatives. A consideration of market segments, competition and public image will illuminate sources of strength and weakness in the branding of the profession of Conservation. Case studies and parallels with other disciplines will be presented for comparison. Strategies to effectively convey the mission of Conservation, while simultaneously raising its public profile and creating a positive image, will be drawn from social movement theory. A discussion of how to develop and incorporate these ideas into future action will follow.

Case Studies I Session: Public Outreach in the Developing World

This session will address innovative international initiatives in South America, the Middle East, and Europe that provide conservation training, preservation resources, and public education to underserved areas of the globe. Specific projects will be shared focusing on traveling exhibitions, art, conservation and society; photograph collections and preservation training across the Middle East; and projects by Heritage Without Borders, designed to provide training and education on-site and in more traditional classroom settings. Issues associated with funding, sustainability, language, art as resource, cultural, economic and social differences, volunteerism, and preservation versus access, as well as challenges in training and education will all be discussed.

The Balance Between Conservation and Outreach: The Art Museum of the Banco de la República de Colombia

Adriana Páez Cure, Conservator and Registrar, Central Bank of Colombia Museum of Art, Bogota

The Museum of the Banco de la República (Central Bank of Colombia) has a collection of about 4,600 Colombian, Latin American and international artwork that includes paintings, sculptures, graphic art, photographs, installations, and videos from the 16th century to the present. The collection was started in 1957 and has grown 20% in the last five years. The Museo de Arte organizes every year six traveling exhibitions which are mounted in different Colombian venues and rotated three or four times during the year. Additionally, it produces five temporary exhibitions of national and international art at the museum in Bogotá that are exhibited with the permanent collection. Every year the museum receives about 1,500 pieces from individuals and organizations to exhibit and use as part of the fine arts outreach program, resulting in almost 5,000 annual movements of artwork, activities of maintenance and conservation of the collections, packaging and preparation for air and land transport.

The preservation of the collections and carrying out these activities in a mid-size museum are in itself a paradox—on the one hand fulfilling the mission of cultural outreach, and on the other hand maintaining the material stability of the collections. There are critical circumstances like the need to mount exhibitions in places where there is staff shortage or the staff is under trained, and several problems related to climatic and museographic conditions. Nevertheless, the Banco de la República has a large physical infrastructure to exhibit art distributed in 14 cities and an excellent security program to that offers an invaluable outreach around the country.

This presentation will discuss the action plan for conservation and registration activities for 2011, the priorities established, the reduction of risk factors for damage to collections, and how this plan has been able to integrate conservation to the different areas of the museum. This was achieved through a great deal of communication, teamwork, continuous training on conservation and museographic issues, and above all, through the commitment to the well being of the collections as a way in which art can bring us closer as a society.

Heritage Without Borders

Dominica D'Arcangelo, Heritage Without Borders, Institute of Archaeology, University College London, London; with Melina Smirniou, Margrethe Felter, Kelly Caldwell, Nicola Harrison, and Carmen Vida

In Spring 2011, a new non-profit outreach organization called Heritage Without Borders was launched (http://www.heritagewithoutborders.org). Heritage Without Borders (HWB) matches volunteer museum professionals with people in developing countries who want help to conserve and interpret their cultural heritage. HWB grew out of a pilot organization called Conservators Without Borders (CWB), which ran from 2007–2009 and successfully completed collaborative projects in Greece, Jordan, and Peru. CWB and HWB have both received a great amount of support and goodwill from the conservation community. Why are conservators (and other heritage professionals) willing to support this type of organization? Why do they volunteer their time?

One reason may be that more heritage professionals than ever before are being qualified to post-graduate degree level. At the same time, job opportunities are decreasing. HWB gives qualified museum professionals an outlet to train others and transfer their skills to people in developing countries whilst providing volunteers opportunities to have life changing experiences and overcome daily challenges.

In September 2011, HWB carried out its first out two practical projects. These projects were staffed and run by professional and student conservators from the United Kingdom. One team of three conservators worked at the UNESCO World Heritage site, Merv in Turkmenistan, to conserve objects on-site while training local students and museum professionals. Another team travelled to Sarajevo to run a week-long conservation school at the National Museum of Bosnia and Herzegovina. The school included 26 participants from Montenegro, Albania, Bosnia and Serbia.

Each project was individual and unique, but both built capacity in local communities through high quality training in basic conservation skills. Both projects also relied on strong local partnerships and excellence in communication and outreach skills.

Heritage Without Borders will give a background to the organization, the international need, its strategy and administrative model. Using our conservation projects in 2011 as case studies, HWB will explain the specifics of the practical conservation work carried out, the benefits, how the projects are evaluated and what our next steps will be to apply excellence in communication to tackle the skills shortages in the developing world.

Middle East Photograph Preservation Initiative: Learning in Collaboration

Nora W. Kennedy, Sherman Fairchild Conservator of Photographs, The Metropolitan Museum of Art; Debra Hess Norris, Art Conservation Department, University of Delaware; Zeina Arida; Rima Mokaiesh; and Tram Vo, Owner, Tram Vo Art Conservation (TVAC)

The Arab Image Foundation, the Art Conservation Department at the University of Delaware, The Metropolitan Museum of Art, and the Getty Conservation Institute are partners in the Middle East Photograph Preservation Initiative (MEPPI), a strategic three-year project to promote the preservation and awareness of photograph collections in the broad Middle East, from North Africa and the Arab Peninsula through Western Asia. Portions of this project are supported by a generous grant from the Andrew W. Mellon Foundation.

The conservation and preservation of photography of the Middle East is still in its infancy despite the existence of many invaluable photograph collections. Collection assessments and surveys, carefully developed educational workshops from basic to advanced, and translations of key preservation texts are urgently needed to preserve the often under-valued photographic treasures from this region of the world. The scarcity of formally trained photograph conservators in this area makes the need for informed preservation professionals essential to care for the wealth of photographic heritage dating from the early 19th century to the present.

This ground-breaking initiative commenced in June 2011 with an assessment phase where significant photography collections in the region are being identified by three researchers. Researchers have been collecting information on the size, content, condition, and access to these collections through e-mail and telephone contact and, where possible, through site visits. In November 2011, the first of three eight-day MEPPI Workshops took place in Beirut, Lebanon, with 18 participants from eight countries. The Getty Conservation Institute is overseeing the carefully monitored 8-month distance learning phase that follows each workshop, as well as final follow-up meetings to share insights, compare results, plan for the future, and cement connections in this ever-widening network of like-minded professionals.

Highlights of a variety of collections will be discussed as well as the challenges faced by collections custodians. MEPPI's success to date has relied upon effective strategies for publicizing the initiative and reaching out to collections and their caretakers. MEPPI seeks to promote: effective approaches to working in a number of languages simultaneously; careful selection and dissemination of literature with broad and universal content for translation into Arabic; modification of preservation solutions based on climate- and cultural differences; the establishment of a standard working vocabulary for terminology in multiple languages; and the visibility and importance of these exceptional photographic collections and holdings regionally.

Case Studies II Session: Disaster Outreach

Three case studies highlight the challenges and opportunities for furthering conservation goals after a major disaster strikes. The outreach and advocacy following the deadly 2009 bushfires in Australia, the incorporation of recovery strategies in museum design following a destructive F1 tornado in 2010, and the 2011 AIC-CERT response to severe flooding in North Dakota illustrate three different approaches to disaster recovery. This session will explore assumptions about recovery, what happens when these assumptions prove wrong, and lessons learned and triumphs achieved under trying circumstances.

Contributors: *Alexandra Ellem, HDT Williamson Painting Conservation Fellow, National Gallery of Victoria; Kathleen Maher, Executive Director/Curator, The Barnum Museum; Susan Mathisen, President, SAM Fundraising Solutions; Randy Silverman, Preservation Librarian, University of Utah Marriott Library*

Moderator: *Lori Foley, Vice President of Emergency Programs, Heritage Preservation*

Dispatches from the Field: Lessons Learned in Responding to Disasters

Lori Foley, Vice President for Emergency Programs, Heritage Preservation

Since 2007, when AIC's Collections Emergency Response Team (AIC-CERT) was formed, members have assisted cultural institutions affected by an array of disasters that have included Hurricane Ike in Galveston, Texas; a devastating earthquake in Haiti; and severe flooding in Minot, North Dakota. While the circumstances for each disaster were quite different, the responders shared many similar experiences that underscored the urgent need, both nationally and internationally, for ongoing education in emergency preparedness. In this interactive session, AIC-CERT members will share the lessons they've learned and the lessons they've observed while working with institutions under stress. You'll learn the important first steps in assisting an organization in its initial response, how to direct these organizations to funding following a disaster, and how to work with staff and volunteers whose homes were probably also affected by the disaster. Learn about the tools and resources that are currently available, and come prepared to discuss what additional resources you need to help institutions address and recover from an overwhelming event. You don't have to be an AIC-CERT member to help the cultural community prepare for and respond to a disaster. This session is sponsored by the AIC Emergency Committee.

This one-and-a-half hour general session will be moderated by Lori Foley of Heritage Preservation and co-chair of the Emergency Committee. AIC-CERT membership will be represented by Gina Minks of Amigos Library Services, Vicki Lee of the Maryland State Archives, and Randy Silverman of the University of Utah Marriott Library.

Show Must Go On!: Conservation Advocacy and Disaster Recovery

Kathleen Maher, Executive Director/Curator, The Barnum Museum; and Susan Mathisen, President, S.A.M. Fundraising Solutions

On June 24, 2010, The Barnum Museum in Bridgeport, Connecticut, was, without warning, struck by an F1 tornado. The 100-plus mile-an-hour winds slammed into the landmark building with merciless force, causing vast damage to both the structure and collections on display in the galleries. It has forced the museum's closure during its recovery.

Rather than perceive the storm as a negative and just "fixing" the damage, the museum is instead seeing it as an opportunity to create a holistic, pro-active strategy to address disaster recovery that will result in a sustainable museum operation and fosters optimal stewardship of its unique collections. Thus, collections care is being incorporated into the museum restoration design, not separate from it or at a later stage, such as during the exhibition design process. By using best conservation practice as the guiding force in the recovery, the museum has an informed way to make decisions about designing gallery spaces, lighting and climate systems that are appropriate to the museum's historic structure and the collection's needs, and exhibition cases and display. This planning is critical because many iconic artifacts and very large-scale decorative arts pieces are on extended display and thus require preservation efforts that can be sustained long-term.

Conservation also plays an important role in the museum's presence during its closure. It is anticipated that this approach to recovery will initiate a new institutional paradigm of collections preservation management that can serve as a model for other organizations throughout the country. The effort will illustrate the impact conservation can have beyond the museum world —in areas such as fundraising, economic development, tourism, and education. And, since "the show must go on," it will be part of the museum's programming during the closure. The museum is making every effort to keeping its audience engaged and updated on the preservation effort as it proceeds through articles in the press, television appearances, speeches throughout the region, the website, and through outreach and collaborative programming.

It is anticipated that full collection recovery will take years given the breadth of treatment needed to ensure the stability of the 25,000 artifacts affected by the tornado impact. To meet this need, the museum has included an on-going conservation program in its post-recovery plans. Although still in its formative stages, the museum envisions a training opportunity where undergraduate and advanced students, working under professional supervision, will assess and treat objects while experiencing the challenges and dynamic of interpretive context and learning the balance of long-term conservation care with exhibition needs. This program will grow from existing education collaborations with the University of Delaware, Quinnipiac University, New York University, and the University of Connecticut.

Trial by Fire: Making Conservation Connections in the Aftermath of the 2009 Black Saturday Bushfires in Victoria, Australia

Alexandra Ellem, HDT Williamson Painting Conservation Fellow, Conservation Department, National Gallery of Victoria, Melbourne

In February-March 2009, Australia's deadliest bushfires killed 173 people and injured many more as they ravaged 78 townships within the state of Victoria. Over 400 individual fires razed more than 1 million acres of land and destroyed over 2000 homes as well as numerous community buildings, commercial properties, and hundreds of farm buildings. Only 5% of one town, Marysville, remained standing in some form.

In the first days after February 7th, which came to be known as Black Saturday, members of the Victorian branch of the Australian Institute for the Conservation of Cultural Materials (AICCM), discussed offering assistance to historical societies, museums and other collections in affected areas if it were required.

As terrifying tales from survivors emerged within the first week of the firestorm, it became clear that some people were finding some—although very few—of their belongings had made it through the fires. Naturally many of these objects were severely altered by the intense heat and by-products of the fire. The group quickly realized as people began accessing and cleaning up their properties that providing information to both the public and collecting institutions about what to do with their treasured possessions was urgently required.

Finding an appropriate way to disseminate information about salvaging damaged belongings to people who were grieving, homeless and in shock was critical. It had to be done sensitively and in a timely manner before the disposal of those belongings occurred. We knew that with such great loss the few items that might be recovered would take on greater significance than they had before. This stirred us to act swiftly so we could assist people in making informed decisions.

This endeavor was built from scratch by volunteers within our professional organization. While volunteer conservators had all had some disaster training as part of their conservation studies, the AICCM Victorian Division had no plan prior to the Black Saturday fires and no formalised networks established to manage disaster recovery. Through professional networks within our workplaces and AICCM, we were able to work with allied professionals in state and national collecting and archiving institutions, who gave us significant support to enable offers of relief for preserving cultural heritage.

The process highlighted how remote conservators are to the public. Thus the bushfire effort became as much about advocacy as outreach. Since then, AICCM has been engineering a more pro-active approach to disaster preparedness and recovery. This paper outlines key lessons learnt from the AICCM's Black Saturday efforts at outreach and advocacy and the activities being undertaken to build on this momentum.

Case Studies III Session: Outreach Tools

This Session describes specific projects which have connected the public with conservation under a variety of different circumstances, including preservation fairs, social media, museum displays, and historic sites.

Anderson will discuss a recurring Preservation Fair that encourages visitors to bring an object or question to be discussed by preservation professionals from a variety of institutions. Haskins will delve into the future of conservation outreach and advocacy through social media. Jewell et al. will show how one institution can reach out to their traditional audience by giving visitors the opportunity to talk to conservators as they work, as well as having conservators curate an exhibit, collaborating with their professional colleagues to reach out to the audience in new ways. Wellman and Young discuss how a professional association performs their mission of public education with Angels' Projects and an Outreach Booth at local events. Shockey et al. will round out the session with a discussion of how they reach out to different types of audiences that see conservation at work in the Lunder Center's "visible lab."

Meet Your Audience: Tips and Advice for Connecting with Audiences on Conservation Topics

L. H. (Hugh) Shockey Jr., MS, AIC-PA, Object Conservator, Lunder Conservation Center, Smithsonian American Art Museum

Engaging a public audience often hinges on making a real and relevant connection to their own experience in such a way that a common ground of understanding is found. When this common ground is established the conservator is better able to communicate their message and the audience comes away from the interaction energized and enlightened. If this connection is not made the message of conservation's relevance and importance may be lost.

Being a conservator in the Lunder Conservation Center's visible labs since their opening in 2006 has given me the opportunity to speak to a wide variety of audiences on the subject of conservation. During this time it has become clear that each type of audience requires a differing approach in order to actively engage and find resonance with the topic of conservation. This presentation will provide observations and tips from my own experience to help conservation colleagues better connect with audiences from a wide age range and knowledge base. Practical communication tips will be discussed with a focus on gauging audience knowledge, choosing topics of interest, and using accessible language. Case studies of programs for non-conservation audiences of high school, graduate school, and special interest groups will be used to illustrate these points. Attendees will be encouraged to share examples of their own experiences of what worked and what did not in their own public engagement efforts.

Participatory Conservation, Outreach and Fundraising: The Case of Santa Ana Zegache Oaxaca, Mexico

Dr. Vera De La Cruz Baltazar, Facultad de Arquitectura "5 de mayo", Universidad "Benito Juárez" de Oaxaca, Mexico; and Georgina Saldaña Wonchee, Directora, Talleres Comunitarios de Zegache A.C., Mexico

Santa Ana Zegache is a traditional community with a colonial heritage of immense value. Its 17th-century Dominican temple contains mural paintings from various epochs, baroque altarpieces, holy-water fonts held by majestic angels of gilded and silver-plated stone, a collection of mirrors with estofado frames, antique manuscripts and a large number of religious paintings and sculptures. Due to the fact that most of these treasures are in need of conservation, more than a decade ago the master painter Rodolfo Morales created the Zegache Community Workshops which, through the incorporation of various parties including several specialists and founding bodies, have evolved to become a multifaceted project. The community workshops have not only made progress in the conservation of the temple and some of its treasures but also have had a social and economic impact in the community. The training of people from Santa Ana Zegache in some traditional arts and crafts has helped to preserve skills that were in danger of being lost, has provided some of the human resources needed for the conservation work of the temple and its treasures, and has helped local people identify with and value their heritage. From an economic point of view, it has given the community an alternative source of income, reducing migration to the United States.

Among the collaborators of the project are several artists who have participated in the design of modern replicas of the temple mirrors. The sale of these replicas to a foundation has contributed to the cost of the conservation. It has also resulted in a number of exhibitions in different cities in Mexico, which have served to promote the program. This paper presents the history of the project and is accompanied by a video realized by Juan Robles from AjoloteOax, documenting the process of creating replica temple mirrors and one of their exhibitions.

The Preservation Fair: Preserving Family Treasures—Connecting the Visitor with Preservation

Gretchen Anderson, Objects Conservator, Head of the Conservation Division, Carnegie Museum of Natural History

The seventh Preservation Fair held at the Carnegie Museum of Natural History in Pittsburgh is the latest in a series of public information events designed to bring preservation specialists and the public together to discuss appropriate and effective methods for preserving both museum collections and family treasures. Since the first Fair was held in 1999, organizer Bernadette Callery, librarian and archivist of the Carnegie Museum of Natural History and assistant professor at the University of Pittsburgh's School of Information Sciences, has made certain that this was a collaborative effort. The event itself is co-sponsored by the Carnegie Museum of Natural History and The School of Information Sciences, and draws on the rich preservation community in Pittsburgh including conservators, research scientists and other preservation professionals.

The Fair has always been an opportunity to introduce the public to the services of local conservators and preservation specialists, suppliers of archival quality materials, and provide basic information on proper storage and disaster recovery techniques. In addition to talking with individual conservators about specific problems, visitors attend informal talks and demonstrations offered throughout the one-day event, on such wide ranging topics as preserving home movies to how to properly store an antique wedding gown. This year a travelling exhibit of supplies and materials for maintaining museum collections, such as storage containers, specimen supports and equipment for monitoring storage environments created by the Society for the Preservation of Natural History Collections was on display.

Visitors to the Preservation Fair are encouraged to bring one small item to discuss with any of the conservators present. Basic advice on storage and handling will be provided on the spot, but more detailed estimates and treatment plans will need to be negotiated with the conservator at a later date.

The newest feature at the 2011 Fair was an interactive program aimed at children and family focusing on the causes of deterioration. The program, based on public programming originally developed at the Science Museum of Minnesota by Helen Alten, Rebecca Newberry and Gretchen Anderson, includes short experiments, demonstrations, and kid friendly activities exploring why materials deteriorate. These activities are being further developed in collaboration between the Carnegie Museum of Natural History's Conservation Department and Museum's Public Program staff, for eventual inclusion in presenting conservation principles in exhibition hall. Finally, preservation students from the University of Pittsburgh Library and Information Sciences program will create the Book Dunk, a demonstration area on how to handle wet books, papers and photographs.

This paper will explore the event in the context present the event the context of raising public awareness of preservation.

Professional Outreach and Public Conservation: Examples from the Washington Conservation Guild

Howard Wellman, President, Howard Wellman Conservation LLC; and Lisa Young, Objects Conservator, National Air and Space Museum

The Washington Conservation Guild, a professional association of conservators in the Washington, DC region engages the museum profession and the general public through a variety of outreach media. The Guild sponsors an annual "Angels Day" where members volunteer to upgrade collections or facilities

at a local collecting institution, it sponsors free lectures to the public, and it brings a display booth with photographs and instructional literature to public and professional venues. This presentation will discuss an example of outreach from recent events at the National Building Museum and the National Air and Space Museum which specifically reached out to school-age children and their parents with examples of preventive conservation (monitoring and preventing light damage) and interventive conservation (mending ceramics).

Social Media and Video—A Foundation for Outreach and Advocacy in Conservation

Scott M. Haskins, Project Manager, Outdoor Mural Maintenance Program, the Mural Conservancy of Los Angeles

Today's methods and technology for communication dictate a sharp departure from the methods of public outreach, PR and marketing of even five years ago. If you are thinking the same way you did 15 years ago, you are in the Dark Ages!

Your new vocabulary word for the day is "Platform." Whom (numbers and quality of contacts) do you (or your institution) reach with your direct efforts? Then, "Whom do your contacts know?"… there is an important, list building, trickle down effect. Examples and how this multiplies one's outreach will be presented.

Would You like to Learn about Conservation?: Integrating Public Outreach into Conservation Practice at the Walters Art Museum

Jessica Arista, Samuel H. Kress Fellow in Objects Conservation, The Walters Art Museum; Stephanie Jewell, Balboa Art Conservation Center; Terry Drayman-Weisser, and Dr. Glenn Gates, The Walters Art Museum

As emerging conservators at the Walters Art Museum, the authors will demonstrate how outreach must now be considered an integral part of a museum conservator's responsibilities. Institutional leadership is key to public outreach conducted by the Conservation Division to fulfill the Walters Art Museum mission: to bring art and people together for enjoyment, discovery, and learning; to create a place where people of every background can be touched by art. Permanent Conservation staff, fellows, and interns, all perform public outreach by participating in a variety of activities:

- Work in the uniquely interactive Conservation Window
- Present lectures
- Conduct lab tours
- Collaborate with educators on planning and implementing programming
- Contribute to the museum's magazine, research forums, and website
- Contribute to exhibition and catalog content
- Treat objects in the galleries

Our presentation will focus on two activities at the Walters that highlight the conservator's responsibility for public outreach beyond traditional contributions. They are personal interaction between staff and visitors at the Conservation Window and recent curation of an exhibition. Personal interaction is central to the success of public outreach. At the Walters, the public has a rare opportunity to speak with a conservator as works of art are analyzed and treated in the Conservation Window. The "Window" is a room with a workbench and didactic materials, opening into a main gallery, where an open window connects the conservator to the visitors. Through this unique interaction, we are able to share the objects stories resulting in an appreciation of the objects as shared cultural heritage rather than inaccessible artifacts. We will present our observations and experiences in the window and the public's response.

The curation of an exhibition required the marriage of traditional technical writing and the personal interaction developed by work in the Conservation Window. The exhibit Lost and Found: The Secret of Archimedes; features twelve years of research, treatment, and preservation of the Archimedes Palimpsest including a gallery focused on its conservation. The conservation staff was asked to curate the final section of the exhibit where other upcoming research projects are displayed. Curatorial responsibilities furthered our skills in outreach as we developed an exhibit that would encourage visitors to engage in the thought process required by research. Collaboration between the curator, exhibit designers, and the Education department reinforced the necessity of effectively communicating our ideas and incorporating the input of the other contributors across divisions to produce rich content, attractive graphics, and educational interactives.

Beginning careers at the Walters, participating in these various outreach efforts has molded how we see the role of a conservator and helped develop our skills in collaboration and communication. Integrating outreach into conservation practice requires the conservator to consider which aspects of our work are most interesting to the public and how to engage audience members ranging in age, education, and interest. The result of this integration is that the Conservation Division has become an important resource for the museum, and that public value for conservation is created both within the institution and with the public.

Exhibiting Ourselves Session

Exhibiting Ourselves: Presenting Conservation

In this interactive session, the audience and presenters will explore issues related to conservation outreach through exhibitions. Presentations will examine: research on methodologies for communicating preservation in exhibitions, the benefits and challenges of working in a visible conservation lab, case studies of exhibitions which incorporate technical information, an exhibition that highlights preservation principles outside of a museum, and conservation and preservation information as part of the narrative in a new museum. Following the presentations, audience break-out groups will be tasked with exploring and brainstorming solutions to issues related to the session theme.

Collaboration, Documentation, Technical Analysis and Historical Study: Conservation's Initiative to Reunite the 1931 Portable Murals of Diego Rivera—The Museum of Modern Art

Cynthia Albertson, Research Fellow, and Anny Aviram, Conservator, The Museum of Modern Art

In December of 1931, the Museum of Modern Art (MoMA) opened a one man show focusing on prominent Mexican artist Diego Rivera, including commissioned frescos along with paintings and drawings. As the museum's exhibit space was temporary, Rivera designed and executed eight portable murals on site with themes inspired by his earlier work in Mexico as well as the cityscape of 1930s New York City. Nearly 80 years later the MoMA re-explored this event with fresh eyes and new insights in the exhibition *Diego Rivera: Murals for the Museum of Modern Art* from November of 2011 through May of 2012.

Conservation played an extraordinary role in the show from inception. Painting conservators and conservation scientists executed a full technical analysis and art historical investigation of the first of Rivera's murals from the 1931 show, now in MoMA's collection: Agrarian Leader Zapata. X-radiography revealed for the first time the interior structure of the portable fresco, while Reflectance Transformation Imaging and Infrared Reflectography provided details on Rivera's working methods. X-ray Fluorescence, Scanning Electron Microscopy, Fourier Transform Infrared Spectroscopy, and Polarized Light Microscopy collectively characterized potential pigments and binders and suggested the composition of the fresco layers. Examination and analysis revealed Rivera's synthesis of traditional Italian fresco techniques with Mexican materials and themes, as well as Rivera's unique adaptation of modern manufactured or ready-made materials. In addition to in-depth study of Zapata, examinations were conducted on the other portable murals reunited for the show, as well as several in-situ frescos in Mexico.

This investigation was not only used as the foundation for a conservation essay contribution to the 2011 exhibition catalog, but was also instrumental to both the exhibition planning as well as public education. A rich understanding of Rivera's working method while in New York was essential as moving portable murals, weighing in excess of 900 pounds, from private lenders and institutions in Mexico was physically and financially challenging. The cultural complexity of securing and moving such large loans from Mexico was a new experience for MoMA, and one where conservation played a significant role. Collaboration with engineers, scientists, builders, exhibit design, art handlers, fresco experts, curators, independent researchers, and conservators at other institutions all facilitated the safe deinstallation, transport, and reinstallation of four of these portable frescos to the 2011 MoMA exhibition.

The knowledge gleaned during the fresco study and exhibition planning also provided valuable insight to a number of public education efforts, including the exhibition audio guide, iPad applications and exhibit website highlights, a fresco "How-to" course for museum educators, as well as the construction of a small portable fresco for family programs. However, despite the expertise gained during the study and exhibition there is still much to be learned about Diego Rivera's portable murals. This paper will explore the attempts, failures, and successes of conservation playing an intricate role in the exhibition Diego Rivera: Murals for the Museum of Modern Art.

Communicating Conservation, Enhancing the Museum Experience: The Case of the Informal Communication of Conservation by Three of the Most-Appointed Museums of Athens, Greece

Sophia Papida, Conservator of Archaeological Finds, Conservation Department, 1st Ephorate of Prehistoric and Classical Antiquities, Athens

Conservation is often the reason for impressive or obstructing arrangement of exhibits, i.e. low light conditions, showcases, barricades, touching or flashlight restrictions in museums. Therefore, conservation has been frequently accused of depleting the museum experience. However, this work suggests that conservation—one of the most important missions and on-going duties of cultural heritage museums worldwide—is thereby informally transmitted to the public. The series of specific environmental conditions and restrictions imposed for the preservation of exhibits operates as indices of informal communication. Moreover, it supports that conservation has the appropriate characteristics to be used systematically as an interpretation tool for formal museum communication with the visitors in order to enhance constructivist meaning-making and further affiliate visitors with cultural heritage exhibitions.

This research was conducted in 2008 as part of a Museum Studies MA dissertation (University of Leicester, UK) at the

three of the most appointed museums of Athens, Greece, before the opening of the New Acropolis Museum, i.e. the National Archaeological Museum, the Byzantine and Christian Museum, and the Benaki Museum. The museums have been selected to monitor the visitors' time spent in front of exhibits displayed under low light conditions, inside showcases, behind fences and bars, and for which touching and flash photography was restricted. Moreover to investigate their knowledge and understanding of the above conditions and restrictions, their perception of conservation, and their interest in seeing it included amongst the interpretation lines of the museums. The conservation managers were asked to provide the museums' aspect on the issue.

The results confirmed the visitors' tendency to stay longer in front of the particularly displayed exhibits, their knowledge and understanding of the reasons behind the restrictions and the environmental conditions imposed, their respect for conservation, their ability to distinguish and comment on conservation interventions, and their interest in conservation-related museum interpretations. The latter, wherever they existed, helped visitors to remember the exhibits for longer. All findings supported the need for use of the conservation amongst the interpretation lines of the cultural heritage museums via its educational and engaging potential for numerous interpreting museum communities.

Conservation and the University Museum: The Challenges and Rewards of Access to Collections

Sanchita Balachandran, Curator/Conservator, Johns Hopkins Archaeological Museum

The university museum is charged with preserving and displaying the objects in its care, but also making these same objects available to the university community for teaching and research. Focusing on the recent re-installation of the Johns Hopkins Archaeological Museum in a new custom-built atrium space, this paper discusses the challenges and rewards of creating and maintaining a traditional museum display while encouraging and enabling the physical use of display objects for study. The conservation of nearly 650 artifacts on display was essential to the re-installation process, as a significant number of them had never been conserved in the past. These treatments—which included cleaning, consolidation, and in some cases entire reconstructions—not only ensured the stability of the objects while on display and in use, but revealed significant details that raised new art historical and archaeological research questions. This paper also examines the ways in which the conservation process has become an important part of the narrative of the new museum, providing the university community and the public access to the "behind the scenes" functions and discoveries that only conservators generally see.

Exhibiting Ourselves: Presenting Conservation

Suzanne Davis, Curator of Conservation, Kelsey Museum of Archaeology; and Emily Williams, Conservator of Archaeological Materials, The Colonial Williamsburg Foundation

The core goals of this session

1) Examine issues related to presenting conservation in exhibitions
2) Encourage dialogue on, and development of, goals for conservation outreach

Description

This session will have a hybrid structure consisting of two, 10-minute, issue-driven papers by invited speakers, a lighting-round presentation of multiple conservation exhibition projects, and a directed discussion involving the audience.

The two papers at the beginning of the session will explore issues related to conservation outreach through exhibitions, with the intention of providing a foundation for the discussion later in the session. The lightning-round presentation of exhibition projects will offer a quick overview of the dynamism of current conservation outreach through exhibitions.

Finally, the discussion period will engage the audience, with the hope of stimulating cross-disciplinary discussion amongst conservators regarding the development and implementation of conservation exhibitions. The discussion will be directed by asking different audience groups to focus on specific questions. Among other sources questions for the discussion groups are expected to emerge from the upcoming conference on conservation outreach, Playing to the Galleries and Engaging New Audiences: the public face of conservation, to be held at the Colonial Williamsburg Foundation in Williamsburg, VA in November of 2011.

Product

The session organizers would like to capture the thoughts and ideas generated by this session and make these available to a wider audience. Venues for this product could be:

- Wiki page
- Blog posts on AIC's blog, www.conservators-converse.org
- Article in *Journal of the American Institute for Conservation*
- White paper on conservation exhibitions for AIC
- Publication via some other venue TBD

From Start to Finish: An Exhibition on the Conservation of Contemporary Art

Tom Learner, Senior Scientist, Rachel Rivenc, Research Lab Associate, and Emma Richardson, Post Doctoral Fellow, Science Department, Getty Conservation Institute

Pacific Standard Time: Art in L.A. 1945–1980 was an unprecedented collaboration of over 60 cultural institutions across Southern California, who coordinated their exhibition programs to tell the story of the birth of the Los Angeles art scene. As part of this initiative (and taking advantage of the publicity that it created), the Getty Conservation Institute organized its own exhibition, *From Start to Finish: De Wain Valentine's Gray Column,* to raise public awareness of the technical studies and conservation decisions that conservators routinely undertake with modern and contemporary art. The exhibition ran from September 11 to March 2012 and centered around De Wain Valentine's 1975–1976 sculpture *Gray Column,* which, at 12 ft. high, 8 ft. across and about 3,500 lbs., is one of the largest artworks he made with cast polyester resin, the material with which he created his striking, highly-polished, large-scale sculptures that interact intensely with the surrounding light.

Valentine was one of a number of artists during the post World War II era in Los Angeles who adopted new materials and highly innovative fabrication processes for their work, most of which were being developed for use in the aerospace, boat, automobile, and even surfboard industries. However, none of the commercially available polyester resins could at the time be cast in large volumes: anything more than a thin layer of resin would crack during the curing process due to the high levels of heat released. Unwilling to accept this limitation, and with much trial and error, Valentine was able to develop a formulation of polyester resin that would allow him to create, with a single pour of resin, luminous artworks of much larger proportions.

Although polyester appears to be a relatively stable material, Valentine's sculptures are easily marked and scratched, and the resin itself continues to move after curing, and so the pristine surface of his work—which is so crucial to its function—is difficult to maintain. In fact, the usual procedure for conserving his work would be to re-sand and re-polish the surface prior to display, thereby regaining the work's original appearance, but at the expense of removing its surface, and—as such- offers an excellent example of the common conflict faced by conservators between an artist's intent and the responsibility to preserve original surfaces.

From *Start to Finish* described both the extraordinary technical story behind Gray Column's creation, as well as the complex conservation challenges it faces. To tell this story, a range of approaches were used: support objects, such as maquettes and drawings, a slab of polyester that visitors could touch to understand the effect of sanding and polishing; a catalog; a documentary (with short clips shown in the exhibition space); a press campaign; websites; flyers; postcards; and social media. Each of these will be outlined and assessed for their overall impact on public outreach.

Preservation Outreach

Christopher McAfee, Senior Conservator, Church History Department, The Church of Jesus Christ of Latter-Day Saints

Conservators in the Church History Department of the Church of Jesus Christ of Latter-Day Saints are advocating for the care of collections by reaching out to the public. In this effort, we have placed educational signs in our Library and in our Museum. We have produced small exhibits regarding preservation principles such as how light can damage artifacts. We have developed a tour of our permanent exhibit that describes the preservation principles and conservation treatments that can be seen throughout the exhibit. We are currently working on a series of videos that will be available to the public, giving them simple principles to follow as they work to preserve their personal artifacts. It is our hope that, as we work to educate the public, we will also educate the Church History staff who may not have a solid understanding of preservation. This talk will share examples of the outreach activities undertaken by the conservation team.

Through the Looking Glass: Guest Experience and the Wondrous World of Conservation at the Musical Instrument Museum

Irene Peters, Interim Head of Conservation, Conservation Department, Musical Instrument Museum

The Musical Instrument Museum (MIM) in Phoenix was founded by Robert J. Ulrich, former CEO and chairman emeritus of Target Corporation. Only three years after the first employees were hired and two years after groundbreaking, doors opened to the public in April 2010. MIM presents musical instruments and music of almost every country in the world, covering 75,000 square feet of exhibit space divided into 10 galleries.

As a further attraction, inspired by a visible paleontology lab at the Carnegie Museum of Natural History in Pittsburgh, MIM's director Bill DeWalt decided that the Conservation Lab should have a large viewing window. Visitors are now invited to "watch as instruments from MIM's extensive collection are being restored." From media bustle and opportunities to lobby for "fancy" equipment to going about the day-to-day conservation work, this presentation will highlight the benefits and challenges of having a visible conservation lab. Further, it will illustrate some of the programming developed at MIM to help guests understand what it is they are looking at and what it is we do behind the glass.

What a great opportunity to educate the public when people can see conservation activities taking place! But what about the boring parts, the times a viewer at the window can only see a person crouched over a workbench in the middle of the room, fume extractor (I mean the huge blue thing hanging from the ceiling) pulled down, the object barely visible? Ever since the

opening of the museum, the Conservators at MIM have been confronted with "entertaining" the public during open hours. Even with creative scheduling, this is a challenging feat in a museum open seven days a week with extended hours in the evening on Thursdays and Fridays. Especially since even on a normal business day we may be busy in the galleries or other back-of-house spaces like the photo studio, in storage, the quarantine room/walk-in freezer, or—who would have thought—the office. Solutions found at MIM include a video tour of the lab, short explanations of specific conservation tasks which are rotated according to current activities, information on objects in the lab and scheduled presentations by the conservators.

The Great Debate Session

Come listen to your colleagues debate the most important conservation issues of the day in the first ever Great Debate at AIC! Two Oxford-Style Debate sessions, each lasting 30 minutes and each with their own debate topic, will pair conservators on stage to examine challenging topics. The goal of the Great Debate is to create a new forum that encourages meaningful discussions and give conservators the opportunity to demonstrate their capacity to address challenging issues directly, openly, and in a fresh format.

Debate Topics

- Having conservators perform treatments in the gallery is the most successful way to generate funding for museums and raise awareness about the profession.
- Publishing accurate and complete "how-to guides" for conservation and restoration treatments online is the best way for us to care for cultural heritage in the 21st century.

The Great Debate at AIC

Moderator: *Richard McCoy, Conservator of Objects & Variable Art, Indianapolis Museum of Art*

Often times we leave the annual meeting wanting to be involved in or witness more critical discussion with our colleagues. In an effort to increase dialogue and to demonstrate an interactive, engaging, and perhaps even fun way to discuss important, timely, and controversially issues within the conservation field, this proposal is not to give another standard presentation or paper, but instead host a first-ever event: The Great Debate at AIC.

This "Great Debate" at AIC will be based on the highly-successful event that took place at the 2010 Annual meeting for the Museum Computer Network (MCN), which itself used a truncated version of an Oxford-Style Debate (www.mcn.edu/great-debate). The goal of the "Great Debate" at AIC is to create a new forum that encourages meaningful discussion and give conservators the opportunity to demonstrate their profound capacity to address challenging issues directly and openly.

The Great Debate at AIC will consist of two, back-to-back debate sessions, each lasting 30 minutes and each with their own debate topic. Both debate sessions will have two teams with three debaters per team. Each team will be selected in advance of the Annual Meeting and be given advance time to prepare their arguments so they can appropriately address their side of the debate.

Each debate session will consist of initial presentations from each team lasting a total of five minutes, members of the audience will then be allowed to ask questions to each debate team for 15 minutes, and finally each team will give their closing argument for a total of five minutes. After the closing arguments, the moderator will poll the audience to determine a winning debate team.

This 60-minute event will be developed and moderated by Richard McCoy, whose primary role will be to maintain

a healthy, and quick moving debate in an environment that is competitive, engaging, and fun.

Members of the two teams will be selected from AIC membership; those chosen will be members that are interested in engaging in a debate that considers an topic from all perspectives. Each team's goal will be to win the debate, not necessarily to defend their personal stance on a topic.

The first debate session topic will consider the future of conservation in general, and the second will consider the future or AIC. Here are some possible debate topics, however it is desired that the debate topics are finalized much closer to the AIC Annual Meeting so that a topic can be chosen that is timely.

Linking Environmental and Heritage Conservation: Presentations, Discussions, and Tips

Speakers: *Braden Allenby, PhD, Sustainability and Conservation of the Human Past Sustainability Scientist, Global Institute of Sustainability, Arizona State University; Lincoln Professor of Engineering and Ethics, School of Sustainable Engineering and the Built Environment, Ira A. Fulton Schools of Engineering; Director, Center for Earth Systems Engineering and Management*

Matt Eckelmann, PhD, Environmental Considerations in Art Conservation; Assistant Professor, Department of Civil and Environmental Engineering, Northeastern University

The Committee on Sustainable Conservation Practice lunch session will include two speakers in environmental conservation and four tips on art and heritage conservation. The speakers will give an overview of current essential issues in environmental conservation and how they relate to our conservation field. They will also address practical issues concerning materials and solvent use, and will discuss how green chemistry applies to our work. The session will also include tips by 4 conservators who will present on how they have incorporated sustainable practices into their work by retrofitting exhibition cases and rehousing collections, reducing energy costs within collections environments and reconsidering water treatment. We have also put ample time aside for an engaged, educational discussion session and will display posters with sustainable benchmarks and our 2011 survey results.

Outreach to Allies Session

Conservators interact with allied professionals tasked with preservation and collections care in various ways. Presentations in this double-session are grouped into three overall themes:

Tools & Tactics

The four talks in this session discuss the various ways conservators and their allies have worked together to increase advocacy for collections care. Topics include how conservators in private practice interface with museum staff to raise funds, enhance awareness and promote collections care; the benefits and efficacy of grant programs like IMLS's Connecting to Collections and Conservation Assessment Programs, which are designed to provide funding and access to preservation resources; and how we can work with our allies to develop, promote and implement standards and best practices that advance collection care. Time is allotted for a panel discussion with the presenters to discuss the challenges and solutions raised in the talks.

Conservation, Science & Research

The two papers in this portion of the session will examine the communication challenges between conservation and the museum and academic research communities. By examining the issues that sometimes limit the flow of information between conservators and conservation scientists and issues in working with academic partners, we can learn how to better develop capacity and communicate our priorities.

Networks

The challenges facing us in preserving our cultural heritage are many and varied, making it essential that we work effectively with our colleagues and communicate clearly with different audiences. No individual or agency can do this alone. The two presentations in this session will discuss networks created to reach out, advocate and implement conservation and preservation priorities. Time has been allotted for an interactive component with attendees providing feedback for how AIC's newly formed Collections Care Network can function effectively in a challenging work and financial environment.

Balancing Outreach and Production in a Public/Private Partnership

Ms. Leslie Courtois

Etherington Conservation Services has a satellite location, a private paper conservation lab, located within the Library of Virginia, a state government agency. From the beginning, the lab was something to be shown off by the state library. This was because of their pride in the level of commitment the agency had made to preserving its collections, but also to justify the cost to legislators who decide the levels of funding for state institutions. In order to do this, they really needed to show people what we, the conservators, were doing in the lab. Thus began a regular stream of politicians, board members, and

wealthy donors through the lab. This then expanded to other library administrators hoping to set up similar operations at their own institutions, student groups interested in preservation, and eventually just any group that requested to see the lab.

Because we are a private business and need to produce a certain amount of billable work every month, it became increasingly difficult to balance the amount of time needed for both tours and actual bench work, but the tours were never something we could refuse because the facility does not belong to us. Furthermore, as the economy crashed and state funding dropped, it became more and more important that we did keep funding sources aware of our presence and the importance of what we do. We began to look for other ways of doing this which would focus our time into more productive and useful results.

We started making conservation videos to demonstrate treatments and educate about the cultural value of the items being treated. The videos could be hosted by YouTube and viewed by anyone in the world, but also could be linked to the agency website, forwarded through email, and shown inside the library during special events and tours. We also started using a conservation adoption program, which is advertised through the agency website and the printed magazine. The program promotes preselected conservation projects that need to be done and asks the public to get involved by donating funds to complete the projects. Both the videos and the adoption projects tie in with current exhibits in the library gallery, so that walk in visitors also become aware that the items they are viewing had to be conserved, and what was involved with their treatment. Finally, we began participating in scheduled events to showcase our work such as National Preservation Week. This kind of event allows us to invite visitors who are interested in conservation to come all at once during a daylong event to visit the lab and learn about current projects, rather than have them showing up at random times throughout the year.

In this talk, these projects will be discussed in further detail to share what has worked for us and what we have learned along the way, as it has been a learning experience for us as well as a teaching opportunity.

Conservation's Role in State-Wide Preservation Efforts

Jennifer Hain Teper, Conservation Department, University of Illinois at Urbana-Champaign

Each IMLS-funded Connecting to Collections statewide preservation project has taken a different approach to increasing preservation awareness throughout their respective state. The true strength of each of these initiatives, however, is the fact that all have endeavored to bring together preservation and conservation professionals from museums, libraries, archives, and historical societies to work together, collaboratively, to further preservation efforts. The speaker will illustrate the approaches used in Illinois to bring together these allied professionals, as well as the press and the general public to raise preservation awareness and education.

Missing Links: Utility, Access, and Communication of Science in Conservation

Jennifer L. Cruise, PhD, MA Cons.

Conservators recognize the value of science in informing their practice, but often have little opportunity to investigate scientific advances that may be of use to them. Their access to new scientific information can be erratic and in some cases unproductive. Conversely, the agendas and constituencies of conservation scientists can lead them to produce reports that are limited in their value to practicing conservators.

In the context of concerns over support for research and education in conservation, and of an attempt in the UK to develop a national strategy for heritage science, the author examined issues of communication and access that restrict the impact of conservation science. While these apply across most areas, a focus for some questions on textile conservation gave the study a more manageable scope, and concentrated on a specialty area whose science base may be particularly vulnerable.

Science literature sources available to conservators were examined, and interviews were conducted in 2009–2010 with UK-based scientists and conservators. The overall aim of this study was to identify factors that limit the utility of conservation science for conservators at the bench. It examined how this is influenced by the attitudes of conservators, the communication venues and forms of science, and the agendas of conservation scientists. It sought to determine where there are gaps that limit the flow of information from the research lab to the conservation lab, and to consider potential solutions to filling such gaps.

Key points addressed include:

1. How the failure to clarify the goals of different types of research projects, and to appreciate the driving forces behind them, can undermine conservators' confidence in the utility of science for their work
2. The role of collaboration in shaping the utility of science research, and how the increasing reliance on independent conservators working on contract restricts already limited opportunities for collaborative work between scientists and conservators
3. How the project-driven nature of conservation work affects its use of scientific information
4. Conservation science information bottlenecks that restrict the influence of science on the work of conservators
5. The interface between conservation science and museum exhibit and education/outreach content development
6. The identification of examples of accessible and targeted science for conservators
7. The potential benefits of science/conservation 'boundary spanners' and of information technology resources in addressing some of the gaps in information flow from science to conservation

Museums as Institutions for Conservation Research—Questions of Value(S), Communication and Mission

Dr. Pip Laurenson, Head of Collection Care Research, Tate, London

This paper considers museum based conservation research and its position within the research landscape, reflecting on the strengths and weaknesses of conservation research within a museum environment. The author will consider the challenges of working with academic partners, developing research capacity and the communication of conservation priorities with research partners and funding bodies. The paper will look at how conservation research sits within the mission of the museum and ultimately asks questions about its value.

A Prevention Intervention: Ideas for Promoting Preventive Care in Conservation and Allied Fields

Joelle Wickens, Assistant Conservator and Adjunct Assistant Professor, Conservation Department, Winterthur Museum, Garden and Library

Preventive care preserves our cultural heritage in ways that post-damage interventive treatment can never restore. This care, and the long-term preservation of cultural property it promotes, concerns us all: from recent program graduates to experienced conservators as well as allied professionals such as registrars, collection managers, and preparators.

To begin this 60 to 90 minute breakout session, several individuals, representing the wide alliance of preservation professionals working toward this common goal, will consider the expanding role of preventive conservation in preservation activities. They will share their visions for growth and collaboration. Following brief presentations, all session attendees will be divided into small groups to brainstorm as to how to implement and promote preventive conservation.

Ideas generated in this session will help AIC's newly proposed Collections Care Network (CCN) promote and achieve its mission. One aspect of the CCN's function will be to bring together individuals that work with and help preserve collections of every type. Together, members hope to:

- Provide resources that support collections care and conservation staff
- Create awareness of preventive care
- Identify and develop standards and best practices, training, and other projects to advance preventive care in institutions of all types and sizes, locally, nationally and globally
- Work with related groups to reach and support key collections care constituents

Individuals who would fulfill the following roles will form the initial presentation panel—one from each category speaking for five minutes each.

- Newly Qualified Conservator
- Experienced Conservator
- Conservation Educator
- Preparator/technician
- Exhibition staff
- Registrar/Collection Manager

Riding the Circuit: Small Museum Outreach and Advocacy in New Mexico

Dr. M. Susan Barger, Consultants for Small Museums and Archives

New Mexico is known as a culturally rich state, yet it ranked third from the bottom of the 2011 poverty rankings compiled by the US Census Bureau. It is the nation's fifth largest state, with a total population less than the city of Chicago. These factors come together to make it difficult to provide much of the needed support services to the more than 230 small museums in the state. Beginning in the fall of 2001 and continuing through December 2010, there was a systematic effort to improve the infrastructure and museum skills for personnel in New Mexico's small museums. First, there was an IMLS-funded program under the auspices of the New Mexico Association of Museums and the Museum of New Mexico Traveling Exhibitions Bureau, (TREX). When the federal funding ran out, private funds kept the program operating within the Museum of New Mexico as the Small Museum Development Project until 2004. At that time, the state decided not to continue the program. The needs of small museums did not go away and a nonprofit museum services organization, Museum Development Associates, was formed in 2004 to continue the work. The general economic downturn forced Museum Development to close its doors in December 2010. This paper will discuss the state of New Mexico's small museums, the successes and failures of small museum outreach and advocacy in New Mexico, and the lessons learned about delivering services and training to small museums in a state with deep poverty, a poor economy, sparse population separated by great geographical distances, and important cultural resources worthy of preservation.

The Role of Outreach and Advocacy for Private Conservators in Working with Museums

Rustin Levenson, Veronica Romero, and Lia Kramer, Rustin Levenson Conservation Associates

Although they are not on staff, private conservators who work with museums, often are compelled to fill the role of museum conservator. In addition to treating works of art, they act as a resource for information on climate control, art transit, exhibition, and acquisition of works. In the absence of staff conservators, it is incumbent on private conservators to advocate for collection preservation and to convey information about the

ethics and standards in museums and in our field. In almost 30 years of private practice our studio has developed and sustained relationships with many museums. These case histories are some of the avenues of advocacy that we have developed.

Case studies

- **The CAP survey as a vehicle for Advocacy:** Rustin Levenson will discuss her experience and lessons learned doing CAP surveys for numerous museums throughout the South.
- **The Eugene Savage Exhibition at the Cummer Museum of Art:** Lia Kramer will present examples of interaction with the Cummer Museum of Art, the Frost Museum of Art, and the Ah-Tah-Thi-Ki Museum during the treatment of 23 paintings for the Eugene Savage Exhibition at the Cummer Museum in October, 2011. Conservation outreach included hosting an extended visit from the Cummer Museum Registrar to learn about conservation practices, introducing the material to other interested museum professionals, and writing a text panel about the techniques of the artist and the treatment of the paintings for the exhibition.
- **Staff Training:** Veronica Romero will report on working with the preparators and staff at the Miami Art Museum, training them in the techniques of insert lining paintings for travel and working with them on the installation of a painted plaster work by George Segal.
- **Lectures and Publications:** Private conservators are also concerned about the interaction between collectors and museums. Outreach via public lectures and publications can be an effective tool of education and can help the museum advocate for their conservation needs. Rustin Levenson will discuss a new publication she is organizing to bridge the gap between private and public collections, *Loaning Works of Art: A Handbook for Collectors*.

Using Exhibition Standards & Guidelines as a Tool for Outreach & Advocacy

Felicity Devlin, Museum Consultant; Nicholas Dorman, Chief Conservator, Seattle Art Museum; Rachael Perkins Arenstein, Partner, A.M. Art Conservation, & AIC e-Editor

Putting collections on exhibit and making them accessible to the public is a vital part of a museum's mission. However, during exhibition there is often less ability to control for the agents of deterioration that collections professionals often guard against (e.g. physical damage, light exposure, pollutants, theft, etc.). Exacerbating this, the speed and expense in exhibition planning often result in a process that in and of itself can become damaging to collections. Optimal exhibition planning requires that many museum professionals work in concert. Curators, conservators, exhibition designers, fabricators and preparators, each have a role to play in ensuring that conservation concerns are factored into exhibit planning and execution, yet they face many challenges including:

- Lack of awareness
- Time constraints
- Financial limitations
- Lack of accurate and accessible technical information
- Difficulties in coordinating roles and communication

Standards can be a useful tool in clarifying the steps that must be taken to ensure that collections are not damaged or deteriorate unnecessarily. With standards in place conservators can effectively advocate for collections care and reach out to colleagues to develop a safe exhibit planning process. AIC would like to start this conversation with our colleagues in allied professions and a working draft of Exhibition Standards & Guidelines is available on the AIC wiki site http://www.conservation-wiki.com.

This online document illustrates both why and how conservation concerns should be incorporated into the exhibit process. It is intended to be easily accessible and updatable, and addresses the wide array of professionals and museum staff whose efforts are key to successful conservation. The Standards & Guidelines illustrate how conservation efforts must be incorporated systematically into the exhibit planning process. They are organized to mirror the exhibit process, from planning through fabrication and maintenance. The document is an important outreach tool as it attempts to address all potential members of the exhibit team and museum workers who have a role to play in the conservation effort. Each Standard is supplemented by best practices and technical information intended to provide the resources that designers and fabricators need for conservation. The wiki format allows for information to be continually updated and refined, to be a portal to accessing up-to-date resources.

During this session professionals involved in exhibits and the creation and distribution of the Standards & Guidelines will present on their challenges and successes in integrating conservation into the exhibition design process and discuss how the online Exhibition Standards & Guidelines will be helpful in promoting preservation concerns with colleagues. Information on how to join the editorial team charged with advocating for its implementation will be given.

Public Art Outreach Session

Public art is uniquely well-suited to provide opportunities for public awareness of conservation and public involvement. More and more, conservators take on the role of communicating the importance of cultural heritage, and engaging the public through diverse and innovative projects that go beyond the scope of traditional conservation treatment. The expanding range of social media, crowdsourcing, and web-based applications create whole new avenues for documenting and interpreting cultural heritage for the general public.

A variety of projects addressing public art, conservation, documentation, and outreach illustrate the use of new media and innovative approaches to public art outreach. These range from a recent initiative for the creation and conservation of outdoor murals (Rescue Public Murals); the conservation and interpretation of a monumental mural in Los Angeles, by the Getty Conservation Institute; the documentation of public art collections using Wikipedia and Flickr (WikiProject Public Art); crowdsourcing the preservation of Venice's material culture; and issues of social media and guerilla art.

While the individual projects presented in this session are very different in scope they each explore ways of using new media and web-based applications to reach as wide an audience as possible. With the rapid advances in communication technology, the potential for different forms of media to be effectively used by the conservation community is great, and has only just begun to be explored. Attendees are invited to share other examples of public art outreach using innovative communication tools during the discussion and roundtable portion of the session.

Conserving and Interpreting the Mural, *América Tropical*, by David Alfaro Siqueiros

Leslie Rainer, Senior Project Specialist, Wall Paintings Conservator, The Getty Conservation Institute, Susan Macdonald, Head, Field Projects, The Getty Conservation Institute

The mural, *América Tropical*, painted by David Alfaro Siqueiros on a second-story exterior wall on historic Olvera Street in downtown Los Angeles in 1932, was the subject of controversy and censorship immediately upon its completion. The painting depicted a central crucified figure in the midst of pre-Columbian ruins, surmounted by an American eagle at which sharpshooters pointed guns from an upper corner of the scene. Due to its incendiary political content, it was whitewashed soon after it was unveiled. The mural was not visible again until the 1960s when the aging whitewash began to come off. *América Tropical*'s significance was recognized by artists of the Chicano Mural Movement who were influenced by the great Mexican muralists Siqueiros, Rivera, and Orozco as touchstones for their own sense of cultural identity. From that time scholars and artists sought to raise the awareness of the value of this mural, and initiated early efforts to preserve it.

In the late 1980s, the Getty Conservation Institute joined with the City of Los Angeles to conserve, protect, and interpret the mural and make it once again accessible to the public. The project has spanned over 20 years, and has included materials analysis, documentation, conservation treatment, and the construction of a shelter, viewing platform, and interpretive center.

The presentation focuses on the aspects of the project related to the conservation of the mural, public access, and interpretation. This includes the development of a thoughtful and ethical approach to the conservation of a worn and degraded overall surface, the aim of which is to preserve both the history and context of the mural as well as to reinstate a degree of legibility to the damaged and faint image. The presentation also addresses the design and construction of the rooftop shelter and viewing platform which must protect the mural from direct exposure to the elements, provide access to the public, and at the same time, preserve the historic fabric of the surrounding El Pueblo de Los Angeles Historical Monument. Finally, we will discuss plans for the interpretation of the mural through an on-site narrative exhibit that will present visitors the story of the mural in the context of the artist's life and work.

The project posed significant preservation challenges at different scales, ranging from archaeological, architectural, and engineering issues associated with building a contemporary structure in a historic district, to managing the various interests and expectations of the community and other stakeholders. The collaboration between the Getty Conservation Institute and the City of Los Angeles was essential to address these challenges and carry the project to completion.

The aim of the project is to preserve and once again present this monumental work of art to Los Angeles and the greater public as a legacy of one of the great Mexican muralists of the 20th century. The holistic approach to the conservation of América Tropical has addressed a multitude of preservation challenges to meet the needs of local, national and international stakeholders for whom the mural holds value.

Crowdsourcing (and Crowdfunding) the Preservation of Venice's Material Culture

Dr. Fabio Carrera, Associate Professor, Interdisciplinary and Global Studies Division, Worcester Polytechnic Institute

The City of Venice (Italy) contains a large and unique collection of artifacts that are displayed on public view, dating as far back as the year 700 AD. The collection includes reliefs, roundels, confraternity insignia, coats of arms, flagpole pedestals, inscriptions, wellheads, street altars, and a variety of other secular and religious symbols of Venice's material culture. "Minor art" such as this has been largely neglected by the numerous preservation efforts that have been undertaken since the big flood of 1966.

This vernacular heritage, which records the various stages of the 1,000-year evolution of Venice's history from the perspective of the citizens of yesteryear, is being saved by today's citizens

through a combination of high technology, social networks and citizen engagement.

Venice's "public art" has been completely inventoried by a combination of teams of students from Worcester Polytechnic Institute (WPI) together with volunteers from the Earthwatch Institute, guided by members of Archeoclub d'Italia, one of the pre-eminent heritage preservation organizations in Italy. In all, hundreds of individuals have contributed to our digital inventory.

The crowdsourced information was archived in databases and mapped using Geographic Information Systems (GIS) from the very beginning in 1990, and it has been available on line since 2004. In all, over 7,000 objects are cataloged in our databases, which include both permanent information, such as date, material, dimensions and the like, as well as periodic condition assessments, accompanied by digital photographs, over time.

To perpetuate the crowdsourced nature of the project, we are now in the process of creating an individual page for each one of the catalogd objects in Venipedia.org, the free english-language wikipedia dedicated exclusively to Venice. The open nature of the Venipedia wiki will allow anyone to update the information concerning each item in the collection in its own individual page in perpetuity. It is our hope that the moderation of the Venipedia entries will also eventually become crowdsourced, as is the case in Wikipedia.

To make it easier to find and appreciate these hidden treasures scattered throughout the city, we have designed a mobile app that uses Augmented Reality techniques to overlay information about public art through a smartphone's camera viewfinder. We are currently adding the ability for the mobile apps to upload condition updates and images from the field, which will also be accessible from Venipedia. Thus, the condition updating could be conducted even by visitors of the city who want to contribute to the preservation of this accessible collection of historical cultural heritage.

Finally, we are now in the process of creating a non-profit organization, PreserVenice.org, that will be collaborating with the UNESCO Venice Office to actively preserve and restore these outdoor testimonials of Venice's past. In the spirit of the entire initiative, PreserVenice plans to employ "crowdfunding" techniques to collect restoration funds from many small contributors, who can make micro-donations in real-time from the Venipedia wiki as well as from the mobile app, while face-to-face with a piece of public art in the streets of Venice.

Guerilla Art, Controversy, and Communication: Conservation Culture in the 21st Century

Andrea S. Morse, Michelle A. Lee and Andrew J. Smith, Sculpture Conservation Studio

Sometime between Easter and Earth Day, an elaborate glass-mosaic mural depicting a surfing Virgin of Guadalupe appeared miraculously on an otherwise unremarkable cement train trestle in the small beach town of Encinitas, California. Over the course of the following weeks the *Surfing Madonna* as it became known, illegally installed by an official-looking construction crew, became the focal point of a national debate about public art, graffiti, and vandalism. Tasked with researching the feasibility of removing the mural intact by the City of Encinitas, Sculpture Conservation Studio (SCS) found itself embroiled in the internationally reported public art controversy. Although the *Surfing Madonna* was by no means the first piece of "guerilla art" to invite controversy, the timbre of the dialogue was considerably more intense than other conversations about unsanctioned public art in recent memory. Surrounded by journalists and public onlookers during the examination and testing of the mural, SCS found its activities (and speculation about its activities) and private conversations reported in both traditional print and internet-based social media. Often, the mark of a successful conservation treatment is that the artwork appears unchanged from its original condition, in other words as if no conservation had been performed at all. Much like the practice of conservation, conservators generally tend not to call attention to themselves, working in relative privacy and anonymity. However, with the advent of the 24-hour news cycle, the internet, social media, and mobile camera and internet devices, what is considered to be the public sphere has widened considerably in a very short period of time—thus affecting the nature of the conservation profession in small but significant ways. We will contextualize the *Surfing Madonna* controversy with surrounding events such as the Museum of Contemporary Art's (MOCA) record breaking *Art in the Streets* exhibition, as well as previous cases of illegally installed public artworks within and outside of the City of Encinitas. This paper will share observations gleaned from the experience of being a subject of press and public interest and scrutiny in the contemporary media environment. As conservators we must acknowledge this rapidly changing media landscape, recognizing that as both conservators and citizens we are subject to the increased "publicness" of everyday life. Although the changes in technology and culture mean a loss of privacy, it also presents an opportunity to teach the public about conservation, advocate, share information, and engage in meaningful dialogue.

Rescue Public Murals: Connecting Conservators to Public Art

Kristen Laise, Vice President, Collections Care Programs, Heritage Preservation; and Will Shank, Independent Conservator and Curator

Founded in 2006, Heritage Preservation's program Rescue Public Murals (RPM) has been connecting conservators to artists, public art organizations, and interested citizens with the goal of preserving outdoor, community murals. Rescue Public Murals' assessments and treatments have received extensive press coverage, which has also informed the public about how the art conservation and historic preservation fields can contribute to save this unique art form.

This presentation will describe the impact that Rescue Public Murals has had promoting conservation. It will also discuss Rescue Public Murals' latest project, the Best Practices for Mural Creation and Maintenance website. This web resource will provide artists and public art programs with best practices information about outdoor mural surfaces, paints, and coatings, application of mural materials, and steps that are necessary to maintain outdoor murals in good condition. The information on this site will be informed by a thorough literature review on mural painting advice and techniques as well as recommendations from a panel of experts, including conservators, researchers, and experienced mural artists.

Artists and groups that are facing the need to conserve outdoor murals, now recognize how planning and careful selection of materials might have delayed or even prevented the need for costly restoration. The Rescue Public Murals Best Practices for Mural Creation and Maintenance website will demonstrate how the advice of conservators at the start of the project can contribute to the longevity of public art. It will also include the latest conservation research on acrylic paints, ultraviolet inhibitors in varnishes, non-woven cloth mural substrates, and other modern materials that have come into use in the last decade. Rescue Public Murals works closely with the Getty Conservation Institute's Modern Paints project and the Winterthur/University of Delaware Program in Art Conservation to stay apprised of the research they are doing on mural materials and will present their latest findings on Rescue Public Murals Best Practices for Mural Creation and Maintenance website.

WikiProject Public Art: Documentation, Research, and Advocacy

Richard McCoy, Conservator of Objects & Variable Art, Indianapolis Museum of Art

WikiProject Public Art is a novel approach for documenting artworks using the online encyclopedia Wikipedia and the image-sharing website Flickr, both of which are among the most-used websites in the world. This global project does not rely on institutional coordination or support, but instead privileges a de-centralized, free (gratis and libre), collaboration-based method that allows and encourages individuals and groups to take ownership for the documentation and research of artworks on a personal and local level. Further, the project allows for and encourages the teaching of the first step in conserving artworks: historic research and photo documentation.

Publishing information and images about art in Wikipedia and Flickr directly advocates for the importance and care of artworks and collections, creates an unprecedented level of visibility, and allows for an extraordinary capacity of knowledge sharing. To demonstrate the project's success and potential, this paper will present results and data from three case studies in which three discreet collections of artworks were documented. These case studies will have been carried out over three years of graduate-level courses taught by the author in the Indiana University Purdue University—Indianapolis (IUPUI) Museum Studies Department (MSTD). Each case study documents collections that have never been completely documented previously: The initial case study documented the collection of more than 40 artworks on and around the IUPUI campus, the second case study documented the more than 40 artworks inside and around the Indiana State House building, and the third case study, finishing spring 2012, will be to document the collection of artifacts and artwrorks contained within the Madame Walker Theatre Center (MWTC), a National Historic Landmark and focal point for Indiana and African American history.

While the case studies have been ongoing, students and online users have continued to document artworks within the city of Indianapolis and in other places including Washington, DC, Milwaukee, Philadelphia, Baltimore, Paris, and Australia. The initial results of this project has been the creation of thousands of images of art now visible in Flickr, and hundreds of Wikipedia articles about individual artworks. While the project has achieved some success, it is in its beginning stages and has yet to realize its full potential. The paper will point out that by working collaboratively, ambitious goals can be achieved. WikiProject Public Art provides not only a system to work internationally in real-time towards the creation and dissemination of knowledge about artworks, but also creates a replicable methodology for collaborative research projects.

By comparison, in the 1990s approximately 32,000 works of art were examined and documented during the project Save Outdoor Sculpture! (SOS!). The data collected from that survey could be used as a basis to re-survey and update that now 20-year-old project in this new approach. Finally, the project will discuss how WikiProject Public Art could be expanded to include other collections of artworks, including those contained within museums, religious institutions, and other cultural institutions or cultural sites. Likewise, the model also could be used to document the materials from which art is made and conserved.

Working with Artists Session

Working with Artists (Collaborative Conservation)

Nancy Odegaard, Landis Smith, Charles Stable, Glenn Wharton

The practice of conservation has become an increasingly collaborative process for conservators of contemporary art and traditional cultural collections. The imperative to preserve impermanent and intangible, as well as physical, aspects of artworks and cultural objects has led to an interdisciplinary, fluid and open approach. Of particular importance has been the engagement of contemporary and/or traditional artists in the process of examination, documentation, conservation research and decision-making, treatment and exhibit installation. This work has expanded definitions of conservation and deconstructed traditional professional boundaries between various museum professionals and other kinds of experts.

In this interactive session, presentations by three conservators will address practical and theoretical aspects of collaborative work in the preservation of variable contemporary art and traditional cultural collections. The role and goals of the conservator in this work, along with the critical role of documentation in this process will be explored.

Artist Participation Session

Landis Smith, Conservator; Dr. Glenn Wharton, Conservation Center, NYU Institute of Fine Arts; and Dr. Nancy Odegaard, Conservator Professor, Preservation Division, Arizona State Museum

The field of heritage conservation has broadened its scope in recent years to include participation of a wide base of constituents. The process can involve a lengthy process of identifying values embedded in cultural objects and negotiating competing interests in developing conservation strategies. In the realm of contemporary art, conservators work with artists, their agents, and other art professionals to identify material and conceptual elements of an artwork, and the artist's concern for public experience of their work.

This session will explore how negotiation plays out in the museum context and with native artists who incorporate traditional culture as part of their medium. Landis Smith will present her work with Alaska native artists in a large project at the Smithsonian's Arctic Studies Center. Glenn Wharton will discuss his work with media installation artists at the Museum of Modern Art. Nancy Odegaard will moderate a discussion about the practical and theoretical issues at stake. The session itself will be participatory, so please bring your own experience and concerns about including artists as active agents in conserving their work.

Maximum Intervention: The Collaborative Renewal and Interpretation of a Maori War Canoe between National Museums Scotland and George Nuku, Maori Artist

Charles Stable, Artefact Conservator, Conservation and Analytical Research Department, National Museums Scotland

The National Museums Scotland (NMS) has in its collection a Maori War Canoe or *waka taua* originating from the Bay of Plenty area and dating back to the early part of the 19th century. The *waka* was in such poor state of repair that it has been unable to be displayed or even physically accessed in the museum stores. The *waka*, although possessing high-quality wood relief carving, is also missing the iconic stern-post, or *taurapa* and had also been subjected to unrecorded and unsympathetic museum repairs. The development a new permanent Pacific Gallery (opened July 2011) at the National Museums gave the opportunity to investigate, restore and exhibit the *waka* in this display.

George Nuku, a highly regarded Maori artist, was approached by NMS and commissioned to aid in the reconstruction and interpretation the *waka*. Nuku is renowned for his use modern materials such as acrylic and polystyrene as medium for applying traditional Maori carving. The basis of his commission was to carve a new *taurapa* for the canoe in clear acrylic which would allow proper visual interpretation of the *waka*. The permanent display of the *waka* is supported by audio visual presentations with interviews with Nuku about the work and background to the object.

In the process of carrying out the commission, Nuku worked with a multidisciplinary team consisting of Curator Chantal Knowles, Furniture and Wood's Conservator Sarah Gerrish and Artefact Conservator Charles Stable. The aim of this paper explores the ethical, cultural, and technical dilemmas that the team faced in undertaking this project, and also the developing dynamic between curator, artist and conservator. In contrast with our normal policy of minimal intervention, the conservation was extremely involved, as with Nuku's aid, we deconstructed, recorded, and rebuilt the canoe using both modern and traditional techniques. Through this work the team discovered that the canoe was originally assembled from an amalgam of carving and parts from at least three different canoes. In attempting to sympathetically marry the new commissioned pieces of carved acrylic to the extant original wood, the conservators became instrumental in the development of the creation of a new commissioned art works and developing plans for their future preservation.

Subsequent to completion of the project the author sought peer review and critique to evaluate whether the approach we have taken could be considered appropriate and ethical from a current conservation perspectives, views were also sought from the general public as to whether the approach has been effective in making the *waka* more understandable as an object.

Biofilms and Weather Resistance of the Rhyolitic Tuff: Preservation of the Cavates and Petroglyphs at Bandelier National Monument

Douglas Porter, School of Engineering, University of Vermont, and Angelyn Bass, School of Architecture and Planning, University of New Mexico

Deep within the mesas and canyons of the Pajarito Plateau in northern New Mexico are thousands of earthen-plastered dwellings carved into the rhyolite tuff cliffs. Known as cavates, these troglodytic structures were once part of larger stone masonry villages occupied from the 12th to the 16th centuries by the ancestors of the modern Pueblo people. Despite the constant and often extreme physical alteration of the soft tuff cliffs, some of the cavates are well preserved and retain their archaeological and cultural significance through their form, domestic features, and architectural finishes. Recently, a multidisciplinary team has been characterizing the weathering rind that develops on tuff outcrops in an effort to understand the relationship of that surface to the preservation of the cavates and petroglyphs carved in the canyon walls. This effort builds on recent research in discrete element modeling and evaluation of the structural stability of prehistoric masonry associated with the cavates, a collaboration between the National Park Service, The University of Vermont, Massachusetts Institute of Technology, and Los Alamos National Laboratory.

A number of deterioration processes including erosion and exfoliation of cliff surfaces threaten preservation of the cavates and their associated archaeological features, such as petroglyphs, carved hand-and-toe-hold trails, and plastered cliffs walls. A thin weathering rind on the surface of the tuff seems to protect the glassy ash from erosion and chemical weathering, but very little is known about its formation or the level(s) of protection it provides. Preliminary examination of tuff samples suggests that weathering rind formation begins with the deposition of dissolved solutes and suspended particulates on rock surfaces by surface water flowing over canyon walls, followed by the colonization of the rock surface by surface-stabilizing biofilms.

It is hypothesized that these biofilms improve the mechanical strength of the friable rock surface by interweaving cyanobacterial and microfungal filaments; contribute sticky polysaccharides that bind surface particles together and reduce imbibition; produce rough surface microtopographies that slow water runoff and create a still-air boundary layer that protects from wind erosion; and provide some protection from freezing as the result of the dark color of the resulting patina. It is hoped that better understanding of the weathering rind formation will lead to the development of low-impact interventions for stabilization of rapidly eroding areas.

The research differs in some respects from traditional approaches to the topic. The interaction of biofilms with rock surfaces in archaeological sites, monuments, and historic buildings is usually explored in terms of the biodeteriorative effects. The pedogenetic processes associated with lichens are both chemical and mechanical. Damage associated with these processes was once thought to occur very slowly, but recent research indicates that some rocks and building stones are significantly impacted in a decade or less. In the context of the cavates and associated archaeological features, this paper explores the possibility that lichens and other biofilms may have a deteriorative effect when considered at the micron scale, but their larger impact may be consolidation of the outer few millimeters of the rock surface.

A Dynamic Public Resource—The Conservation of an Early 19th-Century Spanish Colonial Tile Artifact in the Middle of a Revitalized Watershed at the Presidio of San Francisco

Kelly H. Wong, Preservation Project Manager, and Jennifer Correia, Historic Coordinator, Presidio Trust

El Polín Springs is located in the upper reaches of the Tennessee Hollow Watershed in the Presidio of San Francisco, a National Historic Landmark District. Proposed enhancements of the revitalization project include a creek/habitat restoration, new trails, an education area, and visitor amenities. Prior to the start of construction, an archaeological investigation was conducted since the proposed project was situated in a known archaeological site, El Polín Springs, containing buried remnants of an adobe house foundation. Archaeologists discovered the Spanish Colonial terracotta tile basin adjacent to a current road near the location of the future restoration site.

Close collaboration between Presidio Trust archaeologists and architectural conservators quickly developed to incorporate the feature into the final landscape design. Archaeologists proposed excavating the feature and incorporating it into the design so that it could be interpreted and used as a valuable public resource. The surrounding landscape was a known challenge since the feature was located below existing grade. Conservators began material and salt analysis to determine appropriate material and site conservation approaches. In June 2011, after several meetings with archaeologists and other stakeholders, a plan was devised to excavate the feature, leave it exposed and divert the day-lighted stream. Initial testing was conducted, and the proposed conservation treatment plan included cleaning, selective pointing, tile repair, and implementing site drainage. A post-restoration monitoring plan, to be adapted into a long-term plan, was also developed to identify and address any future problems.

A conditions assessment was conducted using a photomontage, and conservators identified several damaged tiles for temporary off-site repair. Tiles were labeled to document orientation and location. Prior to in situ treatments, the feature was allowed to slowly acclimate to newly excavated conditions. The feature was originally laid on a sand bed with a clay-rich soil as the bonding agent. Water was used sparingly for cleaning tile surfaces prior to repairs. Unstable basin walls were selectively pointed with a natural hydraulic lime-based mortar, color matched to existing soil. Cracked tiles were repaired using ceramic pins embedded in Paraloid B-72, and cracks filled with a custom-colored terracotta patching material. Since archaeologists and conservators have the ability to monitor the site and address future problems, the conservation goal was to

limit intervention and use reversible/repairable treatments.

Many challenges were faced during excavation and treatment of the feature during this unusually cold, wet year, and conservators and archaeologists worked closely to collaborate with landscape architects, ecologists, contractors, and project managers. The main goal of early discussions was to create a grading plan for the feature that would adequately address concerns to control ground and storm water. This project illustrates how conservation planning and collaboration with other stakeholders is critical to the success of a treatment. The site opened to the public this fall (2011), and includes an exciting new educational dimension where the public will, for the first time, view the exposed 19th-century tile basin and learn about the site's Spanish settlement history at the Presidio of San Francisco.

Conservation Works at the Templo Pintado of Pachacamac

Gianella Pacheco Neyra, Museo de Sitio de Pachacamac, Lima

The Templo Pintado is one of the most important buildings inside the Archaeological Sanctuary of Pachacamac, because of its symbolic meaning and because of this temple host at the Pachacamac idol, an Andean deidity adored for more than 1,000 years. The Templo Pintado has an special relevance too, because is the only building that has wall paintings with designs. Unfortunally, despite its great importance, since it was discovered in 1938 by Alberto Giesecke, there has not been conservation work, and consequently great quantity of archaeological information has been lost, principally on the designs that could have been represented on the paintings. The Research and Conservation Project of the Templo Pintado, was developed under the direction of the archaeologist Denise Pozzi Escot, and has as its main objective the structure and painting conservation of the building, and recording of the wall paintings, that is why the following activeites have been done:

- **Topographical and planimetric mapping of the Templo Pintado:** A complete and detailed map was made, allowed the area to be sectorized in order to get a better record of the damages, localizing them. This map was also useful for designing the roof.
- **Graphic and photographic record of the wall paintings:** We recovered photographic records of the paintings made by a different researcher during the first years of the discovery. It was use to make a new detailed photographic record, and for that a grid was needed with the hole area (85 m long) every single meter.
- **Stratigraphic analysis of the wall paintings:** Every layer of painting was defined into a scheme that define the order of the layers and the relationship to the designs of paints (the Harris Matrix technique).
- **Conservation of wall paintings and mud plaster:** All the layers were rehydrated and reattach, using alcohol and distilled water.
- **Analysis and research of the meteorological and environmental effects over the building:** The museum has a weather station that is used to determine the erosive agents that affect the building conservation and to apply the proper technique.
- **Design and installation of a roof:** The roof made it possible to prevent the eolic erosion and the affectations of light rain.
- **Conservation of the mud plaster:** Clean sand was used to cover them properly.

Gelatin as an Adhesive for the Reattachment of Decorative Earthen Surface Finishes

Emily Aloiz, University of Pennsylvania and Frank G. Matero, Professor of Architecture, Historic Preservation Department, University of Pennsylvania

Gelatin, a natural binder derived from animal protein, has been used as an adhesive long before the introduction of modern materials. Largely replaced by synthetic adhesives, gelatin conservation treatments have attracted new attention in response to the need for identifying more technically and culturally compatible materials for the stabilization of detaching, delaminating and blistering earthen finishes at Mesa Verde National Park (USA). The dry, protected climate of these ancient alcove sites allows reconsideration of the use of gelatin as an adhesive for the reattachment of earthen finishes with the added benefits of retreatability, non-toxicity, versatility in viscosity and rheology, and low cost. Gelatin's susceptibility to bio-deterioration and brittleness has prompted its substitution with synthetic adhesives, especially for easel and panel painting; however, these properties alone are not necessarily detrimental on earthen materials and can be controlled if understood. In order to advance the reconsideration of gelatin as a viable adhesive for earthen materials, laboratory testing, and field evaluation over a 10-year period will be presented with a focus on critical properties related to its conservation use on earthen finishes.

How Unsuitable Interventions Can Cause Serious Damages to a Patrimony: A Case Study at São Francisco Convent, in Salvador-Bahia

Griselda Pinheiro Klüppel, Architect, Associate Professor, and Chief of the Department of Project of Architecture, Urbanism and Landscape Planning, Federal University of Bahia, Salvador, Brazil

Restorative interventions on architectural monuments—without the necessary details and development of studies, involving diverse professionals and technicians without the correct specialization—can bring bad results along the time, being responsible for new problems and damages that can compromise the physical integrity of the building for good. The case study presented refers to interventions in the Convent of

the First Order of São Francisco (Saint Frances), in Salvador, Bahia State, with disastrous consequences for its cloister.

The architectural complex formed by the church and the convent of São Francisco in the historical center of Salvador, was built in the 18th century (1705–1782); it is considered one of the most important architectural ensemble of baroque style in Brazil, and it was listed nationally as a patrimony of mankind, in 1938. Among its integrated valuable goods, highlights the exuberant decoration in the interior of the church, with altarpieces and golden carvings, the ceiling paintings in illusionist perspective and the set of Portuguese figurative tiles of the 18th century. These tiles are distributed along panels and friezes in the cloister, also in other parts of the convent and in the church, being considered the second-biggest set of baroque figurative tiles in the world, both in quantity and quality.

The cloister, developed along a quadrangle, was built in two floors, being formed downstairs by a system of full arches, sustained by columns made by limestone. This gallery is covered by a system of vaults edge, filled, recovered by ceramics tiles. The roof of the ensemble is a four waters type with wood structure covered by ceramics tiles and channel type, supported in one side on the structural walls of the convent and the church and in the other side by a limestone colonnade, forming a balcony. Each side is composed by eight columns of circular shaft, in a total of 32 columns. The set is completed by four pillars, with shaft of composed geometry in the apex corresponding to the cardinal points.

The architectural ensemble has undergone several interventions throughout the 20th century and in 1990s, suffered a great work when the roof was replaced. In the partial diagnosis of the damages in the cloister, a serious problem was observed as a result of that intervention, because the rafters that cover the cells and corridor of the cloister are not continuous to the balcony. They discharge over a groundsel up to the wall while the rafters of the balcony rely directly in the balcony without a sustainable structure. This fact caused a horizontally thrust, from inside to outside, resulting in a plumb and rotation of various columns, as well as the east pillar. Some columns of the cloister showed visible stressed material with significant damages and losses, as well as fissures at different angles besides detachments of material in their stems and basis. The biggest fissures and losses were in the pillars whose vertical section coincided with the cleavage plane of rock. The old interventions, the recurrence of cracks along the mortar or cements and the original stone, just in the joints of the floor and in the pillars basis are apparent. In upper floor, an opening marked in the joint near the body guard of the balcony is visible, resulting from rotation problems in the northeast facade. The plaid tiles of the convent had longitudinal bulging in the correspondent area of their internal walls, notably in the southeast sector of the cloister, causing infiltration of rainwater in the head of these walls.

Another inadequate intervention was the removal of the rails to collect rainwater fixed in the eaves of roofs of the convent, mainly in the balcony of the cloister, resulting in serious problems of degradation and loss of material in the whole ensemble. Serious damages and losses are occurring in the panels and friezes of the tiles in the cloister, because of the continuing action of rainwater, by materials ascendancy by capillarity and salt efflorescence. The association of southeast and east winds, predominant in town, aggravates the apparent damages in the southwest and northwest sectors of the cloister. In these areas the floor of the upper balcony shows ripples and sinking in the intermediate sectors. This process is a result of the constant infiltration of rainwater through the floor to the filling material of the hollow concrete slabs and the subsequent oxidation and expansion of the iron structure of these areas.

The actions of the rain without a correct system of drainage that can direct the water through the rainwater system have a great contribution for the problems in the stone structures and for the cloister floor. Some floor slabs, under columns, shows destabilization with partial sinking and deeper cracks on the borders of the stones. In the northeast and southeast sectors the majority is totally blackened by the proliferation of cyan bacteria and other fungi besides the presence of micro flora and undergrowth on the basis, joints and over some pieces.

Some timely interventions were done but since the year of 2007 the cloister is partially restricted, some of the pillars received shoring and arches were closed with bricks to guarantee the stability of the ensemble. However unfortunately nothing more was done to preserve that important monument against the effects of the rain, the time, and the lack of a correct and incisive intervention enabling these elements to destroy progressively the convent.

Interior Finishes in Integrative Architecture at Spruce Tree House, Mesa Verde National Park

Rebekah Krieger

This research gains a fuller understanding of how Ancestral Puebloans utilized architectural surface finishes in different architectural typologies through characterization and analysis of finish schemes at Spruce Tree House, the third-largest settlement out of hundreds at Mesa Verde National Park. This study asserts that complex finish schemes at Mesa Verde are found within rooms of a public, social, or ceremonial function. This significance can be quantified by the rarity and complexity of the scheme as well as by the physical characteristics and spatial attributes of individual rooms.

The scope of the project crosses disciplinary boundaries by utilizing data collected by archaeologists and compiling research on Native American symbolism and religious traditions. Quantitative data on the occurrence of finishes and embellishments is assessed through tabulation and mapped on plans of Spruce Tree House. Existing research on iconography found throughout the Four Corners region is contrasted with the patterns and symbols utilized throughout Spruce Tree House.

The study focuses on one room in particular, Room 115(2), notable for its complex decorative scheme in a second floor location. Kivas, circular underground ceremonial spaces, have traditionally contained the most elaborate finishes at any given

settlement. The presence of complex schemes in rectangular second floor rooms is unusual at Mesa Verde, and only a few such spaces are found at the park's largest settlements.

In situ field investigation and analysis of collected samples form the basis for finish investigation in Room 115(2). Thick section analysis is used to determine the appearance and layer structure of representative samples collected from Room 115(2). scanning electron microscopy combined with backscatter imaging, elemental dispersive spectra and elemental mapping is utilized to identify the presence and location of elemental constituents of representative samples. Room 115(2) is found to have a complex scheme with embellishments nearly identical to the adjacent Room 116(2), a space missing about 60% of its original walls but with legible embellishments due to a lack of the extensive sooting that is present in Room 115(2).

The construction history of Room 115(2) previously established by archaeologists is augmented and challenged by findings from the analyzed cross sections. The interpretation of finish samples suggests that Room 115(2) contained at least four schemes during its occupation. These schemes changed according to the function of the room and the attendant construction changes such as new wall, door, and window locations.

The metrics presented on the presence of finishes throughout Spruce Tree House suggest that second-story room with complex finish schemes play an important role in Spruce Tree House architecture. These rooms are found in pairs and represent a group of special rooms that were part of a larger program of integrative architecture.

Interior Murals, The Conservator's Perspective: Access and Experience of the Conservator within the Architectural Space

Gillian Randell, Paintings Conservator, New York Fine Art Conservation, Inc.

Murals play a unique role within the architectural space that they inhabit, this presentation reflects on the impact of paintings in site-specific spaces. Concentrating on American 19th- and 20th-century murals, several different schools and movements are discussed including The City Beautiful Movement and Work Progress Administration (WPA); within the context of different venues such as sacred spaces, theaters, courtrooms, and other public spaces.

The conservator's privileged access to the murals offers an interesting perspective; not only can we experience the murals tangibly and at close range, we have a special entrée to their history and personality from research, testing, and analysis of the materials.

The Museum of Contemporary Art, Oaxaca: the Conservation of a Historic 18th-Century Building

Victor Pérez Cruz, Francisco Covarrubias Salazar, Rafael Torres Valdés and Vera De La Cruz Baltazar, Cuerpo Académico de Restauración y Tecnología. Facultad de Arquitectura "5 de mayo" de la Universidad "Benito Juárez" de Oaxaca, Mexico

When building projects involving historic structures are undertaken, the functional requirements of the building coupled with conservation concerns sometimes results in decisions that greatly modify the original architecture. The Museum of Contemporary Art (MACO) is housed in a state-owned, two-story, 18th-century building located in downtown Oaxaca, Mexico. Similar to many of the important civil and religious buildings in the city, it is made of green stone, adobe, wood, and bricks.

Throughout its life, the building has suffered damage, mainly due to earthquakes. During the 1970s some changes to the building were made with the goal of conserving the historic structure while adapting it for use as an art museum. Overall the building's architectural integrity was respected; however, the structure was fortified with lightweight, pre-cast concrete slab (Siporex). In 2009, it was discovered that much of the wood was infested by beetles. Because of this newly detected damage, and also because of the expanding needs of the museum, a second building project was undertaken. Due to the new activities programmed for the museum, one of the goals of this project was to create floors capable of supporting 450 kg/m2. An expressed request of the artists who manage the museum in commodatum was to replace the traditional brick parapet with glass panels. Both modifications are being made, and, as we write, the building project is being completed. The traditional wood beams and bricks are now only decorative. Pre-cast concrete (Novalosa) has been used to fortify the structure of the building, and the brick of the parapet has been replaced by free-standing glass.

There are concerns among the local conservation community that these changes to the building will further compromise its structural stability. One specific concern is that the original adobe walls will not be able to support the new concrete slabs. This issue is further complicated by the risk of seismic activity, which is common in Oaxaca. Additionally, removing the traditional parapet not only leaves the columns unconnected and less stable but also eliminates a characteristic feature of 17th- to 19th-century Oaxacan architecture.

Nature's First Green is Gold: a Collaborative Analysis of a Lost Frank Lloyd Wright Wisteria Mosaic

Dr. Corina E. Rogge, Assistant Professor, Patrick Ravines, Director and Associate professor, and Jonathan Thornton, Professor of Objects Conservation, Art Conservation Department, Buffalo State College; and Peter Bush

Frank Lloyd Wright (1867–1959), one of America's premier architects, designed and built the Darwin Martin House Complex, an exemplar of prairie style architecture, in Buffalo, New York (1903–1905). The focal point of the main house was a glass mosaic depicting wisteria vines that surrounded the central fireplace. The mosaic was likely a collaborative effort: designed by Blanche Ostertag, an illustrator, and made by the Giannini & Hilgart Studio, a Chicago art glass firm. Unfortunately, during the years the Martin House sat vacant the wisteria mosaic was destroyed and the tesserae dispersed; only a few were recovered from the fire grate. Luckily, the extant samples represent the five types of mosaic glass used by Giannini: (1) clear backing glass upon which the decorative mosaic was pre-assembled and which was then itself adhered to the wall, (2) gilded field tiles of amber glass, (3) gilded blossoms of amber glass, (4) brown branches, and (5) green leaves with a crackled gold pattern. This crackled gold surface was created by an unknown method that Giannini attempted to patent in 1904. As part of a renovation campaign undertaken by the Martin House Restoration Corporation, the art glass mosaic will be recreated. To help this restoration effort, a collaborative team of scientists and conservators from Buffalo State College and the University at Buffalo volunteered their time, instrumentation, and expertise to analyze the tesserae and mortar to determine the means of mosaic manufacture, gain insight into the glass composition and determine how the crackled gold pattern of the leaves was created. These results have helped guide efforts to duplicate the crackled gold surface and will be used by the glass artists who will recapture, as Robert Frost would say, this "hardest hue to hold."

New Uses of NDE Techniques Including Surface Penetrating Radar (SPR) and Infrared Thermography (IRT) for the Investigation of Earthen Structures

Charles Branasby-Zachary and Avigail A Charnov, GB Geotechniques USA Inc.

Obtaining accurate information for historically important buildings is a critical step prior to developing the remedial/restoration strategy. Buildings constructed of earth are a major part of the built environment. Preservation of earthen structures and a better understanding of how they should be maintained or repaired is critical.

Adobe construction is typically load-bearing, with unfired mud bricks with limited structural strength, and very thick walls. This can be misleading, especially when the adobe material is hidden behind stucco or interior plastered finishes and can be deteriorated both at the outer extremities and within the heart of the wall. Another factor for consideration is hidden openings, which may have been covered by new coats of plaster or stucco or may remain open within the wall, reducing its overall structural capacity.

Traditionally, assessing adobe buildings has been traumatic, necessitating probes into the fabric to provide a structural assessment. This damages the historic fabric, disrupts the building occupants, and provides information only where exposure has been made.

Case studies of innovative and combined uses of non-destructive evaluation (NDE) techniques have provided a wealth of knowledge of adobe structures with minimum disruption. Information capture includes construction arrangement, hidden openings, framing, embedded timbers, voiding/delamination extent within the adobe walls, retained moisture, voiding behind surface plaster, and moisture routes through the site and walls.

The data allows a focused repair strategy to be developed, determines future maintenance requirement, documents and records the current structure and provides a better understanding of the building's history.

Preservation of Outdoor Public Murals: Research and Public Outreach

Amanda Norbutus, Biggs-Davis Fellow, Art Conservation Department, University of Delaware

Public murals are one of the most visible forms of art in the United States, but their extreme visibility is the cause of their greatest vulnerability. Public murals have become part of the cultural history of the United States, documenting changes in the social and political ethos, and providing outreach and recognition to underrepresented youths and cultures. Initially, most murals were painted in urban neighborhoods with inexpensive materials; the muralists made up their techniques as they went along. Even today, there is little formal training or published consensus regarding the ideal preparation of the supporting surface, drying times between coats of paint, or what coatings may help prevent or mitigate damage. Throughout this century, muralists have incorporated modern materials, adapted traditional techniques, and applied them to outdoor murals. This has resulted in many poorly-crafted murals that fade or flake years before their importance as the defining image for a community diminished.

Both the materials and the meaning of public, community-driven art from each era should be preserved. Rescue Public Murals (RPM), a branch of the Heritage Preservation/National Institute for Conservation, was established in 2006 with an interdisciplinary advisory board to address these problems and to become a source of information for muralists, mural programs, conservators, and art historians. RPM has established programs to save dying murals either in situ or in memoriam. RPM's photodocumentation of all existing murals is an important tool for the preservation of the image and the meaning of public murals, especially as the actual works are disappearing. In order to save public murals physically, muralists need to paint with

systems that curb fading and flaking, and scientists need to develop reversible protective coatings that limit the effect of sunlight, humidity, and temperatures on the paint surface.

Cities like Philadelphia, Los Angeles, and San Francisco are known for their outdoor "mural museums" as well as their current preservation efforts. Protection against UV-induced degradation, environmental exposure, and graffiti is a critical dilemma in many cities with public art programs. The use of coatings that provide a long-term barrier between the painted surface and the environment is a conservation treatment growing in recognition that presents an alternative to completely repainting a mural. Analysis of the composition, cleaning, and protective coating treatments of artists' water-borne acrylic emulsion paints used for outdoor public murals was undertaken to help advise future conservation efforts.

My doctoral research focused on collaboration with scientists, conservators, educators, and muralists to create and test materials and techniques that will protect the physical presence of public murals while using methods of public outreach to bring attention to the problems and to the solutions. This talk will explore the roles of the conservator, muralist, scientist, and mural programmer during the preservation of a mural, and present data collected on protective coatings. Projects completed using the practices recommended by Rescue Public Murals, such as consulting with a conservator during the planning stage and selecting lightfast pigments and paints, will be highlighted.

Research and Practical Solutions. Two Examples of Intervention: The Restoration of Teatro Colon Mosaics and National Congress Encaustic Tiles

Alicia Fernandez Boan, Conservacion Ediclicia, Buenos Aires, Argentina

The proposed restoration of the Colon Theater mosaics began with a historical consideration: The necessity to distinguish various types of mosaics is not new, we often make the difference between artisanal and industrial mosaics, that is to say small pieces of glass or marble hand cut and held in a fresh bed of mortar (as medieval ones), and 19th century's industrial ones. Indeed these modern mosaics are a mixture of industrial processes and hand finish. The first part of the process is a high temperature ceramic bar or tablet three inches in length; in location the floor is hand finished, the bars are cut in small irregular pieces using a "tagliolo" and are mounted one-by-one on a fresh mortar copying various designs, very much like a giant jigsaw (puzzle). That is to say that the industrial process ends at the factory that provides the ceramic bars.

We began with the research of the industrial process, in order to replicate the missing or irrecoverable parts. This determined that the material was close to Limoges porcelain. Several proofs demonstrated that the material was porcellanic gres, very close to porcelain but baked at less temperature. The ranges varied in between 1120 and 1230 degrees centigrade depending on the different colors to get. To provide the best results and after different proofs we imported porcelain paste from Stoke on Trent, UK. It was this artisanal imprint the first date of complexity to fill missing parts, we had to adjust forms, sutile ranges in joints width, rhythms of the shapes, being no design the same of the other. The final results are very good not only for recovering handcrafts, but for the local production of this material in Argentina for the first time.

The project of the National Congress encaustic tiles restoration began with the research of the original production technique. During the construction of the Palace of Congress there were no local production of ceramic tiles, being the main suppliers the British firms Minton Ltd (1868–1818), successor to Herbert Milton & Co., Craves Dunnil & Co, etc, and can also mention Sand & Co. Feignies France, or the German Villerroy & Boch Mettlach.

The method of using clay powder coverage was incorporated by William Boulton from 1863, along with other technical improvements, such as the use of perforated copper plates with the design chosen, adjustments to the guide pins, and so on. These technical developments allowed more varied designs and faster drying. Finally, the twentieth century developed the mechanization of production.

Several tests and analysis were made in order to determine original materials, like x-ray diffraction and SEM, Scanning Electron Microprobe.

Proposal for the manufacture of replacement materials: It is a restoration principle for replacement parts to admit a slight difference with the original material, but not a decline in quality. Due to costs, production times and technical problems we changed the original artisanal encaustics graffito for the modern printing techniques. The minimum thickness of the surface decorated ceramics currently used is related to the increased hardness and abrasion resistance of new materials and techniques available. Thus, the sample obtained with porcelain base and screen printing with ceramic enamels achieves a superficial abrasion on the scale 4 PEI (Pourcelain & Enamel Institute, USA-4 on a scale of 1 to 5 strength). The porcelain base reduces the absorption to zero. Both parameters are optimal, comparable to those of the original tiles in resistance to traffic and durability of the decorated surface.

Shared Heritage: Conservation of the Rosario's Built Heritage

Carolina Haydee Rainero, Secretaría de Planeamiento, Programa de Preservación y Rehabilitación del Patrimonio Arquitectónico y Urbano, Facultad de Arquitectura, Planeamiento y Diseño, Universidad Nacional de Rosario, Argentina

The conservation of cultural heritage has become an issue that goes beyond conservation itself and involves professionals from different disciplines. Furthermore, a sustainable management needs to be based in a conservation process that integrates the community that had value the goods in the first place.

From this perspective, the aim of this paper is to reflect the experience that the Municipal Program of Preservation and Restoration of Architectural and Urban Heritage1 implemented in Rosario city regarding the protection and conservation of the architectural heritage, mentioned ahead. In Rosario, architectural heritage has a leading role shaping the urban landscape as the urban memory laid on it and has become a main factor in the city's transformation. In this context, different actions have been defined to address conservation in an integrated way:

Public management and conservation through re-use.
The first public actions regarding the conservation of built heritage were supported by the revalue, re-use and enhancement of city´s landmarks and become local government administrative offices.

Urban Code: indirect and direct protection of property.
The indirect protection refers to urban code´s regulations (2008) that define the way the city is built. They try to discourage indiscriminate substitution by the use of urban indicators such as the height control of the new construction in heritage areas. The Historic Protected Areas proposed complement the above regulations by adding direct goods' protection. The goods´ intervention level is based on the protection levels introduced by the inventory.
Disclosure strategies and citizens' participation. Disclosure is an instrument that permits the average person to get acquainted with heritage becoming the starting point of the process. The following disclosure strategies of the protection instruments intend to involve the average person in heritage conservation are under construction:

- Urban rides. Cultural routes related to the heritage property that originates the HPA.
- Consensus Heritage Project which permits the active participation of the average person in the appraisal of heritage and in the local inventory construction.

Traditional Decorative Painting Materials

John Canning, President, John Canning Painting and Conservation Studios

Traditional decorative painting materials are still being used today for restoration and reinstatement of historic work, and for the creation of new work. The most basic material is oil paint made from four constituents: pigment, binder, thinner and drier. The purpose of each will be discussed along with examples of traditionally used products, i.e. raw linseed oil, pure gum turpentine, Japan drier, and earth pigments. Distemper paints will be presented in the same fashion referencing traditional binders such as rabbit-skin glue, eggs, and beer.

The seven comprehensive steps to wood graining will be illustrated: priming, ground color, water stain and flogging, oil base graining, water stain & mottling, varnishing, and waxing. A live wood graining demonstration will be performed.

Traditional gilding materials, tools, and techniques will be presented along with examples of failed systems.

Stenciling and striping materials, tools, and techniques will be illustrated.

Usonian Frank Lloyd Wright: An Evaluation of Coating Products and Surface Treatments for the Exterior Wood of the Pope-Leighey House

Pamela Kirschner, National Preservation Programs Specialist, Preservation Programs Department, National Archives and Records Administration; and Andrew Fearon, Architectural Conservator, Milner and Carr Conservation

Loren Pope requested a house design like the Herbert Jacobs House, often referred to as Frank Lloyd Wright's first Usonian House. Frank Lloyd Wright responded within two weeks saying "Of course I am ready to give you a house…" and it was constructed in 1941 in Falls Church, Virginia. Five years later the Popes sold it to the Leigheys who lived there until 1964 when it was threatened with the construction of Route 66. Mrs. Leighey asked the National Trust for Historic Preservation to help her save the house signing a contract to allow it to eventually become a public site. The Pope-Leighey House was then moved to the grounds of the Woodlawn Plantation in Alexandria, Virginia.

In 2011, a collaborative study was conducted with funding through a Save America's Treasures grant to determine an appropriate exterior protective coating for the National Trust for Historic Preservation owned property, the Pope-Leighey House designed by Frank Lloyd Wright in 1939. Wooden Artifacts Conservator, Pamela Kirschner and Architectural Conservator, Andrew Fearon, combined efforts to perform an investigation of documentary sources, analysis of physical evidence, and examination of related Usonian house examples. Written documentation, letters and original photographs were researched in the National Trust Archives and the Frank Lloyd Wright Archives at Taliesin West to assist in understanding the materials used.

Several exterior coating products were evaluated for the reintegration and retention of the original cypress siding. In situ and external test panels were monitored with the intention to yield a program that is minimally invasive while promoting the greatest longevity of original materials. Volatile Organic Compound (VOC) content, retreatability, ease of implementation, and sensitivity to the original intent were included in a series of guiding criteria for selection.

The historic material research and coatings evaluation together provides further understanding of Frank Lloyd Wright's intent for exterior wood while offering new solutions for the proper care and maintenance of related examples.

A Creative Obsession: Materials and Techniques of the Self-Taught Artist James Castle

Nancy Ash, Senior Conservator of Works of Art on Paper, and Scott Homolka, Associate Conservator of Works of Art on Paper, Philadelphia Museum of Art

The technical study of works of art, the process of identifying materials used and determining methods of execution, deepens our understanding of an artist's work. This gathering of observations, evidence, and interpretation is essential to understanding an artist's output in historical context while opening avenues for future exploration. Conservators and other scholars often have endeavored to identify the materials and techniques of mainstream artists and to develop precise, repeatable terminology to articulate their findings. However, this approach rarely has been undertaken for self-taught artists, such as Boise Idaho's James Castle (1899–1977), who used unconventional and found materials. This paper discusses Castle's art in terms of technical connoisseurship, which normally is applied to the work of more traditional artists, and includes findings from scientific investigation.

Castle's art—drawings of soot and spit, complex constructions, idiosyncratic books, and whimsical color renderings—embodies a deeply personal vision and artistic language. Previous descriptions of his materials and techniques have been based on his family's limited recollections or on scholarly inference, but these descriptions are incomplete, since Castle—who could not hear, speak or write—left no written records. A 2008 retrospective at the Philadelphia Museum of Art allowed for closer scrutiny of his work within the context of traditional artistic practices, and provided insights into his unique creations. Castle's development of a drawing medium utilizing stove soot, for instance, is wonderfully personalized yet links him to centuries-old artistic practices of producing and drawing with carbon black inks.

Close examination of the physical qualities of Castle's design materials, the tools with which he applied them, and the drawing supports and other paper products he incorporated in his work, revealed his unconventional choice of materials and properties that were integral to his artistic result. Practically every material Castle employed he encountered in his home environment, from the common household product laundry bluing to the family's discarded ice cream cartons to an enormous array of commercial paper products that most likely were obtained from the Castle family's post office and community store.

This study has revealed that Castle understood and even deliberately exploited the distinctive qualities of the materials he chose, for example, how well the surface of a particular paper repelled or absorbed fluid application of his soot and spit ink or the soluble dyes he extracted from colored papers. At the same time, Castle's fascinating artistic output is replete with the experimentation and diversity of materials that might be expected from an artist unconstrained by established conventions. As such, our examination of Castle's art underscores the challenges of deciphering—and describing—complex mixtures of mediums and idiosyncratic techniques, and points to the need for serious and continued technical study of his work and that of other self-taught artists who have expanded the artistic landscape over the past century.

Change the Frame and You Change the Game?: Research and Re-evaluation of the Presentation Formats of the Kunstsammlung's Paul Klee Collection

Nina Quabeck, Conservator, Kunstsammlung Nordrhein-Westfalen

The Kunstsammlung Nordrhein-Westfalen, in Düsseldorf, Germany, has one of the country's largest holdings of the works of artist Paul Klee. In a landmark project involving both scientific research and sleuthing in historical archives, paper and paintings conservators at that museum worked closely with curators and other experts to document significant alterations that dealers and former owners have imposed on Klee's works, in order to find ways to return the works to the presentations originally intended by the artist.

Initially, 88 works by this artist—all of them formerly owned by a private collector in Pittsburgh—formed the core inventory of the collection of the museum. Today, the collection encompasses 100 works by Klee, and offers a singular perspective on the virtually inexhaustible creativity of this artist. In the fall of 2012 an exhibition will be hosted on the premises, presenting all one hundred works to the public for the first time in the history of the museum.

Paul Klee worked very detail-orientated, giving every component of his art careful consideration. Research projects of the recent past have outlined how this extended to mounting and/or framing, proving that this step always marked the conclusion of his working process. Original presentation formats of Klee works are well documented at the Zentrum Paul Klee in Berne, Switzerland, where it is possible to study a number of works that have retained their original frames- a rare sight nowadays, as the simplicity of Klee's style in framing often led dealers or previous owners to intervene. They would change or standardize Klee's highly individual frame formats, or go so far as to trim, color or remove and change the mounts. Almost all of the works in Düsseldorf are currently presented in gilded frames with textile covered wooden liners, which in many cases obscure parts of the original structure like wooden strip frames or artist's inscriptions on the secondary support. Many have suffered further modifications, such as replacing having the original cardboard secondary support replaced by canvas.

With the aid of scientific examination of the works, and by comparing those held at this museum to unaltered examples at the Zentrum Paul Klee, it is hoped that the original mounting systems of the Kunstsammlung's works can be determined. Archival photographic material is being consulted as a reference.

Already, a number of images have been discovered that show works held by the Kunstsammlung in the artist's studio or in his early exhibitions in Europe and the United States.

With a large number of works by Paul Klee being held in American museums, it is hoped that this presentation may increase exchange and consultation between conservators in Germany and the United States on the subject of Klee's compound works, especially as the history of the works in the Kunstsammlung's collection is most certainly being shared with works in the US.

Case Study: Examination and Analysis of a Mesoamerican Deerskin Map

Ted Stanley, Special Collections Paper Conservator, Princeton University Library

Princeton University Library's very rare mid-16th century Aztec deerskin map is a distinct and dramatic reflection of the Early Colonial Period of Mesoamerica when the Spanish conquest of the region forever altered the culture. Aztec and Spanish influences compose the map's imagery with glyphs and glosses, and depict a traumatic change in an indigenous way of life.

A thorough examination and analysis of the ca. 1550 map was conducted to help ascertain its authenticity. Pigments, dyes and the deerskin support were analyzed through various microscopic, spectrographic and observational means such as FTIR, UV-VIS, light microscopy and UV-induced visible fluorescence to help determine the authenticity of the map and its constituents.

The analysis strongly suggested that the support was indeed deerskin by microscopically comparing surface characteristics to a known deerskin sample. Spectroscopy and microscopy results indicated the presence of dyes and pigments such as cochineal, bone black and Maya blue, a dye/pigment complex of indigo and palygorskite, which have a well-documented association with Aztec culture. Two substances were found that had very scant documentation associating them with the Aztec culture. These were gamboge, a dark mustard yellow resin usually associated with Southeast Asia, and Maya Green, which appeared spectroscopically to be a version of Maya Blue. The object appeared to be authentic after evaluating the analysis and extensive research. The presentation will review the analysis and research that was undertaken.

Confronting Stenciled Posters: The Discovery, Conservation and Display of Soviet TASS World War II Stenciled Posters

Cher Schneider, Senior Special Collections Conservator, University of Illinois Urbana-Champaign Library; and Harriet Stratis, Head of Paper Conservation, The Art Institute of Chicago

Summer 2011 brought to fruition a 10-year collaborative project that involved museum professionals from all corners of The Art Institute of Chicago to conserve, research, and display hundreds of over-sized World War II TASS posters alongside commercially printed war posters and artists' renditions of war.

The TASS posters were modeled after stenciled posters made by the Russian Telegraph Agency, ROSTA, and used during the Russian Civil War (1917–23). The initial goal of the TASS Studio was to produce one poster for each day of the war. Over the course of 1,418 days of war, the Studio collaboration that brought together more than 92 of the most noted artists, poets, writers, stencil cutters and painters of the day resulted in 1,240 designs and a total of 690,000–700,000 individually stenciled posters. Although the posters were produced rapidly with poor quality paints and papers, they were made to the highest aesthetic standards despite the shortage of artists' materials that plagued the Studio throughout the war. The TASS posters were disseminated each day and hung in shop windows throughout Moscow and abroad fulfilling the TASS-Studio artists' goal of disseminating agitational propaganda.

In 1997, staff in the Department of Prints and Drawings at the Art Institute made a startling discovery during preparation for a major renovation in which art from all corners of the department was inventoried and temporarily relocated. While emptying out a closet, they discovered a narrow, trough-like shelf high above rack storage that contained two thick rolls of paper and 26 folded-paper parcels. Long forgotten, enclosed within these parcels were 157 TASS posters that were mailed to the Art Institute in 1942. The USSR Society for Cultural Relations with Foreign Countries [VOKS] was responsible for the international distribution of TASS posters and it began mailing posters to the US as early as the summer of 1941. To our knowledge this remarkable collection was never exhibited during the war.

This talk will describe the discovery and study of the Art Institute's collection of TASS stenciled posters. Trends in materials usage will be outlined and the stencil process used in the TASS Studio will be elucidated. Innovative and unconventional conservation treatment techniques will be described. Unorthodox display methods developed to bring the posters back into the public eye in *Windows on the War: Soviet TASS Posters at Home and Abroad 1941–1945* will be described.

The Conservation of the Jefferson Bible at the National Museum of American History, Smithsonian Institution

Janice Stagnitto Ellis, Senior Paper Conservator, and Emily S. Rainwater, Post Graduate Fellow, NMAH; Laura A. Bedford, Assistant Book Conservator, NEDCC

Between 1819 and 1820, 77-year-old Thomas Jefferson created a cut and paste assemblage of New Testament verses and had them bound into a book by Frederick Mayo. Jefferson called his book *The Life and Morals of Jesus of Nazareth*. We now call it the Jefferson Bible. In it, Jefferson created a chronological and edited arrangement of the Gospel verses which reflected Jesus' life and teachings.

The volume remained with Jefferson's family until 1895, when his great-granddaughter sold it to the Smithsonian Institution. Since then, the Jefferson Bible has been in constant demand and was repeatedly put on display. In 2007, conservators and curators agreed that it had become too fragile to safely exhibit, and planning began to address its conservation needs.

In 2010, a team of conservators conducted a condition survey and material analyses on the twelve different types of paper, four manuscript inks, six printing inks and two adhesives found in the volume. The book's sewing structure was mapped, and other bindings by Frederick Mayo were researched to document his craft technique. They considered treatment options, and discussed the pros, cons and associated risks with curators. Together, it was determined that the most significant conservation issue was the physical damage to Jefferson's pages caused by the bookbinding. The team formulated a plan to disbind the book, stabilize the damaged pages, and modify the rebinding in the original covers in preparation for a scheduled three-month exhibition in November, 2011.

Curators and conservators worked together to examine each page and discuss where and how mends were to be made. This discriminating approach ensured that all evidence of Jefferson's hand and use were preserved. Each page was professionally photographed using a 50MP Hasselblad camera, producing the first color images ever made of the complete artifact. These images were used by Smithsonian Books to publish a color facsimile of the artifact and were launched on a website, allowing the public unprecedented up-close access to the object.

The conservation of this National Treasure received constant media attention. It invited a close up examination of both the artifact and the conservation profession. The treatment appears in a Smithsonian blog, in the *Smithsonian Magazine,* and in an hour-long TV documentary produced by Smithsonian Networks. Throughout the project, the museum welcomed select visitors into the conservation lab, including donors, board members, the Secretary of the Smithsonian, the Smithsonian Board of Regents, and members of Congress. The facsimile, website and exhibition include a chapter written by the conservation team and assure that the world can examine the artifact, the conservation decision-making and the conservation treatment in exquisite detail. The interest in this artifact and open-door discussion of its history and conservation has gifted numerous opportunities to promote preservation and the value of museums to a wide and influential audience.

Deceptive Covers: Armenian Bindings of 18th Century Imprints from Constantinople

Yasmeen Khan, Rare Book Conservator, and Tamara Ohanyan, Rare Book Conservator, Library of Congress

Armenian medieval manuscript binding and book structures have been well described and understood, unlike later bookmaking by the Armenian diaspora communities around the Mediterranean in the early modern period. Historians of the book or book arts have used external decorative features, such as the tooling, to locate the craftsmen creating the binding. Thus it has been suggested that Armenian books printed in Constantinople in the 18th century may have been transported to Europe through commercial routes to be bound. However, early printed Armenian books in Library of Congress' collection show that the underlying structure of the bindings is based on medieval Armenian manuscript book making, while decorative features have a European aesthetic, implying that they were bound locally by Armenians. Using the findings of two surveys related to bindings on early printed Armenian books from Constantinople in the Library of Congress collection in Washington DC, and the Mesrop Mashtots Institute in Yerevan, respectively, the authors will discuss the evolution of Armenian binding. Changes in style, structure and craftsmanship of bindings on Armenian books printed in Constantinople in the 18th century will be located within changes in the aesthetics and identity of the local Armenian community, and their commercial relationships with other Armenian diaspora communities in Europe.

Exploring New Frontiers: Outreach and Collaboration Across Institutional Boundaries with the Treatment of de Brys' Collection of Voyages

Erin Hammeke, Conservator for Special Collections, Duke University Libraries

The de Bry family published several travel accounts in Frankfurt in the late 16th and early 17th centuries, including a description of voyages to the New World. De Brys' portrayals of the Native American inhabitants of Virginia and Florida in the 1580s, including the well-known and oft consulted engraved reproductions of John White's watercolors, were intended for diverse European audiences and illustrate a people who are alternately powerfully elegant and savagely brutal. Staff at Duke

University Libraries selected three of de Brys' printed works for conservation treatment because of their poor condition and high instructional value. Conservation and curatorial staff collaboratively decided that preservation of the original texts and preparation for high instructional use should be the goals for treatment. The treatments consisted of washing and resizing two texts and rebinding all three in blind-tooled, full calf bindings. Large tissue fills and creative guarding strategies were employed to allow oversized plates to be handled and stored in a way that minimized damage.

The conservation treatments were presented in a talk at a symposium at Duke University in the spring of 2011. The symposium was hosted by Duke's Center for Medieval and Renaissance Studies and brought together international scholars and their various interpretations of de Brys' works. The author's involvement in the symposium offered a unique opportunity to connect these researchers to the printed originals and to hear firsthand how the repairs might impact the researchers' experiences and readings of the works. Having this type of transparent and open discourse with the scholarly community can inform future treatment decisions and, more generally, will help to raise public awareness and appreciation for special collections holdings and their preservation. The conservation of de Brys' works and timing with the symposium additionally led to other outreach opportunities on campus, including highlights of the items in an exhibit in the library and references to the works in a visiting artist's installation.

The Mysterious "Voynich Manuscript": Collaboration Yields New Insights

Paula Zyats, Assistant Chief Conservator, Yale University Libraries; Gregory W. L. Hodgins, National Science Foundation—Arizona Accelerator Mass Spectrometry (AMS) Laboratory, University of Arizona; Joseph G. Barabe, Senior Research Microscopist, Director of Scientific Imaging, McCrone Associates, Inc.

One hundred years ago, a young American book dealer named Wilfred Voynich acquired a mysterious vellum manuscript, apparently written in an unknown language. He developed an intense interest in the manuscript and eventually traced its history back to the 17th-century court of Rudolf II of Bohemia. Surviving documents show that the meaning and origins of the manuscript were unclear to scholars at that time: some speculated it was written by the 13th-century English natural philosopher Roger Bacon, a theory that Wilfred Voynich ultimately favored. Many scholars have studied the volume over the last four centuries, including 20th- and 21st -century cryptanalysts who have grappled with the question of whether the book is an encoded text based on a known language, a previously unknown language, or nonsense.

The "Voynich Manuscript," as it has become known, was donated to Yale University's Beinecke Rare Book and Manuscript Library in 1969. In late 2008 an Austrian film crew approached the Beinecke with a proposal to conduct materials testing on the "Voynich Manuscript" and make a film about it. This prompted an exciting collaboration between curators, scientists from McCrone Associates in Westmont, Illinois, who characterized the inks and paints, the National Science Foundation—Arizona Accelerator Mass Spectrometry (AMS) Facility at the University of Arizona, who carbon dated the parchment, conservators from Yale, who performed conservation treatments and oversaw the materials testing, historians, Voynich experts from around the world, and filmmakers. The collaboration resulted in significant advances in understanding this extraordinary object. This paper summarizes those findings, outlining the history of the "Voynich Manuscript," some of the theories as to this extraordinary manuscript's origins, its conservation treatment, materials testing, and parchment radiocarbon dating. The advances though significant, are humble: the authorship of the "Voynich Manuscript" and its meaning remain a complete mystery.

New Book and Paper Conservation Products and Processes from the Heritage Science for Conservation Laboratory, Department of Conservation and Preservation—The Sheridan Libraries, The Johns Hopkins University

John Baty, Heritage Science for Conservation Program, Department of Conservation and Preservation—The Sheridan Libraries, The Johns Hopkins University

Heritage Science for Conservation (HSC) is funded by the Andrew W. Mellon Foundation to bring conservators and scientists together to advance book and paper conservation. Following our first year, at the 2010 Annual Meeting, we presented research into the underlying physical science of book and paper degradation, which remains a core activity of our research laboratory. At the 2011 Annual Meeting we presented technologies we developed and applied to our research that have broader application to book and paper degradation studies, including techniques adding precision to accelerated aging and hence its predictive power. As HSC completes its third year, we report outcomes made possible by the strengthened collaboration of conservators and scientists that was fostered through our previous work: the development of products and processes that book and paper conservators can use at the bench.

Three technologies will be highlighted in this presentation. (1) A calibration pack, consisting of paper targets of representative paper grades and relevant analyte concentrations, to enable conservators to calibrate their X-Ray Fluorescence (XRF) or Near Infrared (NIR) spectrometers for nondestructive analysis of paper in their own laboratories. (2) A new accelerated aging vessel for both quantitative research and side-by-side comparisons, designed specifically for materials aging, thereby greatly reducing failures in that application as well as internal

off-gassing from gaskets, etc. (3) A set of buffers to be applied to paper, capable of "setting" the pH of the paper to a level of the conservator's choice, and demonstrated to retain that pH during aging, thereby optimizing the environment for particular pigments and inks.

All of these technologies originated from problems HSC scientists encountered while carrying out conservation science research projects with continuous input from conservators. Specifically, the scientists were faced with the problems of: How do you deposit a precise amount of material onto a paper for aging studies? How do you make sure that you are observing that degradation at a specific pH throughout the experiment? And how do you ensure that your aging vessel will maintain the environment you specify? The fact that Heritage Science for Conservation is an environment in which (1) research projects carefully designed to answer conservation questions are carried out, (2) the problems encountered are interpreted in a collaborative environment between conservators and scientists, and (3) the solutions devised, whether a product or a process, are shared with the widest possible audience, recommends Heritage Science for Conservation as a model for other book and paper conservation science laboratories.

Ozalids in the Music Library: Life before Xerox

Melina Avery, Special Collections Conservation Fellow, Northwestern University Library

This study investigates the manufacture, history and conservation treatment options for early photoreproductions found in music libraries, colloquially called "Ozalids". As architectural drawing reproductions are called "blueprints" but are not necessarily made by the blueprint process, not all of these "Ozalids" were actually produced by the trademarked diazotype process called "Ozalid." Based on surveys carried out in the Northwestern University Library and in other Chicago area music collections, "Ozalids," or, more correctly, non-Xerox photoreproductions, are a diverse group encompassing a range of photoreproductive technologies including Photostats, mimeographs, diazotypes of several varieties, and possibly other still-unidentified processes. Overall, the diazotype was the best-represented technology and therefore the focus of this research. Despite the former popularity of this copying technique, very little useful information about it is widely available.

Diazotype technology, invented in the 1920s, was the predominant small-run copying method before electrostatic (Xerox) photoreproduction was perfected and popularized in the 1970s. As music scores of this era were often handwritten, there was great demand for a copying method that could exactly reproduce unique manuscripts. The technique was not only popular in music reproduction; other collections which may house numerous diazotypes include architectural drawings, maps, and archives which hold office photocopies.

During the collection surveys, preliminary identification was carried out by visual assessment, and Fourier Transform Infrared Spectroscopy (FTIR) has also been used to objectively quantify materials and to identify and quantify degradation. Diazotypes have a characteristic appearance and aging pattern, including discoloration of the support, fading of the media and a strong chemical odor. Deterioration is presumed to be caused by outside forces as well as inherent vice due to residual chemicals.

As the original music manuscripts were often written on delicate onionskin paper for use in the reproduction process, many libraries are now left with only the unstable "Ozalids" as unique objects in their collections. As these copies were not produced in large numbers, many "Ozalids" can be presumed to be unique to the collection in which they are found. For this reason, as well as their value as exemplars of a once-prevalent copying technology, they are worth preserving.

Although resources exist for visual identification and basic preservation of this type of object, literature related to treatment is difficult to find. Based on the surveys carried out for this research, typical treatments from which these items may benefit include surface cleaning, humidification, tape removal using solvents, aqueous and non-aqueous deacidification, and mending. Protocols were developed to carry out experimental treatments on expendable samples of various types of photoreproduction. Results have shown numerous pitfalls to common treatments which may be easily avoided, including bleeding of media during solvent treatment with acetone and ethanol, but not with toluene, and dramatic sinking of media due to over-humidification.

Preservation of Cultural Heritage: The Restoration of the Globe in Relief, Department of Geography of the National School of Buenos Aires, (CNBA)

Amalia De Grazia, Eugenia Guidobono, and María Gabriela Mayoni, Ana Wortley, Conservators of Cultural Heritage, Colegio Nacional de Buenos Aires/National School of Buenos Aires

The Department of Geography of the National School of Buenos Aires has various collections that reflect the different systems of teaching that took place during the 19th and 20th century. Today they work as a witness and a document of the degrees of education, discoveries, and scientific advances in geography, anthropology, archeology, and geology. One of the most important pieces is a globe in relief, unique in the school, that dates from 1850 and that suffered a great physical damage during an accident. The origin is German, from the firm Schotte & Cia (Berlin), although its topographic information is in French. German and France were in general, the major suppliers of didactic material for teaching in Latin American countries, and they were also true innovators and spreaders of the European systems of education and policies of the time.

Within the Integral Plan of Preservation of Cultural Heritage carried out inside the Institution, the Conservation Group, together with the Department of Geography, submitted a proposal of restoration for the Globe. The object presented a diversity of damages caused by different agents of deterioration that resulted in physical and chemical problems. The proposal had the objective of reconstructing the structure of the damaged area, the cleaning, consolidation and correction of deformations in the support.

The intervention was not only successful in stopping damages and recovering the structure of the object, but also in retrieving the important information contained in the representation. The value of that information, in relation with the cartographic knowledge today resides mostly in showing the changes in the political situation, in the reach of the explorations and the discoveries of new territories.

Study on the Influence of Gunpowder Residues Found in Paper-Based Materials

Jen Jung Ku, Research Assistant and Paper Conservator, and Fei Wen Tsai, Associate Professor, Tainan National University of the Arts, Taiwan

Material science has always being an important element in the field of collection preservation and restoration, because the property of the material itself affects the preservation and life expectancy of the work. Gunpowder is a modern medium and the use of it in artwork is a recent phenomenon. Although there is not much investigation into the use of gunpowder in art, with the increased appearance of such types of artwork, further research in the preservation of collections involving gunpowder becomes a necessity. This research project focuses on the use of gunpowder material on paper-based artworks. Three accelerated-aging experiments were carried out to investigate the effect of gunpowder residue on paper.

The experiment used a mixture of potassium nitrate, carbon, and sulfur as the gunpowder sample. The mixture was applied to three paper-samples with different properties for levels of explosion tests. The paper samples were then placed into an accelerated-aging chamber with different humidity, heat, and light levels. Changes in the optical, physical, and chemical properties of the paper samples after the deterioration were analyzed through the use of automated color measurements, acidity tests, and FTIR tests. The data from this experiment suggested that the paper sample containing the most gunpowder residue changed its color the most after deterioration. At the same time, the brightness of this sample increased compared to $a^\star$ and $b^\star$ values. Our preliminary deduction of the cause of color change in this sample was the deterioration and falling off of the gunpowder residue. The experiment data also suggested that the gunpowder residue changed the acidity of paper samples. Paper samples containing gunpowder residue had a higher pH value reading compared to the samples after the aging test. The pH value was maintained between pH 7 to pH 9. The FTIR-ATR spectrum of the samples showed little change before and after the aging test. After comparing the data from the before and after spectrums, it was apparent that no new substance was produced after the aging test, and there was negligible interaction between the gunpowder residue itself and paper samples.

This research paper outlines and explains experiments done on collection materials containing gunpowder and findings from it. From the experiment result, we predict that the most common deterioration in such kind of collection material is the falling off of the gunpowder from the work itself. Therefore, a way to ensure the stable affixation of the gunpowder on the base material of the work is urgently required for the preservation of this kind of work today.

The Populist Conservator: A Sticky Case Study

Whitney Baker, Head, Conservation Services, University of Kansas Libraries

How do our colleagues in related professions and the general public regard the conservator? As a scientist in a white lab coat, bent over an object with a tiny paintbrush in hand? The unseen expert referenced in family treasure shows on public television? As a pie-in-the-sky idealist whose "best practices" seem to belie an understanding of the limitations facing small museums and archives?

In this presentation, the author discusses her research, borne out of necessity, on preserving a treasured, yet not well preserved, part of American popular culture—the bumper sticker. Such objects would rarely warrant individual conservation treatment, yet are held in many permanent research collections and small cultural heritage institutions. In the midst of a traditional, material science-based research project on how these items were made and how they changed and deteriorated over time, the author overcame her own and others' prejudices about what constitutes an object worth preserving. She learned to embrace both the beauty of the lowbrow and the value of the highly practical solution.

Thus the goals of the research shifted outward: to communicating the preservation message for materials that usually do not receive conservation notice—such as these challengingly sticky and ephemeral objects—and to providing economical solutions for items widely held by institutions routinely strapped for funds. Surprisingly, once the work was couched in terms of its impact on the public, the public took notice. The bumper sticker project garnered significant interest in the popular press and blogosphere, and even resulted in a video created by the author's institution. Now on YouTube, the video celebrates not just the quirkiness of the topic, but the substantive, serious research behind the findings. This example will contextualize a discussion of positive and accessible approaches toward publicizing the preservation of cultural heritage, in ways that make use of modern technologies.

Treatment Considerations for the Haggadah Prayer Book: Evaluation of Two Antioxidants for Treatment of Copper Containing Inks and Colorants

Season Tse, Senior Conservation Scientist, Canadian Conservation Institute; and Maria Trojan-Bedynski, Senior Conservator and Doris St. Jacques, Conservator, Books, Maps and Manuscript Conservation, Library and Archives Canada

The Haggadah prayer book, c. 1763, is part of the collection of the Library and Archives Canada. This illuminated manuscript contains iron gall ink and numerous drawings with pigments which include atacamite/ paratacamite, a copper containing pigment. A deacidification treatment with WeiT'o carried out in 1987, was unable to completely protect the paper from deterioration caused by the pigments and ink. Additional treatment would be necessary to effectively delay further damage caused by oxidation, catalyzed by copper and iron ions in the ink and pigments.

Because of the water sensitivity of many elements in the manuscript, only non-aqueous treatments could be considered. The European co-funded InkCor project identified a number of antioxidants that can be used in non-aqueous solutions. Halides were among the most effective for treatment of both iron and copper inks and pigments. Two possibilities of antioxidants were selected for further testing: tetrabutylammonium bromide (TBAB) and 1-ethyl-3-methylimidazolium bromide (EMIMBr).

Laboratory prepared iron gall ink and iron-copper ink, atacamite (Cu2Cl(OH)3) and verdigris (Cu(CH3COO)2•[Cu(OH)2]3•2H2O) were applied on unsized Whatman #1 paper and pre-aged. Six combinations of antioxidant and deacidification treatments were used on pre-aged samples: WeiT'o only, Bookkeeper spray only, WeiT'o followed by TBAB (in ethanol); WeiT'o followed by EMIMBr; TBAB followed by Bookkeeper spray and EMIMBr followed by Bookkeeper spray. The treated pigment and ink samples were aged at 80°C and 65%RH for 36 hours, for the ink samples, and seven days for the control and pigment samples. Both aged and unaged samples were analyzed using color measurement, zero-span tensile test, and pH measurement. Elemental analysis using inductively coupled plasma atomic emission spectrometry (ICP-AES) was also carried out. This paper will present the test results and evaluate the four antioxidant and deacidification treatment combinations for their suitability for treatment of the prayer book.

True Love Forever: Preserving the Legacy of Norman "Sailor Jerry" Collins

Samantha Sheesley, Paper Conservator at the Conservation Center for Art and Historic Artifacts

Norman Keith Collins, known as "Sailor Jerry," has helped to elevate the status of tattoos to fine art. A renaissance man of his time, Jerry was interested in art, electronics, politics, and business. Early in his career, he traveled the globe with the Navy, eventually landing in Honolulu to set up a tattoo shop on historic Hotel Street in Chinatown. He built a reputation for quality work, which attracted customers in spite of the cost. We credit Sailor Jerry with the invention of the magnum tattoo needle, used to apply broad strokes of color to the skin, as well as an improved tattoo machine construction, whose smooth operation resulted in greater detail and less pain for the sitter. He was the first tattoo artist to find and use a purple ink that was not fugitive or toxic. During a time when trade secrets were guarded, he befriended the most talented tattoo artists in the world, corresponding only with those whom he tested and deemed worthy of his attention. His studies culminated in a style that combined the bold colors and designs seen in Japanese tattoos with iconic Americana imagery. Sailor Jerry, who longed for the day when tattooing would be seen as fine art, would be pleased to learn that his flash, stencils, rubbings, and sketches underwent full conservation treatment at the Conservation Center for Art and Historic Artifacts.

Twenty-six sheets of Sailor Jerry's original flash, 148 acetate stencils, and nineteen original drawings were examined, treated, housed, and framed to the highest standards for long-term preservation and exhibition. The colorants used to create the bold flash art found on the walls of Sailor Jerry's shop remain brilliant, mainly due to the conscious decision of the artist to invest in quality materials. The acetate stencils, slightly yellowed and brittle, are artifacts of a tattoo craft made obsolete by today's digital means. The sketches illustrate the confidence and control Jerry had over his hand and tools. This collection reveals the progression of the artist's idea as seen in sketch form, its realization in full color flash, the translation onto the acetate stencil, and the rubbings taken from the stencils. Treatment included selective surface cleaning, tape removal, mending, and flattening of a variety of supports including: watercolor paper, transparent paper, and acetate pieces. The tools and materials used by Sailor Jerry were diverse and demanded creative problem solving in terms of their conservation treatment, display, documentation and transport. Communication and collaboration with the owner was vital, and the cultivated relationship has spurred research, exhibition, and outreach opportunities. One of the most rewarding aspects of the project has been the opportunity to present conservation and preservation issues to new audiences, including tattoo enthusiasts, in the form of lectures, newspaper articles, blog posts, and video documentaries.

Acts of Non-Conservation: Developing More Effective Means of Communication and Advocacy through Metadata

Joshua M Ranger, Senior Consultant, AudioVisual Preservation Solutions

As the theme of this year's conference suggests, conservation involves much more than physical actions performed on objects but also extends to activities that enable the performance of those actions, such as advocacy, fund-raising, and preservation planning. At the root of these activities is the ability to communicate qualitative information (Why do these objects matter?) and quantitative data (How many? How old? What type? How much?) to colleagues as well as to people outside the field. The qualitative argument will pique interest to get the ball rolling, but it is the quantitative information that supports actionable preservation plans and seals the deal for funding – especially when descriptive metadata is limited or unobtainable.

Coupled with institutional budget cuts, the backlog of unprocessed audiovisual collections and the exponential growth (and often poor file management) of digital collections present serious challenges to the conservation and accessibility of those materials. In this presentation I will discuss ways to leverage collection metadata into effective quantitative communication strategies for advocacy. My focus here will be on technical metadata and audiovisual and digital media as representative of media types that have been under-documented in collections or have presented challenges to documentation due to variability, collection sizes, and accessibility issues.

Use case data will come from inventory work performed using two new processes developed by AudioVisual Preservation Solutions (AVPS) to overcome those hurdles: a high-efficiency inventory workflow for documenting analog audiovisual assets and our FATMAP tool. FATMAP is a data-mining utility AVPS developed that crawls servers or other storage devices and parses available metadata from files into a format that allows for greater intellectual control of file-based assets, statistical analysis, obsolescence monitoring, and more. Using basic querying or reporting utilities, the data collected from these processes can be used to distill or graphically represent information that helps communicate with administrators, funders, vendors, and the public.

Capture Software for Preservation of Analog Video

Lauren Sorensen, Preservation Specialist, Preservation Department, Bay Area Video Coalition

Many times preservationists working to digitize analog video must use tools and software products from the video editing community in order to digitally capture for preservation purposes analog videotape.

For this presentation, I will discuss and present a white paper on preservation of analog videotape, comparing software products' user experiences, examining each product's settings and their purposes for preservation, and examining authenticity in bringing the signal from analog waveform into sampled SD-SDI signal.

Software to be tested includes:
Mac OS 10.6.8 environment:

- Final Cut Pro 7.0.3
- Final Cut Pro 10
- Adobe Premiere
- Blackmagic Express
- ffmpeg (open source capture software)
- bmdcapture

Ubuntu/Linux environment:

- ffmpeg
- kdenlive
- bmdcapture
- Blackmagic Express

Variables considered include:

- Usability: What is the user experience in one software product in comparison to its counterparts? User interface friendly towards preservationists' motivations (after defining what these are in looking in detail at AIC's code of ethics, AMIA's code of ethics, and SAA's code of ethics versus editors)? Within this section, user experience questions will focus on: settings, capture control, the opinions of the users in thinking about the extent to which the software is used for capture for preservation versus editing, with differently composed questions expressed to different user groups: archivists, preservationists, video editors, and hobby users.
- Authenticity of Signal Reproduction: comparison of files digitized to the same codec and wrapper in MediaInfo, Exiftool, mjpegtools (for signal analysis) and ffrobe. In examining this information, document and look for consistency of metadata across different selected codecs and wrappers outputted from different software products.
- Settings: Establish which settings are important for preservation purposes, then map metadata related to settings on each of the different software. Questions answered by this test in particular will be: How do different capture settings affect the resulting digitized version of the original analog tape? Comparisons will be made across different software products.

Conservation in Collections of Digital Works of Art

Ben Fino-Radin, Digital Conservator, Rhizome at the New Museum

Rather than addressing entropy and deterioration of physical artifacts, many collections must now contend with ensuring the conservation of works that are entirely digital. Just as biological and chemical threats to physical collections are determined by environmental conditions, digital works of art are also reliant on specific environments—in this case, technological frameworks and architectures.

Since 1999, Rhizome at the New Museum has maintained an online archive called the ArtBase, a collection of art engaged with, and dependent on, digital technology. The ArtBase contains works that employ materials such as software, code, websites, moving images, games, and browsers, towards aesthetic and critical ends.

This presentation will present methods of digital conservation as practiced by Rhizome. We will look at strategies for assessing inherent risk in a given art object, and practices for mitigating these risks. We will also explore examples of digital art objects that embody the following fundamental issues:

- Works that exist as performative actions within commercial web services or social networking platforms
- Works that employ real-time data
- Works that employ obsolete browser-specific javascript

The presentation will also look at frameworks and standards that are necessary, from a collection management standpoint, to ensure the long-term sustainability of digital conservation measures.

CRT Paper 1: Fundamentals of CRT Care and Maintenance

Chi-Tien Lui, Owner, C. T. L. Electronics Inc.; and Raphaele Shirley, Consultant, New Media Restoration, C. T. L. Electronics Inc.

This presentation will analyze the fundamental construction of the cathode ray tube monitor (CRT) and survey its basic functions, as well as the ways in which CRTs age over time, outlining specific signs of deterioration and malfunction. We will look at possibilities for conservation and replacement of CRTs on a long-term basis, ways of refurbishing CRTs, and the implications of migrating CRT-based works to new display technologies. The presentation will also explore ways of conserving time-based artworks for which the CRT is an essential component by focusing on the works of Nam June Paik. Finally, the presentation will discuss the optimal conditions for storage of CRTs—those still in use, or those held as back-ups for the restoration of art works.

CRT Paper 2: Down the Tube? Conserving CRT-Based TV and Video Art Today

Joanna Phillips, Conservator of Contemporary Art, Solomon R. Guggenheim Museum

Only a few years after the global termination of cathode ray tube (CRT) production, art collections are struggling today to preserve and exhibit TV and video artworks that are functionally, aesthetically, conceptually or otherwise dependent on analogue, CRT-based equipment such as television sets, video monitors and three-tube projectors.

While many TV and video artworks do not rely on CRT equipment specifically, and may be migrated to successive technologies without compromising the artwork's identity, a considerable number of works do require the dedication and maintenance of CRT devices or CRT technology. Specific CRT devices may be identified as unique and irreplaceable, e.g. if they feature artists' designs, modifications or signatures. CRT technology in a broader sense—not necessarily reduced to a specific make and model—may also be identified as irreplaceable, if it provides work-defining properties to an artwork. For instance, an artwork may aesthetically depend on the 4:3 aspect ratio, the line-based image structure or the cubic dimensions provided by a CRT television or monitor. Or, an artwork may conceptually depend on the functionality of a CRT, because artistic effects are generated e.g. by modifying the scanning movement of the electron beam.

This paper discusses the steps that are taken by the Conservation Department at the Solomon R. Guggenheim Museum to address the problem of CRT obsolescence in a collection care context. Two CRT-dependent examples from the Guggenheim collection, the TV sculpture *TV Crown* (1965/1998) and the video installation "TV Garden" (1974/2000) by Nam June Paik are selected to illustrate these steps, including equipment analysis and classification, documentation, development of a conservation strategy, and establishment of relationships with repair specialists.

CRT Paper 3: Conservation of Historic CRT-Based Artwork from the '60s

Christine Frohnert, Conservator of Contemporary Art, Cranmer Art Group, New York

Nam June Paik (1932–2006) was a Korean-born American artist. He moved to the United States in 1964, and lived and worked in the U.S. until his death in 2006. As television became a ubiquitous part of culture in the 1960s, he began to experiment with the medium, pioneering the development of media-based art. Paik transformed the idea of a video image on a television screen from a literal representation of objects and events into an expression of the artist. In a diverse body of work including installations, performances, interactive artworks, and collaborations with other artists, Paik questioned the idea of time, the nature of music and art, and more specifically our

understanding of television. As these technologies become obsolete, our ability to access and exhibit a significant segment of our cultural property is seriously challenged.

CRTs (cathode ray tube monitors) were the standard technology used in his studio from the early '60s until his death. Today CRTs are obsolescent, and increasingly difficult to conserve—but necessary to keep Paik's work alive. Constant maintenance of CRT's is required: servicing the monitors, finding replacement parts and replacement CRTs, etc. Those preservation needs are challenging tasks and hard to perform not only due to the lack of replacement CRTs and components on the market, but also due to the decreasing availability of specialized technicians and engineers serving the field of CRT repair.

In addition to servicing, repairing and replacing CRTs, it is important to document the artworks and its components in full detail. Although traditional conservation methods are appropriate for examining and documenting the physical or sculptural components of a work of art, they're not sufficient to capture information about the condition of electronic equipment or condition of the video content of media artwork. The development of new conservation methodologies as well as best practices for documentation is critical to the preservation of media art.

Dying Technology: The End of 35mm Slide Transparencies

Tina Weidner, Time-Based Media Conservator, Tate, London

Approaching the end of yet another analogue technology has become regular business in the 21st century, but the biggest fear of all in the last couple of years is facing the likelihood that we will loose analogue photography and motion picture film. Both industries are tightly interwoven and share the same industrial production plants where the core component, the film stock, is made. A flowering second hand market, led by enthusiasts, has supported both mediums over the last decade as projectors, cameras and lenses have long been discontinued, but now without film stock, both will come shortly to a definite end.

35mm slide is a unique medium that sits right in the middle and combines the qualities of both technologies. A slide is a high-resolution positive photograph with accurate colour reproduction, relatively low processing cost which can be projected large scale in comparison to its relatively small physical size. Like no other medium, slide catered for domestic family live, academia, advertising, fashion, industry, events and the arts in an educational and creative aspect, and became an essential medium in contemporary art practise since the 1960s.

This paper will reflect upon current practises of how artists and conservators deal with the preservation and the display aspects of slide-based works in public collections since the discontinuation of the last remaining slide duplicating stock Kodak Edupe in March 2010. It has not only become increasingly challenging but in part also extremely demoralising. What is expected from conservators in 'final call scenarios' like this, and how far can one go in the race against time and available budget? I question whether the setup for digitally scanning 35mm slides as part of the long-term archiving strategy has been implemented, and recommendations about the scanning technology, colour management, file format and quality control has been discussed and shared amongst those institutions holding slide-based works of art in their collection?

As those questions were discussed circa 10 years ago as scanning technology first became available, there was a certain anxiety or uncertainty about what further development will bring which often prevented agreement on a 'final' plan. This has now been overcome as the scanning technology that was designed to capture analogue photographs and transparencies to enable the 'easy transfer' into the digital sphere will not be developed further. In consequence there are no unknowns left other than defining the time scale of how quickly museums will have to act to preserve these works of art and its analogue upbringing.

With this paper, I would like to explore the unique quality of 35mm slides and its installation context and illustrate why it cannot be substituted by a digital replacement. Certainly this is not possible without an underlying tone of sentiment and nostalgia but I would also like to capture the way in which we make those judgements based on visual observations with an analogue pair of eyes and whether this may also be true in the way in which future generations will look at it.

Moving Pictures: Restoring Roy Lichtenstein's Foray Into Film

Clare Bell, Program Manager, Catalogue Raisonné Researcher, Roy Lichtenstein Foundation

In 1969, Roy Lichtenstein was invited to spend two weeks at Universal Studios as part of the Los Angeles Museum of Art's groundbreaking project Art & Technology which paired leading artists with some of California's foremost industries. Lichtenstein had never worked in film before, but after his brief introduction to "Hollywood," he decided he would attempt his own version of "moving pictures" upon his return to his studio. Lichtenstein made sketches for fifteen landscape pictures in total which would combine filmed sequences with other synthetic material separated by a heavy black horizontal line that would rock back and forth. He engaged independent filmmaker, Joel L. Freedman of Cinnamon Productions, to assist him. Over the course of that year, they experimented by shooting 35 mm footage of sunrises to sunsets and rippling ocean water under his own Benday dot props out in Montauk near his studio on Long Island. Not satisfied with the results, Lichtenstein altered his elaborate plans and instead focused on completing three completely filmed vignettes that would mirror the precision and clarity of his paintings. To accomplish what he could not in paint, Lichtenstein turned to special effects expert Hugo Casolaro and together they worked in the lab to animate both the color and imagery of his final *Three Landscapes*. Two of the filmed sequences were shown side-by-side in Osaka, Japan for

the World Expo in 1970 and a year later the third film was added for the installation of Art & Technology in Los Angeles.

Lichtenstein's film is little known to scholars of his work. Its spare illustrations in black and white and small screen digital representations were the only record of his work in the media. Deterioration, discoloration and lack of vintage celluloid materials proved to be among the most challenging restorations encountered by the Roy Lichtenstein Foundation. Careful consideration of the artist's intentions and research into the work in its original installation state led to a restoration approach that privileged his use of film over attempts at digitized versions.

This paper will outline the various stages and steps encountered in restoring Lichtenstein's film installation and review the challenges and questions that remain regarding its celluloid and inevitable digital future as a work of art both in a private and public context.

Rapid Identification of "Sticky Shed Syndrome" in Magnetic Tape Using ATR-FTIR and Multivariate Statistics

Dr. Eric Breitung and Samantha Skelton, Preservation Research and Testing Division, Library of Congress; and Stephen Morgan, Department of Chemistry and Biochemistry, University of South Carolina

The Library of Congress holds more than 500,000 magnetic tape objects. Many are degrading rapidly, and like many cultural heritage institutions and archives, a rapid method to identify degraded tape is needed to allow for the treatment prioritization prior to copying and/or digitizing. Even in the most ideal storage conditions, tapes are known to degrade. Tapes produced during the 1970–1990s often contain polyester-urethane (PEU) binders to hold magnetic particles onto polyethylene terephthalate substrates. PEU binders are known to degrade via hydrolysis, which causes squealing and/or shedding of magnetic material onto playback device heads. This condition is referred to as "sticky shed syndrome" (SS). There are no known non-destructive methods for rapidly identifying degraded magnetic tapes. Several brands and models of tape are known to contain PEU binders and are known to degrade, however tapes are rarely held in their original packaging or even kept on original hubs making classification by visual inspection impossible. Playing a tape is the currently accepted method for classifying a tape as SS or non-SS. If the tape squeals, flakes, or gums playback equipment, it is classified as SS and removed from the digitization workflow for treatment. This process can not only render the playback device unusable, but it can permanently damage the tape and lead to loss of data.

This presentation will focus on the use of Attenuated Total Reflectance—Fourier Transform Infrared Spectroscopy (ATR-FTIR) combined with multivariate statistical analysis as a rapid, non-destructive, identification tool for the identification of degraded magnetic tape. Researchers at the Library and other labs have attempted to use ATR-FTIR to differentiate SS and non-SS tapes by attempting to identify small differences in peak shapes and shifts. Because of the number of manufacturers and formulation changes, predicting the presence of degradation through analysis of peak comparisons is difficult and requires significant technical expertise. The use of multivariate statistics allows for the comparison of the spectral ranges with the greatest amount of variation between groups of SS and non-SS tapes of many tapes simultaneously. Once a database of spectra is developed, the use of statistics is expected to allow ATR-FTIR to be used as a non-destructive predictive indicator for collection items.

ATR-FTIR allows for the analysis of the surface binder approximately 500 nanometers into the sample. Multiple crystals and ATR designs were tested to identify the conditions under which no damage to the tape was observed under optical microscopy. The dispersed pressure of an ATR system was used to hold the tape against a large, flat, germanium crystal during measurement. Each measurement required 30-40 seconds to acquire. One hundred quarter-inch reel to reel tapes from the Library's collection were measured via ATR-FTIR and the results analyzed. Tapes were also played by audio engineers at the Motion Picture Broadcasting and Recorded Sound Division of the Library to determine, using the traditional method of playing tapes, whether they had SS. The methods used along with the results from both methods were compared and will be discussed.

Toward an Ontology of Audio Preservation

Sarah Norris, Conservator, Texas State Library and Archives Commission

Current preservation efforts for audio media rely heavily on digitization. But what is lost when recordings are migrated away from older formats? How does the physical medium of a recording relate to the sound of a recording, to a musical score, or to a performance? Can a mass-produced recording be regarded as a work with multiple instances, like an editioned print? Such questions are critical in understanding the myriad values audio recordings may carry. As items composed of relatively unstable modern media, recordings share commonalities with contemporary art, and their preservation may be usefully informed by the ethics of the museum world. However, these complicated artifacts are usually archival in nature, and as such must be regarded as innately historical objects with a practical function. This talk explores the meanings of recordings and their physical media, and places the recording within the lifetime of a musical work in an attempt to inform future preservation strategies.

Always Becoming

Nora Naranjo-Morse, artist and member of the Tewa tribe, Santa Clara Pueblo; and Gail Joice, Collections Manager, and Kelly McHugh, Objects Conservator, National Museum of the American Indian

Known collectively as *Always Becoming*, a group of five hand-built sculptures by artist Nora Naranjo-Morse (Santa Clara Pueblo) emerged from the grounds of the National Museum of the American Indian (NMAI) in 2007. *Always Becoming* is the first outdoor sculpture in Washington, D.C. by a Native American woman. It is the artist's intent for the sculptures to erode over time, reflecting her message of growth, transformation, and Native peoples' relationship with the land. In the traditional pueblo world, it was common to leave clay utilitarian or ceremonial pots outside to melt back into the ground. This way of responding to cultural objects was one of the inspirations for *Always Becoming*. The piece is an ephemeral object which has opened discussions concerning the way institutions view conservation. *Always Becoming* embodies cultural knowledge and a practice-based philosophy of care, reflecting NMAI's core mandate of inclusion.

Naranjo-Morse worked side-by-side with family, friends, and volunteers from the NMAI and the public to build the pieces. This inclusive approach to the fabrication of the sculptures was not limited to their creation. The original concept of purposeful erosion continues, but the artist acts as steward of the sculptures, visiting them once a year to care for them. Naranjo-Morse's strong relationship with NMAI staff created what she calls, "The first generation of caretakers." This group of caretakers includes the artist, collections managers, horticulturists, and conservators. The next generations of caretakers are conservation fellows and interns who work directly with the artist on her annual visits, learning that the role of a conservator to preserve and protect works of art may include assisting in their return to the earth. This talk will discuss the dynamics of the ongoing care of these sculptures as they continue to bring people together, engaging the artist, the public and NMAI's collections managers, horticulturalists, and conservators.

Analysis and Conservation of American Indian Silver Jewelry

Teresa Moreno, Associate Conservator, Arizona State Museum

The Indians of the American Southwest did not mine and process silver-bearing ores for silversmithing themselves, but instead originally relied on U.S. and Mexican silver coins or scraps of metal for their raw material, which they would hammer out or melt together into small ingots and then hammer into thinner sheets. The westward expansion of the railroad ushered in a rush of people hungry for souvenirs of their adventures in the American west. This increase in demand resulted in an eventual decrease in the quality by Indian silversmiths trying to keep up with the burgeoning market.

The role of the conservator is expanding. Through our examination, analysis, and documentation we may be asked if the composition of the silver in the American Indian jewelry identifies its method of manufacture, or if historical events are documented in its metallurgy. Scientific analysis of a collection of jewelry such as this may also enable the identification of changes in materials and technology over time which may in turn help to provide further insight regarding a relative and approximate date of manufacture. We may be asked to determine the most ethically appropriate and culturally and aesthetically acceptable method of cleaning and conserving American Indian silver jewelry.

This presentation discusses the history of silver mining/refining in the American Southwest and Northern Mexico, the techniques and traditions of American Indian jewelry making, the non-destructive analytical techniques appropriate for American Indian jewelry objects, and the typical forms of silver corrosion. Based on this background research, a study of the Arizona State Museum collection, as well as consultations with American Indian craftsmen and traders and collectors of American Indian silver jewelry, preliminary protocols for conservation cleaning and care are being developed.

From the Art of Surface to the ATR of a Surface: The Rapid, Non-Invasive Analysis of Synthetic Materials Used by Finish Fetish Artists

Emma Richardson, Rachel Rivenc, and Tom Learner, Modern and Contemporary Art Research, Science, Getty Conservation Institute, Los Angeles

In recent years there has been growing interest in synthetic materials within the museum environment, both from an identification point of view and in order to determine their condition. Since their development in the late 19th century, synthetic polymers have moved steadily into almost every area of life, and as a consequence, into a growing number of museum collections. Many classes of plastic have become household names: polyethylene, polyester, polyurethane, acrylic, polyvinyl chloride (PVC), and cellulose acetate, to name just a few. They are typically cheap, lightweight, and readily molded and shaped into all kinds of forms and structures. Since their introduction, they have opened up incredible new design possibilities for sculptors, architects, and designers.

While the general perception of plastics is one of persistence, i.e. materials that do not readily biodegrade, many are already exhibiting serious signs of deterioration, often appearing with little or no warning. Common signs include discoloration, crazing and cracking, warping, becoming sticky due to plasticizer migration, and in extreme cases turning completely to powder.

The degradation and stabilization of organic polymers vary through the classes, therefore illustrating the need for positive identification within collections, which is not always easy with limited sampling of artifacts. This is particularly true where the

surface and finish of an artwork is inherent to its artistic intent, such as the pieces synonymous with the postwar Los Angeles art scene. Taking inspiration from the Californian landscape, many of these artists were adopting highly innovative fabrication processes to create seamless, bright, and pristine-looking objects. The sculptors, in particular, became well known for utilizing a vast array of new resins, paints, and plastics, all of which were being developed at that time for use in the aerospace, boat, automobile, and even surfboard industries.

The Getty Conservation Institute is undertaking a major study into the novel and often experimental technologies applied by many of the most prominent of these artists, such as Peter Alexander, Robert Irwin, Craig Kauffman, John McCracken, Helen Pashgian, and De Wain Valentine; their pristine surfaces often earning them the label 'Finish Fetish'. An important part of this project has been the use of a portable ATR instrument —with a curved ATR measuring head—for rapid, non-invasive, in situ analysis of the materials used in these artworks. Although contact with the object is required with this instrumental setup, the force exerted during measurement is minimal and in most cases extremely high quality FTIR spectra were obtained without leaving any mark on these typically delicate surfaces.

Holy Mammoth, Batman! Conservation Education and Outreach for the Preservation of a Columbian Mammoth

Vanessa Muros, Research Associate for the UCLA/Getty Conservation Program and Allison Lewis, Assistant Conservator at the Phoebe A. Hearst Museum of Anthropology, University of California, Berkeley

What and how much should we teach non-conservators about archaeological conservation? Should conservators train archaeologists to undertake conservation techniques on site in the absence of a conservator? These are some of the questions raised when in March of 2011, two conservators were asked to consult on methods to excavate and preserve the remains of a Columbian mammoth discovered in Castroville, California. The salvage excavation team was made up of area archaeologists, volunteers and students from local colleges. Conservators came to the site to advise on techniques and materials for excavating the fragile bone, consolidating tusk and skeletal material in situ, lifting the fragile finds, and post-excavation treatment and storage measures. Due to the logistics of the project, the conservators were not able to permanently work on site but instead had to train archaeologists and students on various conservation techniques, which the team members would have to perform in the absence of a conservator. In this paper, the authors will discuss their work on the project, their education and outreach efforts, and the issues they faced when determining what and how much they should teach non-conservators about conservation.

Raising Meretites: Conserving an Egyptian Mummiform Coffin from 380–250 BCE

Kathleen M. Garland, Senior Conservator, Objects, The Nelson-Atkins Museum of Art; John Twilley, Mellon Science Advisor, The Nelson-Atkins Museum of Art and consulting scientist; Dr. Johanna Bernstein, Department of Materials Science and Engineering, Rutgers University, and consulting scientist; and Joe Rogers, Conservation Associate, The Nelson-Atkins Museum of Art

Conservators, conservation scientists, the curator, preparators, a designer, wood scientists, and a structural engineer participated in the examination and treatment of the painted and gilded inner coffin of Meretites from the collection of The Nelson-Atkins Museum of Art. Raman Spectroscopy and SEM investigations demonstrate that the "yellow ochre" color on the inner coffin is the result of the transformation of realgar into para-realgar and arsenic oxide, substantially altering the original red appearance of the coffin. FTIR Spectroscopy points to copper oxalate, a compound typically formed through microbiological action on copper compounds, but whose origins remain incompletely understood in this case. Consolidation of the fragile, tented paint using Paraloid B-72 will be discussed. Space requirements in the gallery exhibition make it necessary to display the coffin upright, but x-radiography indicates that the aged ficus wood has areas of potential weakness. Transmission ultrasound measurements were collected, and mechanical properties such as specific gravity, modulus of elasticity, compression of the wood were estimated to better evaluate the potential stress of raising the coffin upright. Three-dimensional laser scanning was used to precisely record and compare the dimensions of the inner coffin while laying flat and when raised to nearly vertical, serving to detect any movement that might occur in the wood. This data will also provide a baseline against which to monitor potential movement over time. The evaluation of the wood was used to engineer a minimally intrusive mount that reduces long-term stress by displaying the coffin at an incline of five degrees off-vertical.

So Far Away From Me? Conservation and Archaeology

Suzanne Davis, Associate Curator and Head of Conservation, Kelsey Museum of Archaeology, University of Michigan and Claudia Chemello, Senior Conservator, Kelsey Museum of Archaeology, University of Michigan

Conservation is integral to the practice of archaeology, and many conservators would like more sustained collaboration between conservators and archaeologists. However, little has been done to examine archaeologists' need for, access to, and utilization of conservation resources. For example, how do archaeologists identify and hire appropriate conservators? Do they have access to the conservation information and services they need? Is conservation prohibitively expensive or affordable for excavations?

This paper presents part two of a survey-based research project conducted by the authors to examine the working relationship between conservation and archaeology. In this phase of the project, the authors conducted an online, anonymous survey of archaeologists who direct field projects. The primarily multiple choice survey collected information about the respondents and the projects they direct, with an emphasis on their knowledge of conservation and their engagement with professional conservators. Funding for conservation on excavations was examined, as was the archaeologists' need for and access to information about conservation. One section of the survey asked specifically about the respondents' familiarity with the American Institute for Conservation (AIC) and their ability to access, navigate, and use resources available through AIC and the AIC website.

This survey complements recent data on archaeological field conservators collected by the authors through a similar survey in the first phase of this project. The survey of field conservators looked at their education and level of experience, where they work, the services they provide for excavations, and their rates and methods of compensation for fieldwork over the past ten years. The results were presented in the Objects Specialty Group session of the American Institute for Conservation's annual meeting in 2011.

In addition to presenting results from the survey of archaeological field directors, this paper will include brief demographic information on the respondents and will describe the survey's design and methodology. Finally, the authors will discuss how our professional body might use the data generated by this survey to improve outreach and better connect with the archaeological community. Developing and sustaining avenues for communication between archaeology and conservation will not only benefit the preservation of archaeological sites and artifacts, it will have a positive impact on implementing and disseminating best practices in both of these allied professions.

The Treatment of a Mi'kmaq Box Made of Birchbark, Porcupine Quills, and Iron-Dyed Spruceroot

Carole Dignard, Senior Conservator, Objects Department, Canadian Conservation Institute, and Amanda Salmon, Assistant Conservator, Furniture and Heritage Interiors Department, Canadian Conservation Institute

A 19th-century Mi'kmaq birchbark cylindrical box decorated with porcupine quills and spruceroot, from the collection of the McCord Museum in Montreal, was treated at the Canadian Conservation Institute. Problems that needed to be addressed included severe brittleness of the black spruceroot wrappings and warping of the birchbark lid. The black spruceroot's pH was very acidic (ranging from 3.0–3.5) as compared to a pH of around 4.5 for the red spruceroot on the same box. Presence of iron ions was confirmed in the black spruceroot using the bathophenanthroline test strips; atomic absorption spectroscopy was carried out to further quantify its metal contents. Iron and other metal ions are known to catalyze the oxidative degradation of organic material (cellulose, collagen): chain scission occurs, imparting brittleness and loss of mechanical strength.

Treatment challenges arose due to the object's composite and assembled nature as well as due to its fragile condition. The treatment involved cleaning the quillwork with lightly moistened swabs, and softening and reforming the detached and warped quilled birchbark lid cover using methanol vapors and restraint pressure. For this, tests were carried out to determine the duration and extent of vacuum pressure that would be effective in softening birchbark and preventing its rebound (memory), while avoiding flattening or crushing of delicate quillwork. A vacuum-bagging technique, with soft cushioning and an air leak valve to distribute and control the amount of pressure, was effective in applying a gentle, uniform and prolonged amount of pressure on the whole lid surface (48 hour methanol exposure followed by 12 mm Hg of pressure for 50 hours). Only a small amount of rebound occurred, which did not prevent the lid's reattachment to its circular ring. The lid was secured in place with Japanese paper hinges; a small area of loss was infilled with Japanese tissue and cellulose fibers. For the brittle and damaged spruceroot twinnings decorating the 3 birchbark rings making up the box's cylindrical wall, chemical stabilization was carried out on the damaged black elements by adapting the calcium phytate/calcium carbonate treatment often used to treat iron-gall ink corrosion. Several repeated applications of the solutions were applied by brush while blotters were used to absorb excess solution. Next, the spruceroot was repaired or physically stabilized using toned Japanese paper and Lascaux 498 HV acrylic adhesive. Fading rates for the vividly colored quillwork were measured using the micro-fading technique in order to provide specific display lighting recommendations.

Surveys of similar Mi'kmaq or Anishinabeg birchbark boxes decorated with spruceroot were carried out both at the McCord Museum and at the Canadian Museum of Civilization in order to proactively determine which were at risk of further embrittlement, cracking and losses: the spruceroot's condition was assessed, including its current extent of damage, its pH and its Fe(II) and Fe(III) content. The aim was to assess whether these should be given treatment priority for chemical stabilization as a pre-emptive measure, to arrest or slow down oxidative degradation while the iron-containing spruceroot was still in good condition.

Bridging a Divide–Conversing With Allied Professionals

Michael O'Malley, Paintings Conservator, Centre de Conservation du Québec

Conservators are very good at sharing knowledge and networking among themselves, but reaching out to allied professionals such as art historians is another thing altogether. The conservation treatment of a seventeenth century portrait of a venerated Augustine nun not only led to a renewed appreciation of its formal qualities, but also became an occasion to bridge a divide between Québec conservators and art historians. Ten years after the treatment, in the absence of any serious scholarly interest in the painting, the conservator published an article about it a Canadian art history journal and reopened the discussion around the attribution of the painting.

The portrait of Mère Catherine de Saint-Augustin (1632-1668) is a precious object for the Augustine nuns of Québec. Oral tradition relates that the portrait was made at her deathbed. Mère Catherine first served the community as a nurse, then as keeper and director general of the hospital. Her leadership, devotion, and spiritual fervor made a lasting impression on the young French colony. Beatified by the Vatican in 1989, Mère Catherine is considered to be one of the founders of the Catholic Church in Canada.

Before treatment, the portrait was covered by successive layers of overpaint. In the 1950s, it was finally rendered unrecognizable by a nun who tried to "rejuvenate" the sitter by giving her a younger, more cheerful appearance. The removal of the overpaint uncovered details and characteristics of the original surface that had not been seen in decades. The painting is neither signed nor dated, but the quality of its execution points to an artist of European training, as opposed to the work of an amateur or a self-taught painter.

The eminent Québec art historian, Gérard Morisset (1898–1970), had seen the painting before its last transformation in the 1950s. As early as 1936, he noticed a resemblance between it and female figures in two works by French painter Claude François (1614-1685), also known as Frère Luc, who sojourned in New France in 1670. However, Morisset stopped short of definitively attributing the portrait to Frère Luc, perhaps because François came to Québec two years after the death of the sitter. The portrait has generally been attributed to Hughes Pommier (1636–1686), a priest and artist associated with the Québec Seminary.

While many questions remain open and unanswered, the article refocused attention on this enigmatic portrait and on the work of conservators. Stylistic and scientific evidence was presented that argue in favor of an attribution to Frère Luc, which seems to have been well received by some art historians in Quebéc.

A Case Study in the Removal of a Lead Lining using a Q-Switched Nd:YAG Laser

Matt Cushman, Andrew W. Mellon Fellow in Paintings Conservation, Rita Albertson, Paintings Conservation Department, and Philip Klausmeyer, Fuller Conservation Laboratory, Worcester Art Museum

Portrait of a Woman, an oil on canvas (c. 1830) attributed to John Samuel Blunt (American, 1798–1835) in the collection of the Worcester Art Museum, exhibited numerous structural and aesthetic issues that necessitated treatment. Of major concern were several complex, unmended tears that a previous lining failed to hold securely in plane. The lining canvas was easily separated from the original, revealing a thick, stiff, lead-containing adhesive paste that had to be removed in order to affect a successful treatment. Traditional aqueous and solvent-based methods were found to be ineffective at removing the lead-containing lining adhesive. Ultimately, a Q-switched Nd:YAG laser with an emission wavelength of 1064 nm was used to remove the adhesive.

This presentation will detail the decision-making process involved in removing the lead-containing lining adhesive, including efforts to characterize materials on both the recto and verso of the painting. Health and safety concerns will be addressed, and observations about the potential advantages and disadvantages of the use of lasers for this application will be shared. Finally, while presenting avenues for further research, investigations into materials and techniques for preventing laser-related thermal damage during such applications will be introduced.

Challenges and Choices in Conserving an Early Abstract Expressionist Painting by Clyfford Still

Barbara A. Ramsay, Director of Conservation Services, ARTEX Fine Art Services

The responsibility for conserving paintings in the Clyfford Still collection over many years brought with it a range of condition issues and conservation challenges that have necessitated not only technical expertise but a sensitive approach to interpretation and serious ethical consideration.

Clyfford Still's painting, *1943* (PH-286), provides an important early example in the artist's development as one of the first Abstract Expressionist painters. In this painting, Still takes the leap from his abstracted, but still recognizable, human forms to the fully abstract paintings that have become associated with his name.

Structurally, this painting was found to be relatively sound, apart from some localized cracking, minor lifting of paint, and minimal paint loss. Aesthetically, there were condition issues that could be seen to compromise the original intent of the artist. Pronounced drying craquelure had developed over large sections of the fields of black paint, exposing white underlayers. In addition, a coating applied at an unknown date had reticulated and discolored to a dark brown color. It was not entirely clear

whether the variable degree of gloss observed across the painted surface was intentional or the result of changes in the painting materials. The high degree of sensitivity of Still's paints to water and organic solvents further complicated decisions that were to be made regarding conservation of the painting.

The conservator responsible initiated a dialogue regarding this painting—its materials and techniques, the causes of changes in its appearance, options for its conservation, and pros and cons of potential approaches to treatment—which continued over several years and involved conservators from the ARTEX Conservation Laboratory, several conservators from museums and the private sector, and conservation scientists. The family of the artist, the museum director, and scholars also expressed their opinions with respect to what the artist would have intended, what the work *should* look like, and how the work would represent the artist to a public that had never before seen his paintings. Scientific analysis was carried out in order to identify some of the materials employed by Still in this painting. Archival materials were also studied in an attempt to better understand the artist's intentions.

A recurring question arose during these deliberations: "Should we hold the artist accountable for the materials and techniques that he has used, or should we attempt to re-introduce aspects of his original intent as we perceive them?"

This presentation will describe some of the conservation issues raised by the study of this Clyfford Still painting, the treatment options considered, the ethical concerns, and the eventual conservation work undertaken in preparation for installation in the inaugural exhibition of the Clyfford Still Museum that opened in Denver in November of 2011.

A Chastened Splendor: The Study and Treatment of Works by H. Siddons Mowbray

Cynthia Schwarz, Assistant Conservator of Paintings, Paintings Conservation Department, Yale University Art Gallery

In 1892, while many of America's artists prepared for the World's Columbian Exposition, a small group of painters were engaged in decorating Collis P. Huntington's Manhattan residence. With the home's demolition in 1926 these pieces were donated to the Yale University Art Gallery. The collection is a unique example from the era; the World's Fair paintings were destroyed by fire, and the delicate matte surfaces of countless other contemporary works have been altered by inappropriate application of varnish and the effects of time. By contrast, the surfaces of Yale's pieces were protected, stored rolled for 80 years. However, many of the pieces have sustained extensive structural damages, resulting in a major conservation treatment for their installation in 2012. This collection can alternately be viewed as an invaluable document into the original intentions of the early mural movement, and as, bereft of their original context, fragments of an artistic whole. This paper explores this duality through the technical study of one of the artists, H. Siddons Mowbray (1858–1928).

In the first part of the paper, a technical investigation of the Huntington Mowbrays will be combined with texts on technique by Mowbray and his contemporaries to more fully understand how hiss painting techniques and philosophy evolved with his development from an academic easel painter to a pioneering muralist. While today he is remembered for his early Orientalist scenes, it was decorative mural painting that consumed his aspirations and mature career, culminating in the Italianate schemes of the Morgan Library (1906) and the University Club (1901). For the Huntington, Mowbray's first significant mural commission, he created nine large (40 in. x 80 in.) lunettes depicting allegorical female figures and ten smaller lunettes illustrating the story of Persephone. At this early moment in the American Mural Movement, artists struggled with the limitations of their materials. From creation to presentation, Mowbray adapted the academic easel painting methods of his training to imitate Renaissance frescoes, experimenting with absorbent grounds, leanly bound paints, and unconventional surface coatings. He also struggled to adapt his Orientalist palette to a large-scale project, in at least one case returning later to "tone down" his murals.

In the second part of the paper, a discussion of conservation procedures developed for use on this series will be focused on mindfulness of the matte paint, rigid painting surface, and attention to the textured surface that Mowbray sculpted. In Mowbray's own words, his paintings taken out of context "would look queer in an exhibition, for being a detail only of a large scheme of color, …can only look natural when restored to [their] place in that ensemble." In the conservation and exhibition of the paintings, Mowbray's intentions, both within his painting aesthetic and in their presentation and interpretation, are of paramount concern. Conservation also took into account the reinstallation of these pieces into a similar space. Their future exhibition space, in the coved ceilings of Yale's Street Hall, will be discussed as it relates to the conservation and interpretation of the panels.

Comparison Between Two Identical Portraits of Fray Camilo Henriquez

Mónica Cecilia Pérez Silva, Painting Conservator, Centro Nacional de Conservacion y Restauracion, and Juan Manuel Martinez, Art Historian & Curator, Museo Historico Nacional

The *Portrait of Fray Camilo Henríquez* (c. 1817) represents one of the promoters of Chilean Independence, the founder of the first Chilean newspaper, librarian, journalist and senator.

This piece, an oil painting on wood, is the character's only iconographic source and has been used for all subsequent portraits and sculptures. This image is the one appearing on history books, and therefore is on the collective imaginary, and is widely used on different areas: journalists and historians' blogs, webpages related to Chilean history, journalism, typographic art and education, among others.

In spite of being a well-known image, very few people know there are two identical portraits. One of them is located at the Direction Office of the Libraries, Archives and Museums Direction (DIBAM), representing his activity as the first designated librarian of Chile's National Library, and there is seen by very few people. The other portrait is on the permanent exhibition of the National History Museum, and is seen by thousands of people every year.

Both paintings, although they are not signed, are attributed to Swiss artist José Guth, who lived in Buenos Aires, Argentina, in the same period Fray Camilo Henríquez inhabited that city.

This year, the portrait that belongs to the National Library was sent to the National Center for Conservation and Restoration (CNCR), since it showed some damage due to an accidental fall.

While the restoration was being carried out, the National History Museum lent their portrait to the CNCR so that both were able to be compared. Although at first sight they look exactly the same, when viewed together it was possible to notice subtle differences that suggested the importance of carrying out a comparative study that eventually allowed us to determine if one is a copy of the other.

The project was discussed within the CNCR, identifying the needs and scope of it, and the study was defined. Several CNCR Labs and support units are involved: the Painting Conservation Lab is the project coordinator and was also in charge of the restoration, process photographs, and Vidicon IR Reflectography analyses; the Scientific Lab took samples in order to identify materials and techniques; and the Visual Documentation Unit took the initial, final, UV light and macro photographs, and IR Reflectography with digital camera.

Besides the work done by the CNCR, the curator of the National History Museum has had an enthusiastic participation. He is collecting historical records that will permit to clarify the origin and history of both paintings. This information, together with what has been observed with non destructive analyses, might confirm the hypothesis that one of them was painted having the other one as a model, based on the fact that one of them was lent to the National Library for a short period in 1968. This, however, is only a supposition, once we have the results of all analyses, photographic material and historical information we will finish with the comparative analyses and conclusions stage, which will be carried out by the whole team.

Conservation, Engineering and Materials—Reinventing the Wheel?

William Wei, Senior Conservation Scientist, Netherlands Institute for Cultural Heritage

The scientific side of the world of the conservation of cultural heritage is primarily a world of chemistry. This is not surprising, since a majority of issues dealing with the conservation and restoration of objects are chemistry-based issues such as aging, artist's materials, cleaning, corrosion, effects of climate and indoor pollution, identification, pigment analysis, etc. Conservation training programs thus include a considerable amount of chemistry in their syllabi. As a result of this and years of experience, a certain trust in and acceptance of what chemists in conservation scientist have to say has developed in the conservation world, no matter how complicated the measurement.

On the other hand, when it comes to issues involving the mechanical and physical behavior of objects and materials, this level of trust and acceptance is not nearly as strong. There is still much discussion over issues such as vibrations, the cracking of panel paintings, the strength of adhesives, etc., although similar issues have been solved in the industrial world, using principles and methods long accepted in engineering and physical sciences. Yet while most conservators would board their flight to the next AIC conference without batting an eyelash, they have serious concerns and can be quite skeptical when those same principles and methods which are used to protect their lives in an aircraft, are used for protecting valuable objects.

Why is this? It is the age old need for three things:

- Better education in the areas of the mechanical and physical behavior of materials and objects
- A willingness by conservators and other end users to learn and better understand such new engineering information, and not just look for the quick, "non-academic" fix, and
- A willingness by engineers and physical scientists to better and more simply explain the concepts and solutions that already are there, and not lose their clients in a sea of jargon and complexity, and unnecessarily reinventing the wheel.

Over the past decade, the conservation research department of the Rijksdienst voor het Cultureel Erfgoed, as an applied research organization, has built up considerable experience in bringing engineering principles to conservation science. Examples of work being conducted to improve an understanding of mechanical and physical behavior of objects include:

- Simple methods for teaching the principles of the mechanical testing of materials developed together within the former conservation training program of The Netherlands Institute for Cultural Heritage (program now operated by the University of Amsterdam)
- Work conducted in close cooperation with museum professionals to help understand (the difference in) the effects of shock and vibrations on sensitive objects
- Specific case studies on the combined chemical and mechanical effects of climate on outdoor sculpture
- Introduction of simple methods for monitoring the cleaning of objects, and the accumulation of dust.

It is shown that, as in all walks of life, a willingness to communicate in another "language" always leads to better communication, understanding, and solutions of the issues involved.

Development of Portable Hyperspectral Imaging Cameras for Identification and Mapping of Organic Artist's Materials Such As Paint Binders and Textile Fibers

John K. Delaney, Department of Scientific Research, National Gallery of Art and Department of Electrical and Computer Engineering, The George Washington University; Paola Ricciardi Department of Scientific Research, National Gallery of Art; Murray Loew, Department of Electrical and Computer Engineering, The George Washington University; and Suzanne Lomax, Department of Scientific Research, National Gallery of Art

Near-infrared (750–2500 nm) reflectance imaging spectroscopy has been recently shown to be a useful tool to map and identify various artists' pigments. This approach has utilized both electronic transitions (color) and vibrational overtones from hydroxyl (-OH) and carbonate groups ($-CO_3$)[1]. Here we report on efforts to extend this methodology to map and identify non-pigment artist materials such as paint binders and textile fibers in situ. Imaging spectroscopy, the collection of hundreds of contiguous narrow-band images, offers an improvement over site-specific fiber optic reflectance measurements by combining both spatial and spectral information. Currently new portable high sensitivity hyperspectral cameras are being developed that will operate under the low light levels conditions necessary to examine paintings, drawings, illuminated manuscripts as well as textiles. These cameras will have both high spectral (2.4 to 4 nm) and high spatial resolution (< 0.1 mm per pixel) capabilities. Identification and mapping of these organic materials will be done using the higher harmonics of the vibrational features found in the mid-IR which are routinely used to identity these materials using FTIR spectrometers. These chemical signatures include overtone and combination vibrational features associated with amide bonds, $-CH_2$ -OH, and $-CO_3$ groups. The cameras utilize transmission-grating spectrometers and state-of-the-art infrared detectors, such as InGaAs and InSb arrays of 640x512 pixels and 1024x1280 pixels, to obtain the required sensitivity. The instrument's performance is being verified using test panels and paintings in the National Gallery's collection whose composition is known by GC-MS and FTIR analysis. To date we have demonstrated (1) the ability to separate and map test panels painted using drying oils versus whole egg tempera, (2) have mapped an egg yolk binder in a 15th-century illuminated manuscript, and (3) have separated wool and silk fibers within a c. 1500 tapestry. The knowledge gleaned from this instrument will help art historians better understand, and conservators better preserve, important works of art.

Discriminating Palettes: The Painting Materials of Clementine Hunter and Her Imitator

Joseph Barabe, Senior Research Microscopist, McCrone Associates, Inc.

The paintings of Clementine Hunter, an illiterate and self-taught folk artist from Natchitoches Parish, Louisiana, once sold for pennies but now command prices in the tens of thousands of dollars. Recently, a number of works attributed to her have been suspected to be forgeries. In the course of the criminal investigation, McCrone was contracted to examine a number of works purchased directly from her, and thus of known authenticity, and compare their material constituents with works suspected to be imitations. The comparative analyses proved useful to the investigators, as both groups had both distinctive palettes and a number of visual characteristics as well. This presentation will summarize McCrone's findings and show the efficacy of the comparative approach, which can be enormously effective in generating data of evidentiary value.

The analytical methods performed on the paint samples included polarized light microscopy (PLM), energy dispersive x-ray spectrometry in the scanning electron microscope (EDS in the SEM), Fourier transform infrared spectroscopy (FTIR) and Raman spectroscopy. The results were summarized in tabular form, and a chart was created showing the distribution of painting materials between the five known Hunters and the five questioned paintings. Significant differences were found between the known authentic paintings and those of questioned authenticity. This paper will describe the analytical methods used, the data generated during the chemical and visual analyses, the conclusions the analyses permitted to be drawn and the forensic result.

Fredrick Hammersley: An Artist's Documentation of His Painting Practice

Alan Phenix, Scientist, Tom McClintock, Consultant, Rachel Rivenc, Assistant Scientist, and Tom Learner, Senior Scientist/Head of Modern and Contemporary Art Research, Getty Conservation Institute

Frederick Hammersley (1919–2009) was one of the leading abstract painters in Southern California in the World War I period. He first gained widespread acclaim when, together with Karl Benjamin, Lorser Feitelson, and John McLaughlin, his work featured in the landmark exhibition *Four Abstract Classicists* (LACMA 1959, San Francisco Museum of Art 1959; ICA London 1960; Queen's University, Belfast), which led to the coining of the movement in painting known as "West Coast Hard-Edge."

Hammersely studied art in Los Angeles in the 1940s, at the Chouinard Art Institute and later at the Jepson Art Institute, where he continued in a teaching capacity after his studies. Subsequent teaching positions in California included Pomona College (1953–62), Pasadena Art Museum (1956–61), and Chouinard

(1964–68). In 1968 he moved to Albuquerque, New Mexico where he continued teaching, at the University of New Mexico, until 1971, when he stopped teaching to concentrate on his painting. Hammersley died in May 2009 at his home in Albuquerque, and his studio there is being maintained as it was at his death.

Hammersley is a remarkable artist in many respects, but a particular feature of his practice was his meticulous documentation of his processes, methods and materials, and great concern for the permanence of his work. The Hammersley studio houses a wealth of archival material pertinent to his painting technique, including a series of notebooks from the beginning of the Albuquerque period, that describe in detail the creation of individual works. And many paintings include on the reverse annotations by Hammersley regarding specific technical or material features; in some cases, the annotations are so descriptive as to indicate the particular passages painted on specific days.

The essential purpose of this study are: to present a broad inventory of the archival materials at the Hammersley studio that have significance for understanding of the artist's practice; to collect observations by him on materials and process; and to offer some initial interpretations in terms of the relationship between his artistic intentions and technique and of his perspectives on the durability of his work.

Gauguin's *Brittany Landscape*: Compositional Transformation and Intentional Ambiguity

Carol Christensen, Senior Paintings Conservator, John Delaney, Senior Imaging Scientist, Michael Palmer, Conservation Scientist, and Douglas Lachance, Painting Conservation Technician, National Gallery of Art

In Gauguin's signed and dated *Brittany Landscape* from 1888, the slightly awkward composition can be attributed to the artist having painted on a single canvas—over the course of several days or a week—a succession of different landscapes, all of which shared the same sky/hill line. These various compositions are revealed by x-radiography and infrared reflectography, and the close time frame of their creation is confirmed by examination of paint cross sections. In a tour de force of concentration, Gauguin did not block out the lower compositions but instead painted directly on them, reusing certain lower image shapes in the final composition and creating ambiguous forms that were probably preferred by the artist. A theory of the sequence of the compositions is proposed. Drawing on the neuroscience concept of pre-conscious processing, first linked to technical art history by E. Melanie Gifford, the question of whether Gauguin's re-use of underlying forms is intentional without being a choice made by a fully conscious mind is discussed. The results of this research suggest we may need to revise our current view of Gauguin as dishonestly representing his artistic process as totally spontaneous. The analysis also reveals in a single painting a whole range of ideas explored by the artist at a time when he was about to move forward stylistically, painted during a period of incubation in which he tested many different compositions on one canvas.

On Picture Varnishes and their Solvents for the 21st Century

Robert Proctor, Co-Director and Painting Conservato, and Jill Whitten, Co-Director and Painting Conservator, Whitten & Proctor Fine Art Conservation

No book is more important to painting conservators than *On Picture Varnishes and Their Solvent*s by Feller, Stolow and Jones (1985). Several varnishes have been introduced to the field since this book was published more than a half century ago. This presentation will discuss the unique solubility parameters of several of the varnishes commonly used by painting conservators and how different solvents can effect their appearance and allow them to be applied in distinct layers that can be applied and removed without disturbing the layers of varnish or inpainting below.

Print or Painting? The Treatment of a Penschilderij by Willem van de Velde the Elder

Kristin deGhetaldi, Doctoral Candidate and Coremans Fellow, PhD Program in Preservation Studies, University of Delaware

Though Willem van de Velde the Elder produced hundreds of maritime sketches and oil paintings, he may be best remembered for his elaborate penschilderij. Penschilderij or "penpaintings" typically involve the application of ink atop a panel/canvas substrate that has been prepared with layers of lead white bound in oil. Beginning as early as 1638, van de Velde's unique penpaintings became popular with wealthy patrons throughout Europe. Van de Velde's compositions provide an extraordinarily complete record of the ships and small craft of Holland and England in the late 17th century. Van de Velde was one of the first to work with this technique although penpaintings from least eight Dutch artists have survived. It is important to realize that van de Velde and his contemporaries used varied and disparate methods when comparing his works to penpaintings by Experiens Sillemans or Adrien van Salm. Van de Velde's style changed throughout his lifetime as he began adopting a more fluid approach by the late 1650s, applying subtle washes in areas of shadow in place of the fine cross-hatched lines seen in many of his earlier works. Very few penpaintings have found their way into public institutions with the exception of the Rijksmuseum and the National Maritime Museum in Greenwich. In 1994, Dutch Ships near the Coast by van de Velde was gifted to the National Gallery of Art in Washington DC, becoming the very first penpainting to be housed in an American public collection. When the author began the treatment in 2010, the conservation staff was able to take a closer look at the materials and techniques used to create this particular penpainting using SEM-EDS, GC-MS, and cross-sectional microscopy. Though much was discovered with the help of analytical tools, many questions still remain regarding this curious artwork. The analytical findings will be discussed and compared to previous studies. The treatment of *Dutch Ships near the Coast* and the challenges encountered will also be covered.

Relating Artist Technique and Materials to Condition in Richard Diebenkorn's "Ocean Park" Series

Ana Alba, William R. Leisher Fellow, Painting Conservation, Jay Krueger, Senior Conservator of Modern Paintings, Christopher A. Maines, Conservation Scientist, Suzanne Q. Lomax, Organic Chemist, and Michael R. Palmer, Conservation Scientist, The National Gallery of Art

This paper is a continuation of an earlier two-year research project where four of Richard Diebenkorn's "Ocean Park" paintings were compared based on their current condition and materials used. The four paintings chosen included two with severe cracking (*Ocean Park No. 111*, Hirshhorn Museum and Sculpture Garden, and *Ocean Park No. 96,* Guggenheim Museum, New York) and two that are in relatively good condition (*Ocean Park No. 115*, Museum of Modern Art, and *Ocean Park No. 125*, The Whitney Museum of Art). Materials analysis was completed for all four paintings and the two paintings showing cracking were found to contain an acrylic preparatory layer.

In continuing this in depth look at Diebenkorn's Ocean Park series, about 40 additional paintings were examined and an additional 10–15 paintings were sampled for analysis. Ground and paint samples were analyzed using Fourier transform infrared (FTIR) and pyrolysis-gas chromatography–mass spectrometry (Py-GC-MS) to determine medium. Cross-sectional analysis and SEM-EDS were completed to determine layering structure and elemental composition of the paints.

The analytical work revealed changes in the artist's materials during the time span the paintings were executed. For example, Diebenkorn started incorporating clear synthetic preparatory layers instead of pigmented grounds starting in 1974, though he switched back to commercial acrylic gessos around 1979. The clear layer is a good match to Rhoplex AC-33, which would have been readily available during the time the paintings were executed. Alkyd paints have also been identified throughout the series.

Condition issues in this series were also documented and a database was created to chronologically track material changes in the paintings and analytical results. Correlations between his choice of painting materials and various combinations of brittle alkyd and oil layers over elastic preparatory layers were noted. Generally, those paintings that combine brittle paints with soft acrylic layers are exhibiting more severe cracking than those that are more traditionally constructed. This difference is illustrated in the database where the earlier paintings tend to be in better condition than some of the later paintings. Generally, painted areas that consist of multiple layers fare worse than areas without heavy layering and reworking.

The author also worked with the Richard Diebenkorn Foundation to establish travel histories for individual paintings and referred to historical photographs to verify analytical data and visualize previous incarnations of paintings that had gone through multiple stages of reworking. Studio assistants and fellow artists were also consulted to help understand Diebenkorn's studio techniques and philosophies.

Research into Anti-Graffiti Coatings for Acrylic Murals: Preliminary Analysis and Evaluation

Emily MacDonald-Korth, Painting/Wall Paintings Conservator, Associate Project Specialist, Leslie Rainer, Wall Painting Conservator, Senior Project Specialist, and Tom Learner, Senior Scientist, The Getty Conservation Institute

In the past 40 years, outdoor murals have become a familiar feature in cities in America and around the world. Murals are a valuable expression of modern society, and must be preserved for current and future generations to benefit from their cultural import. However, in recent years, outdoor public murals have become targets for graffiti. Anti-graffiti coatings have been developed to protect murals from this type of vandalism. The Getty Conservation Institute has been researching anti-graffiti coatings since 2008, beginning with a literature review and search for products currently on the market and used by artists, conservators and cities for this purpose. Over the past year, practical testing of a selection of these products has been carried out on mural test walls.

The focus of the project was testing the performance of 11 anti-graffiti coatings designed for exterior surfaces, including six permanent coatings and five sacrificial coatings currently being used by conservators on murals or referred to in the literature. The coatings tested were fluorinated acrylics, waterborne polyurethane, acrylic, silicone, polysaccharides, and wax.

To assess the performance and effectiveness of the anti-graffiti coatings, 5 types of graffiti materials were applied over the anti-graffiti coatings, and graffiti was subsequently removed using methods recommended by the coating manufacturers. Graffiti materials tested were: Krylon metallic and Krylon gloss spray paint, Sharpie paint and permanent markers, and Rust-O-Leum latex house paint. To test the change in coating performance over time, graffiti was removed one day after application, repeated for 10 successive rounds; and after one month, six months and one year. Following manufacturers suggestions, high pressure hot water was used to remove graffiti, followed with solvent-based graffiti removal using proprietary removers made by the manufacturers as part of their anti-graffiti coatings systems.

The coatings were evaluated according to several criteria: appearance (color, clarity, sheen), performance (ease of application, ease and efficiency of graffiti removal, durability of the coatings), and stability (color change and ageing). Preliminary results show that in general, sacrificial coatings perform fairly well: they are easy to apply, sufficiently durable, allow for easy and efficient graffiti removal, and are more

resistant than permanent coatings to common graffiti materials. Sacrificial coatings also have drawbacks: they tend to be less aesthetically pleasing than permanent coatings, the coatings must be reapplied after every graffiti removal, and maintenance is an issue for some which discolor and attract dirt, requiring removal and reapplication.

Benefits of permanent coatings included: easy application, generally an aesthetically pleasing appearance, low maintenance, and no reapplication of the coating after graffiti removal. Drawbacks of permanent coatings were: adhesion failure with high pressure hot water spray, deformation and dissolution when using solvent-based graffiti removers, surface damage due to the mechanical action required to remove graffiti, and the irreversibility of the coatings. This project provided valuable information about specific characteristics and behavior of a variety of anti-graffiti coatings currently being used in conservation. None of the coatings tested have all the characteristics of a desirable anti-graffiti coating, and other products and methods should be investigated.

Treatment of Izhar Patkin's "The Black Paintings"—Collaboration and Compromise

Anne Grady, Sculpture Fellow, and Jennifer Hickey, Paintings Fellow, The Museum of Modern Art

This paper presents the case study treatment of Israeli-American artist Izhar Patkin's (b. 1955) 1986 installation, "The Black Paintings" as an illustrative model of the complexities frequently encountered in the conservation of contemporary large-scale, multimedia work. Treatment of "The Black Paintings," 22 painted neoprene panels hung together to create a 28 ft. x 22 ft. installation space, involved a year-long project, undertaken collaboratively by The Museum of Modern Art's Sculpture and Paintings Conservation Departments. The practical limitations of the treatment, often necessitating philosophical consideration and compromise, will be addressed in the broader context of the conservation of contemporary art.

The circumstances and rationale that shaped the ultimate course of this treatment will be addressed. The size, materials, and current state of the work's preservation all presented challenges, as conservators sought to develop a realistic time frame, create a suitable workspace, and stay within a budget. Further risk assessment regarding housing and handling was considered, as the work was prepared for travel for exhibition.

The treatment of Patkin's "The Black Paintings" provides a lens through which to examine the subtleties involved in striking a balance between artist's intent, audience reception, and the object's preservation. Consultation with the artist will be addressed as a resource unique to conservation of contemporary art. The advantages and complexities arising from access to a first-hand articulation of artist's technique and intent will be explored. The AIC Code of Ethics specifies, "the primary goal of conservation professionals…[to be] the preservation of cultural property." This broadly stated credo provides for varied, nuanced interpretation, even over the course of a single treatment, and the collaborative forums in which we, conservators, debate the philosophical complexities of our decisions serve as a means to better understand and clarify our intentions.

Crude Oil and Archeological Bone and Shell

Erin White, Student, Conservation Studies Program, University of York, York, UK

Crude oil spills in marine and terrestrial environments are not uncommon, which has in turn created a broad market of products whose purpose is to remove oil. Products such as solvents and surface washing agents are the commonly employed methods for oil-spill clean-up, and studies exist that test the effectiveness of some of these products on various substrates. Unfortunately, the threats crude oil exposure poses to archaeological artifacts and cultural resources are and methods to mitigate such damage have not been widely studied.

The National Center for Preservation Technology and Training (NCPTT) in conjunction with Northwestern State University (NSU) in Natchitoches, Louisiana, has recently concluded a study that began in 2010 and was completed in the summer of 2011 on the effectiveness of five oil-removal products on archeological bone and shell with the intention of cleaning without damaging the material itself. The objectives of the project were to determine the best cleaner for oil removal, to quantify the state of bone and shell samples prior to and after oil application, and to examine the degree of oil removal from samples per cleaner. Crude oil was first applied to the bone and shell samples and then artificially weathered. Following this, cleaners were applied to remove the oil.

Products selected for testing were either common "over-the-counter" cleaners or listed on the EPA product schedule. Five products were tested that included surfactants, surfactants with enzymes, and solvent-based cleaners. Cleaning methods per product were based upon manufacturer's recommendations and instructions. Environmental safety and low toxicity were primary concerns for cleaner selection, as well as how the cleaners might be used under real world conditions. The effectiveness of each cleaner was determined through analysis using the Fourier Transform Infrared Spectroscopy (FTIR) and color measurements.

This examination of the effects and effectiveness of surface oil removal products aims to provide a basis for future studies in crude oil removal from cultural objects and archaeological artifacts.

Methods for Crude Oil Removal from Fort Livingston, Grand Terre Island, Louisiana

Carol Chin, Joint Faculty, Materials Conservation Department, National Center for Preservation Technology and Training

Fort Livingston is located on the western tip of Grand Terre Island, Jefferson Parish, Louisiana. The fort was listed in the National Register of Historic Places in 1974. It has been managed by the Louisiana Office of State Parks since its designation as a State Cultural Area in 1979, and is part of Grand Isle State Park. Construction of the fort began in 1841. The walls were constructed of tabby faced with brick. The tabby remained exposed in some of the interior spaces. Stairways, lintels, and other trim pieces were made of a fine-grained granite.

The fort and surrounding beaches and wetlands were contaminated with crude oil around the first week of June, 2010. Floating oil slicks arriving at Grand Terre Island reached the fort because the structure is partially submerged in Gulf waters even during low tide. The largest tidal range in the area during that time was approximately two feet, depositing oil onto the brick walls of the fort and on some of the interior spaces that flood during high tide.

Grand Terre Island is only accessible by boat, and there are no sources of power or fresh water on site, presenting unique challenges for the careful removal of crude oil from the structure. Because a portion of the fort now stands in gulf waters, any cleaning products used must be approved for release into seawater. Alternatively all cleaning effluents must be collected and disposed of on the mainland.

Staff from the National Center for Preservation Technology and Training made three site visits to Fort Livingston: June 2010, September 2010, and July 2011. The extent of oil contamination was evaluated, oil samples were collected for further studies in the laboratory, and cleaning tests were performed. A variety of cleaners were tested, including products on the Environmental Protection Agency's National Contingency Plan Product Schedule. In July 2011, testing concentrated on methods using poultices. Results of the site visits will be presented. Additional testing was performed in the laboratory using the same cleaners, and these data will be compared with field testing.

Multi-Layer Atomic Layer Deposition Films as Protective Coatings for Silver Art Objects*

Eric Breitung, E-Squared Art Conservation Science, University of Maryland, College Park; Amy Marquardt, Gary Rubloff, and Ray Phaneuf , E-Squared Art Conservation Science; Glenn Gates, and Terry Weisser, The Walters Art Museum

We present results from a collaborative research program between the University of Maryland and The Walters Art Museum in developing and evaluating multilayer, multifunctional atomic layer deposition (ALD) films for conservation of silver. Tarnishing of silver is a critical problem that is currently dealt with by coating with polymeric coatings such as nitrocellulose or placing objects in specially designed cases containing sulfide absorbers. Use of polymeric coatings is common and if applied carefully can protect an object for 20–30 years in a controlled museum environment. Uneven coating, however, can lead to severe tarnishing and pitting.

Our approach is based upon ALD: an innovative, thermally activated gas phase process for depositing incredibly conformal, very thin, and uniform films on metal (and other) surfaces

regardless of topology. Preliminary studies performed at the Metropolitan Museum of Art in 2006 showed that the tarnishing rates of 70 nm of alumina (Al_2O_3) deposited by ALD performed as well as microns of brush coated nitrocellulose. To validate and improve this process for museum objects, we are exploring multiple compositions and layer structures to optimize barrier performance and optical clarity. Tarnishing is being evaluated via reflectance spectroscopy as well as x-ray photoelectrons spectroscopy (XPS) to measure the amount of sulfur on the surface subsequent to stripping the protective coating after a series of oxidizer exposures. Accelerated aging of test coupons is being performed using both exposure to atmospheres with controlled, elevated concentrations of hydrogen sulfide (H_2S) and increasing the temperature of ALD coated samples under atmospheric levels of H_2S. This is employed to establish the characteristic time scales of diffusion of oxidants through the ALD coated films relative to uncoated and nitrocellulose coated silver. The reversibility of ALD metal oxide coatings is also being evaluated to determine if either the deposition or the removal of thin layers of metal oxides on silver changes the physical characteristics or chemical composition of the silver surface.

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Progress in the Investigation of Silicone Rubbers and their Residues

Kasey Hamilton, Student, Chemistry Department, Tulane University; Adriana Rizzo; and Anna Serotta, Contract Conservator, Fairchild Center for Objects Conservation, Metropolitan Museum of Art

Silicone rubber molds are often used to cast and reproduce objects and artifacts. These molds are frequently used in conservation because of their ability to capture high levels of detail, making them very useful for examining surface topography of objects. Paired with scanning electron microscopy or other imaging techniques, impressions taken with silicone rubbers can often reveal technological details, such as tool marks, which can help to reveal the processes of an object's manufacture. In the past two decades, conservators have begun to notice that silicone rubbers leave behind a residue, locally discoloring the surface of the object where the impression was made. Residues can sometimes be seen in the form of pieces of cured silicon rubber, trapped within interstices or recesses, but more problematic are components of the silicone rubbers which may be either absorbed by the surface or left on it as a film. These can cause permanent staining of the surface, as well as changes in the surface properties. Some research exists on the characterization of silicone rubbers, the identification of their residues and their mitigation on surface of objects. However, new silicone rubbers have since been commercialized and used in conservation without having been systematically tested for their safe use on historical objects. The current study focuses on an in-depth chemical analysis of eight of these silicone rubbers, and identifies potential residues left behind by them. The silicone rubbers investigated include President Jet Light Body (Coltène), Extrude XP (Kerr Corporation), Elite Double 8 (Zhermack), Elite HD+ Maxi Putty Soft Fast (Zhermack), Elite HD Plus Putty Normal (Zhermack), Silastic J RTV (Dow Corning), HS II (Dow Corning) and P-4 (Silicones, Inc.). Bulk samples of each of these molds were prepared by casting the silicone rubber on different substrates: glass slides, slides coated for analysis in the mid-infrared region, and limestone. The bulk samples were analyzed by mass spectrometry using evolved gas analysis (EGA) to obtain information on the volatility of components within the mold. Then, gas chromatography mass spectrometry (GC-MS) techniques including pyrolysis gas chromatography mass spectrometry (Py-GCMS) were used to clarify the composition of the individual silicone rubbers and verify the solubility of components in the cured molds. The composition of the bulk and surfaces of the silicone rubbers were also compared by attenuated total reflection Fourier transform infrared (ATR-FTIR) microscopy. The residues left behind on the different substrates were studied by FTIR and GC-MS techniques. The study shows that all silicone rubbers investigated leave siloxanes residues to varying extents. Among the tested silicone rubbers President Jet Light Body leaves the least amount of residue. Although non-polar solvents would be suitable to solubilize the residues, the use of a suitable barrier prior to their application on art objects would be recommended, as the masses of polysiloxanes left on the surface may be too high to allow for their complete removal with a solvent or poultices.

Quantitative XRF Methodology for Examination of Cultural Heritage Artifacts on Paper

Lynn Brostoff, Research Chemist, Preservation Research and Testing Division, Library of Congress; Sylvia Albro, Senior Paper Conservator, Library of Congress and The Phillips Collection; and Alice Han; Josefina Maldonado; Jae Anderson; and Michael Glascock

X-ray fluorescence spectroscopy (XRF) is probably the most widely used non-invasive method of analysis for determining elemental composition in cultural heritage artifacts. Elemental composition provides key information for deciphering material identity, as well as treatment history. As commonly applied to paper-based collection items, results are strictly qualitative. Therefore, it is worthwhile to develop quantitative XRF methodology, which may enhance our understanding of the artifact, not only in terms of its material identity, but also its condition.

The difficulty of developing a quantitative XRF method for organic substrates such as paper arises in part from variations in scattering of x-rays in light element matrices and in the lack of appropriate and readily available calibration standards. This paper discusses these issues, and compares and contrasts various

calibration methods developed and tested at the Library of Congress using papers or films doped with minor and trace elements of interest and a Bruker TracerTurbo portable ED-XRF instrument. Different calibration methods have been validated or discounted based on inspection of the raw data and analytical results obtained by inductively coupled plasma-mass spectroscopy (ICP-MS) conducted in collaboration with scientists at the University of Missouri.

Quantitative XRF results from analysis of various artifacts at the Library of Congress will be presented, including: 18th-century historic papers from Fabriano, Italy; text and maps in a 1513 hand-colored edition of Ptolemy's *Geographia*; and various 19th–century American manuscripts. Discussion of the results will focus on the value that quantitative elemental information brings to our understanding of these artifacts, particularly in terms of inherent quality and treatment history. In addition, it will be shown that a quantitative XRF methodology can be an important aid to condition assessment through easy identification of dangerous levels of transition metals, such as from manufacture or potentially after exposure to floods.

Camera Rolling, Speed… and Action: Exhibiting the Conservation of Banners through Film

Leanne Tonkin, Textile Conservator, and Kate Chatfield, Exhibitions Manager, People's History Museum, Manchester, UK

The Textile Conservation Studio based at the People's History Museum in Manchester, United Kingdom has been a centre for the conservation of banners since 1990. Since the opening of the newly extended museum in 2010, a permanent viewing platform, situated within the gallery, has allowed the general public access to the Textile Conservation Studio (TCS). A recent survey undertaken to analyse the effectiveness of the public's access to the TCS has prompted debate among the museum's exhibition and conservation teams. The time taken to conserve a banner can be extensive and vary enormously. According to the survey, this aspect of banner conservation continues to be a phenomenon within the viewers' experience. In response, a film project was initiated to demonstrate some of the skills and time involved in conserving a banner. Ideas began emerging between the exhibition and conservation teams and the film producer:

- Follow the conservation of a banner, from beginning to end, as access for the public to understanding conservation more clearly
- Provide the public with a personal connection by introducing the conservators working on the banners
- Allow the public to understand the function of a conservation studio and the various equipment used during treatments
- Tell an aspect of banner conservation on the museum's website taking the function of the TCS beyond the walls of the museum
- Platform the museum as an institution that provides specialist knowledge on the care and conservation of banners, helping to reinforce a specialist area of textile conservation

In this presentation, we present the collaboration to complete the film project from the viewpoint of both the textile conservator and the exhibitions manager responsible for curating the permanent viewing area of the TCS. Specifically, the aim of this presentation is to present outcomes of filming the conservation of the Amalgamated Stevedores Labour Protection League banner (c. 1918). It is a traditional two-sided, oil painted, silk banner designed by George Tutill. On one side, the banner depicts the names of stevedores (men who loaded and unloaded ships at port) who lost their lives during the First World War effort. The banner proved to be challenging due to later restoration work completed during the 1970s, whereby modern acrylic paints were used to overpaint weak areas on the paint and a synthetic textile restoration tape. The options for treatment became severely limited due to the mixed materials used on the painted surface. The filming of this case study will introduce the overall aims and objectives of the exhibition manager and the challenges faced by the textile conservator to present and ensure appropriate footage was captured for public understanding.

Further outcomes will include the relationship between the film producer and the textile conservator and their collaborative aims of the filming. Trust and total flexibility involving all parties was essential in order to make the project work and to allow for a successful learning process for all involved.

A Cautionary Tale: Mounting Flat Textiles—An Historical Overview

Christine Giuntini, Conservator, Department of the Arts of Africa, Oceania and the Americas, The Metropolitan Museum of Art

Textile conservators routinely think about mounting methodologies as an integral part of many flat-textile conservation treatments. By training and practical experience, textile conservators tend to privilege a rigid mount over other types of stabilizations. By the mid-twentieth century, it was generally recognized that degraded and fragile flat textiles would be better preserved by limiting flexing and handling. By the end of that century, this principal has been widely applied to a wide range of textiles.

Several different types of stitched and press mountings were developed by the staff of the Textile Museum (Washington, DC) in the 1950s and 60s. By their design and materials, they aimed to raise the level of textile mounting in the United States to a higher standard.

The Textile Museum first developed protocols based upon preservation-conservation principles laid out by the newly established International Institute for Conservation. Many of the large museums throughout the United States were influenced by these published protocols and in these collections today, versions of Textile Museum mounts still exist. Perhaps more than any other institution, The Metropolitan Museum of Art (MMA) has mounted hundreds of textiles using these mounting protocols. From the 1970s, textile mounts, were designed at the MMA to be semi-permanent treatment protocols.

As the conservation field in general grew to appreciate the need for the long-term stability of the mounting materials, "new" types of mounts were developed that featured a materials upgrade rather than an improvement on the physical principles behind the mount design. Over time, both the origins and the deductive reasoning behind the creations of these Textile Museum mounts has been forgotten or disregarded, as evidenced by at least one short-lived mount protocol that used a stable, but inappropriate, material for the solid-support backing. Often "new" types of mounts were developed out of the understandable desire to decrease the weight of large mounts. Depending upon the condition of the historical textile, some of these mounts did not adequately support the historic fabric.

A brief overview of textile mounting treatments, as found in the published literature or in museum collections, will be presented along with commentary on their real-time aging properties and the unintended consequences of some of these mounting protocols.

A Conservation "Circuit Rider": An Innovative Approach to Preservation for Dispersed Collections

David Bayne, Furniture Conservator, Peebles Island Resource Center, and Emily Schuetz, Graduate Fellow, Winterthur/University of Delaware Program in Art Conservation

It is challenging to effectively and efficiently care for large collections that are divided among multiple sites spread across a broad geographic region. Conservators must balance the pressing need to treat individual objects, prepare for exhibition or display, and provide preventive care to collections that may be far away from their home laboratory or studio. These tasks can be both time- and labor-intensive, making it difficult to do all of them consistently well. Continuity and consistency are key to successful preservation efforts, and are hard to achieve from a distance. One way to improve the level of preservation for dispersed collections is to designate a traveling preventive conservator. This "circuit rider" would visit the many sites regularly, work with site staff on preventive conservation, implement good practices, and assist with special projects.

The State of New York has 36 historic sites and battlefields that are located across the state. These sites are advised by the Bureau of Historic Sites and their conservation needs are served by the Collections Care Center at the Peebles Island Resource Center, in Waterford, New York. A "circuit riding" conservator could provide consistency to collections care initiatives and bolster the overall level of preservation for the New York State's diverse collections.

Peebles Island furniture conservator David Bayne and conservation intern Emily Schuetz, a student in the Winterthur/University of Delaware Program in Art Conservation, tested the practicality of this approach during June–August 2011. Seven state historic sites were visited. All of the sites visited have mixed collections, encompassing furniture, textiles, paper and photographic materials, decorative arts objects, and ethnographic objects. The tasks completed at each site varied depending upon the needs of the site, but included projects such as preventive conservation audits, assessing light exposure, environmental monitoring, and cleaning storage areas. The sites were receptive to these targeted visits, and found the information gained useful. It was a valuable opportunity to connect with site staff, and explain the process, practice, and significance of preventive conservation. Practical issues, such as the ratio of travel-time to on-site time, and the need for designated time for preparation and follow-up, were assessed and will be shared during this presentation. The successful aspects of this pilot preventive care initiative, including expected outcomes such as the completed projects and unexpected outcomes such as improved site staff morale, will also be discussed.

Conservation Outreach Activities at the Minnesota Historical Society

Sherelyn Ogden, Head of Conservation, Minnesota Historical Society

The Minnesota Historical Society is a private, non-profit educational and cultural institution created in 1849. Its funding, more than $40 million annually, comes from state funds, appropriated biannually, and non-state funds, including earned revenue, gifts, grants, and interest on investments. Since 2001, state funding for the Society's operating budget has decreased by nearly 25%, and approximately 25% of the Society's full-time equivalent staff positions have been eliminated. Each year, the Society is under increasing pressure to find additional sources of funding while preserving as much of the state funding as possible. To accomplish this, the Society has had to promote itself and to advocate for its mission—the preservation of Minnesota's history—more actively than ever before. The conservation program is a valuable part of this effort. By connecting with the legislature, the general public, the press, and allied professionals, the conservation program helps raise awareness of the Society and of the importance of preservation. The ultimate goal is that the Society, in general, and its conservation program, in particular, will be considered an indispensible resource and will survive these challenging financial times.

This presentation will discuss conservation outreach activities at the Minnesota Historical Society. These incorporate education, publication, marketing, fundraising, and legislative advocacy, and they are carried out in various inter-related ways. For example, a conservation page on the Society's website was developed and is enhanced regularly to address questions from the general public. Sample planning documents, such as the Society's long-range preservation plan, emergency preparedness plan, and housekeeping manual are on the site for use by preservation colleagues. A series of podcasts on the site illustrate, for museum professionals and the general public alike, how to store different types of textiles. Staff publications promoting preservation range from books to book marks. Marketing efforts include a brochure, press releases, articles in newspapers and magazines, and radio and television interviews. Hundreds of visitors view the conservation labs annually on behind-the-scenes tours to learn more about preservation. Conservation treatments are carried out on public view at such events as History Matters Day and Civil War Flag Day held in the State Capitol, which attract school children, legislators, and the general public. These activities raise awareness not only of preservation but of the Society as well, and they support its fund raising efforts. Thus conservation outreach at the Society has evolved from a means of providing the public with information they request to also serving as a valuable fundraising and advocacy tool.

Although this presentation will address outreach activities involving all sorts of collections, it will focus on textile-related activities.

The Creation, Implementation, and Safety of Digitally Printed Fabrics in Textile Conservation: Where are We in 2012?

Miriam Murphy, Kress Conservation Fellow, Museum Conservation Institute, and National Museum of African History and Culture, Smithsonian Institution

When preparing an object for exhibition, it is a challenge for textile conservators to make it as visually appealing and understandable as possible if significant elements are severely damaged or missing. In the past, hand painting and screen-printing have been used to replicate printed fabric patterns, and woven patterns have been reproduced by custom weaving cloth. But hand painting and screen-printing require an exacting level of artistic ability, and the surface application of paints and dyes can affect the texture of the fabric. The cost and minimum yardage requirements of custom weaving are not only prohibitive for smaller institutions and conservators in private practice, but also the few remaining domestic mills that provided this service have been closing over the past decade. In addition, these techniques require considerable work hours for the conservator and a long lead-time for the mill.

The purpose of my graduate thesis research was to provide information about the potential applications of digital printing technology for textile conservation by investigating what is and is not possible at this point in time. I believe that digitally printed fabrics will be an increasingly important tool in textile conservation, but to date there have been only a few scholarly articles on the topic, and the most recent were written several years ago. My goal was to augment the foundation established by those conservators by investigating and evaluating the recent developments in digital printing and creating an up-to-date resource guide for the field.

To accomplish this, I identified the companies currently providing digital textile printing services and summarized the general accessibility, cost, and time requirements of these sources for contract work. I also determined what digital printing options could be accomplished in a conservator's own lab. Additionally I contacted several major institutions regarding their conservational experience with digitally printed fabrics. I then evaluated digitally printed fabrics' accuracy of print definition and color replication as well as their range of physical qualities and usefulness for different conservation applications. I compared the outcomes of printing on substrates of different fiber types, the possibility of printing on textured substrates, and whether the weave texture of a textile object could be visually replicated on a fabric substrate of a different weave.

Most importantly, I considered the safety issues for the original object when used to generate the digital print file, and evaluated whether advances in digital photography have made it possible to replicate textiles by using digital files created through photography rather than having to submit the original to scanning. I also researched the safety of the inks, dyes, and coatings currently used for digitally printing textiles with regard to any potential short- or long-term impact they could have on historic objects, as well has how the components of a digitally printed textile may be affected over time by environmental conditions.

I believe that the use of digitally printed fabric is a promising tool for textile conservation and I hope that this research will serve as both a current best practices guide for its use and as a benchmark upon which future investigation can be based.

Dating Silk and Other Innovations in Mass Spectrometry

Mary Ballard, Senior Textiles Conservator, Christine France, Physical Scientist, Caroline Solazzo, Researcher, and Mehdi Moini, Research Scientist, Museum Conservation Institute, Smithsonian Institution

New developments in mass spectrometry provide answers to question about age, fiber source, and fiber identification. Protein hydrolysis to amino acids has been used to measure the racemic composition of amino acids; this measurement charts the age of the protein. This may resolve questions left by the anomalies of C-14 dating (e.g., post-1650 AD). Larger protein sequences can also be used to differentiate species where fiber identification is difficult. Stable isotope mass spectrometry can also provide evidence of location based on the proclivity of plants and animals to absorb different isotopes preferentially. Especially intriguing is the very small size of the sample required for these tests.

The QR Code Quilt: Embedding Textile Conservation Outreach into the Fabric of an Exhibition

Gaby Kienitz, Head Conservator, Mary Jane Teeters-Eichacker, Curator of Social History, and Leslie Lorance, New Media Manager, Indiana State Museum

Creating educational experiences for museum visitors in the context of an exhibition can be a challenge. Extensive text panels are often ignored and video installations can disturb the contemplative hush in a gallery. How do you explain to visitors the complex process of treating, prepping and installing quilts for an exhibition while making it seem like the secret prize in a cereal box instead of a pedantic school lesson? You hide it in plain sight by making a QR code quilt that is part of the exhibition, but also links to a YouTube video when scanned by a smartphone.

The purpose of the video was to highlight the conservation and installation activities at the museum so that visitors might understand how and why these differ from the treatment of textiles in their everyday life. The quilt making tradition is strong in Indiana; there are many quilting groups with numerous contemporary quilt competitions. Many of the visitors who attend our quilt exhibitions have been to quilt exhibitions at county and state fairs or other venues. Quilters typically carry

their quilts in pillowcases and exhibit them using rods in casings. This is significantly different from what occurs at the Indiana State Museum.

The concept of the video was proposed by the textile conservator as part of an ongoing effort by the new media manager to extend the visitor experience through online resources and establish a closer connection to the museum by telling the personal stories of artifacts. In this case, the intention was to tell the personal story of the efforts by conservation and exhibition staff, interns, and volunteers during the preparation and installation of the quilt exhibition *Frugal and Fancy: Quilts of Indiana*.

The idea of the QR code quilt was suggested to the curator and incorporated into the exhibit after the rest of the quilts had been chosen. The museum's new media manager and the exhibition designer worked together to determine the proper code and print it out in various sizes to see which would be most legible as a quilt. Two quilt artists, one to do the piecing and one the quilting, were approached and agreed to create the quilt on a very tight time frame—over the Christmas vacation! The pattern was transferred to graph paper and the tiny squares combined into rectangles and larger squares where possible. The quilt was created using high-contrast Kona cotton fabric and machine quilting to keep the surface flat and make it easily readable.

The QR code quilt became an artifact in the exhibition but also an active and continuing tool to explain behind-the-scenes activities at the museum. Even though the exhibition was de-installed in July 2011, the quilt was accessioned into the collection and the video is archived and linked to the artifact's permanent database record. Visitors can access the database through the available web record and continue to view the quilt and the video.

Raksha—Raising Awarness of Textile Conservation in India

Sarah Glenn, Elizabeth-Anne Haldane, and Susana Hunter, Textile Conservators, and Lynda Hillyer, former Head of Textile Conservation (1989–2006), Victoria and Albert Museum, London

This paper will discuss the recent collaboration between textile conservators from the Victoria and Albert Museum (V&A) and Sutra, a Kolkata-based non-profit organization founded in 2002 by Amrita Mukerji. The purpose of Sutra is to increase awareness of India's textile heritage and to encourage research and conservation of textiles in India. The V&A is renowned for its extensive collection of Indian textiles and it is the development of expertise in the care of these objects that led Amrita Mukerji to approach then Head Textile Conservator Lynda Hillyer to collaborate on a project to raise awarenesss of conservation issues in India.

This collaboration resulted in a conference called *Raksha*, organised by Sutra and held in Kolkata, India, in February 2010. The first seminar day focused on research into natural dyes and the second, presented by V&A and Indian conservators, was on principles of textile conservation. Following these seminar days, delegates had the opportunity to participate in a two-day textile conservation workshop organized and led by V&A conservators (repeated by demand) and also a pest management workshop led by Vinod Daniel. The conservation workshops took the form of a series of lectures followed by practical demonstrations. Under the guidance of the textile conservators, the delegates had the opportunity to practice the techniques discussed. Following demand for more practical based workshops, a second five-day workshop was held in Kolkata in November 2011.

Topics for discussion will include:

- Collaboration with Sutra and Indian based conservators
- The development of the program, evaluation of the first event and planning for the second
- Funding issues
- Success of the *Raksha* conference leading to incorporation of the conservation initiative into the V&A's International Strategy for India, resulting in funding for the second event and for two Indian conservators to complete six-month internships in the V&A Textile Conservation Studio
- Sustainability of the initiative and plans for future projects

Repair of 20th-Century Leavers Lace

Annie-Beth Ellington, Graduate Student, and Dr. Margaret T. Ordoñez, Professor, Department of Textiles, Fashion Merchandising and Design, University of Rhode Island

One lone mill in Rhode Island stands as a reminder of a once prosperous machine-made lace industry in the United States. The machine-made lace industry, primarily leavers lace, had grown in England and France by the second quarter of the 19th century. However, the leavers lace industry in the US did not become established until 1909, after the Tariff Act allowed increased duty-free importation of the machinery from England for 17 months (August 6, 1909 to December 31, 1910), causing southern New England to become the mecca for the leavers lace industry in the US. Curators and conservators should be aware of the possibility of leavers lace fabrics and trims on pre-1850s objects as well as full leavers lace gowns from the 20th century in costume collections. As modifications to equipment occurred, the leavers lace machine became the most complex textile equipment that produced fabrics and trims. The product's intricate structure makes repair of damaged areas a complicated, time-consuming, and tedious task.

This study addresses repairing damage in leavers laces, a topic virtually ignored in literature. "Repair of Twentieth-Century Leavers Lace" details a procedure for repairing this machine-made lace. A microscopic examination of 20th-century leavers laces in garments and yardage from the University of Rhode Island Historic Textile and Costume Collection plus garments found in local vintage clothing stores revealed how yarns in

the manufactured laces interact and facilitated reproducing their movements. Drawings and photocopies of both large- and small-scale laces aided in developing repair techniques that incorporate an adhesive to stabilize broken yarns and stitches to replace missing connections.

This process is very time intensive, and practice is essential, although the time required for an effective repair shortens with experience. Finding suitable yarns for repairs is a major hurdle, but with patience, time, and a steady hand, the mesh and patterns in damaged machine-made lace can be stabilized and repaired.

A Reporter, an Archive, a Costume and its Conservator: Going Viral in the 21st Century

Cara Varnell, Owner, Textile Arts Conservation Studio

There once was a time when an art conservator might be interviewed by the local newspaper about a current project. That story would run for one day and then be relegated to the publication's archives, read again only by the odd researcher. Or a local or national radio program dedicated to the arts might interview a conservator, offering their listeners an opportunity to hear about the condition of a national treasure or the care of public art directly from a person involved in this peculiar profession. Again, the show would air in a given time slot then be stored away, forgotten, deep in the annals of the network. If the normally publicity-shy conservator felt uncomfortable with the results, it made little difference, because the story would be out of the public eye in a relatively short time, leaving the entire experience as nothing more than a resume notation. But no more. Local stories are no longer just local and stories that make it to the national press are available around the world.

In this paper, I share my experiences and what I have learned from two very public conservation projects. Both involved Hollywood costumes, lots of publicity and resulted in a mind-boggling presence on the internet.

In 2010, I was the exhibition textile conservator for a Hollywood costume exhibition in Oklahoma City that drew a considerable amount of local press coverage. I was interviewed like a visiting celebrity and everything I said—the good, the bad and the stupid—found its way into the various reporter's stories. Initially it meant nothing to me, until I Googled my name one day and there they were, all of the articles in all their glory.

In 2011, I began a special project with the Harry Ransom Center at the University of Texas, the conservation of Vivien Leigh's costumes from *Gone With the Wind*. Even before this project began, it had a significant internet presence and I was forewarned it could be a high-profile job. The conservation of these sentimental pieces led to an Associated Press article, broadcast news coverage, and even an NPR story. With the careful guidance from the Public Relations department, I survived several hours of interviews and photography by a wide assortment of reporters. Within a day of the publication of the AP article, newspapers from London to Bombay to my home town had the article online—250 journals within the first week, to be exact. Three months later, the total exceeded 3000—all versions of the initial stories—with the same quotes and the same photos, now all attached online to my name.

What I will share in this presentation are the lessons I took away from both experiences, the differences between each, and my recommendations to other publicity-shy conservators facing a similar virtual fame.

Recovery and Conservation of the Textile Collections at the National Museum of Music

Alina Vázquez de Arazoza. Textile Restorer and Conservator. National Center for Conservation, Restoration and Museology, Havana

The National Museum of Music treasures in its collections, pieces that belonged to outstanding Cuban and foreign individual musicians and bands. This collection is of high heritage value. Among the collection are the costumes used by Cuban singer and *vedette* Rita Montaner, and other musicians, such as Joseíto Fernández, author of the world famous "Guantanamera;" Ignacio Villa (Bola de Nieve); and Perucho Figueredo, author of "The Anthem of Bayamo," currently Cuba's national anthem.

The collection includes some hundred pieces in various materials that belonged to outstanding artists from the second-half of the 19th century and the 20th century. It includes stage costumes and other artifacts, both stage props and personal objects, such as fans, hats, banners, and pennants. Predominantly, the pieces are made of textile, although there is also leather, woven fibers, and feathers. Textile materials typically include silk, cotton, and also synthetic fibers with decorative elements, such as embroideries and other non-textile materials in metals and other synthetic materials. Some of these costumes are handmade and others are industrially made, in some cases one can find the label of the original manufacturer.

For many years, the conservation conditions were extremely inadequate, causing irreversible damage to many of the pieces. In 2007, the museum decided to undertake a project for the recovery and conservation of this collection. The project has been implemented since then. It includes, not only the restoration of the pieces that need treatment, but also plans for the conservation measures inside the collection, packing procedures, and proposals for curatorship and exhibition of the pieces when the museum is reopened.

During the conservation and restoration, the participation of other specialists has been extremely important, as each piece is unique in every sense. Biologists, chemists, restorers specializing in other materials and techniques, conservators, and museum specialists contributed to the analysis of the damage and made decisions regarding the solutions for the treatment of the pieces.

This paper presents our experience recovering and safeguarding this cultural heritage, analyzing previous conditions and the results obtained during and after treatment, as well as the decisions made for the appropriate conservation and future exhibition of the collections.

A Successful Treatment Method for Reducing Dye Bleed on a 19th-Century Sampler

Katherine Sahmel, Textile Conservator in Private Practice, and Laura Mina, Mellon Fellow in Costume and Textiles Conservation, Philadelphia Museum of Art

One common problem that textile conservators confront is dye bleed on historical textiles. The issue may be caused by previous treatments, often undocumented, that have resulted in disfigured patterns. This paper describes the successful treatment of a sampler from 1832 with silk embroidery on a wool ground. The sampler, an important piece in the collection of the Philadelphia Museum of Art, appeared to have been wet cleaned at least 30 years ago. It is currently unsuitable for exhibition because of extensive bleeding of green and pink dyes on the silk embroidery threads onto the un-dyed wool ground.

A series of tests with various commonly used cleaning solutions and solvents failed to reduce the dye bleed, and bleaching methods were deemed too risky for the aged silk and wool. A chelating solution, brought close to neutral pH with triethanolamine (TEA), was found to successfully reduce the dye bleed with no discernable damage to the wool fibers. This solution was delivered with a methyl cellulose poultice to minimize the spread of moisture while maximizing contact time. The embroidery threads were protected from the cleaning solution with applications of cyclododecane on areas adjacent to the applied poultice. This system resulted in a significant reduction of dye bleed on the wool ground while minimally affecting the silk embroidery.

Tiraz Textiles: A Review of Past Treatments in Preparation for the Opening of the New Gallery of Islamic Art at the Detroit Institute of Arts

Howard Sutcliffe, Textile Conservator, Detroit Institute of Arts

In February 2010, the new Gallery of Islamic Art opened at the Detroit Institute of Arts (DIA). The Gallery follows the model of display instituted throughout the rest of the museum, which reopened in 2007 after a six-year rebuilding and reinstallation project. The DIA is among the first of the large civic art museums in the United States to actively engage relatively new ideas about museological theory informed by visitor research and critically engaged organizational practices. In a departure from the traditional chronological and geographical approach to art history, the DIA provides visitors with an innovative experience that focuses as much on the stories and connections behind the art as the art itself.

Reimagining the way in which the Islamic art collection is exhibited has meant revisiting the ways in which it had been conserved and presented in the past. This paper will discuss the rationale behind this new approach, principally using the collection of tiraz textiles from Medieval Egypt as a case study.

The tiraz textiles are from an archaeological environment and are predominantly fragments cut from clothing and burial shrouds. They entered the DIA collection in the 1920s. Records from this time are scant but do indicate that most were adhered to fabric "trays." In the 1980s, the majority underwent treatment for display where they were mechanically removed from the trays and pressure mounted, using what at the time would have been the latest techniques and materials.

This method of display led to these once sacred textiles being viewed on the wall as pictures rather than as clothing or grave goods. Examining the ethics surrounding the exhibition of such materials was an important purpose of the project and retreating the textiles meant that their presentation could be reinterpreted to better connect them to their original context. The collaboration between the conservator and curator and the role that conservation played in the process of re-interpretation and display will be explored.

Conservation Training at the Forbidden City

Antoine Wilmering, Senior Program Officer, the Getty Foundation

In December 2009, The Palace Museum (PM), Beijing, and World Monuments Fund (WMF) established CRAFT, a new and unique conservation training program and facility for fine furniture and historic interiors in the Forbidden City (Palace Museum), Beijing, as part of their collaborative conservation program for the Qianlong Garden (QLG). The garden, located in the northeast section of the Forbidden City, was built as a private, two-acre garden between 1771 and 1776 by the Qianlong emperor. Encompassing four courtyards with elaborate rockeries and 27 pavilions and structures, the garden was largely left dormant after the last emperor left the Forbidden City in 1924. Its buildings have never been open to the public. Known as Conservation Resources for Architectural Interiors/ Furniture, and Training, or CRAFT, the program combines training in traditional Chinese craftsmanship with modern conservation science and philosophical approaches.

CRAFT is structured as an on-the-job training program that focuses on the fine furniture and historic interiors commissioned by the Qianlong emperor, and on long-term preventive conservation strategies through the design and implementation of internal environmental control systems. CRAFT has enrolled 10 trainees for the first two-years of the program that include participants from the disciplines of conservation, conservation science, traditional architecture, and history. The training sessions include side-by-side instruction with master craftsmen for building traditional furniture making and restoration skills, combined with a formal scientific conservation curriculum delivered by international and Chinese conservation professionals. CRAFT is designed as a six- to eight-module training program aimed specifically at the conservation challenges of Qianlong's furniture and interiors. The length of each module varies between three and four months, and each consists of various classes, workshops, and seminars. A new cycle of classes is scheduled to begin every two years. Courses are intended to help craftsmen embrace modern conservation approaches, materials, and techniques in their work.

The Edge in Focus: The Many Stories of an 18th-Century French Frame Treatment

MaryJo Lelyveld, Conservator of Frames and Furniture, Conservation Department, National Gallery of Victoria, Melbourne, Australia

In 2011 the National Gallery ofVictoria (NGV) undertook the treatment of one of the most valuable frames in its collection, a carved and gilded Régence period frame that houses Poussin's *The Crossing of the Red Sea*. Its twin frame, that adorns Poussin's *The Adoration of the Calf* in the National Gallery of London, has been described by frame historian Paul Mitchell as "The most stunning and majestic of all these [late Louis XIV and Regence period] great frames."

Given its prestige within the collection, the "Poussin Project" afforded a unique opportunity to present to a diverse range of audiences across and variety of forums the research, examination, and treatment that was carried out by the NGV Conservation Department. Conservators are traditionally renowned for being an abstruse lot. As such a conscious effort was made use a number of thinking tools to more effectively mediate the experience between the audience and the artefact, most notably the Integral Theory framework.

Similar to the Characterisation Grid developed by Appelbaum that explores the multiple ways in which we engage with the artifact, Integral theory can provide us with a more coherent and comprehensive approach in understanding the breadth of conservation practice from a meta-perspective. Yet, unlike the Characterisation Grid, which takes the artifact as the starting point to map objective "ways of knowing," Integral Theory accepts the subjective experience of the individual as part of the experience.

Integral theory synthesises "ways of knowing" or perspectives into the four quadrants of the inner subjective and outer objective of both the individual and the collective. These can also be conceived of as: personal, physical, social and cultural realities. By identifying and incorporating the qualitative experience of the individual, the conservator becomes much more aware of their own biases and can better anticipate the needs of a given audience. This paper discusses the utility of using thinking tools such as the Integral Theory framework to purposefully engineer and mediate the conservation message as a foundation for more effective communication of the conservation process to a broader range of audiences.

The Establishment of Collaborative Platforms in Protecting and Conserving of the Global Cultural Heritage

Dr. Hany Hanna, Senior Conservator, International Expert in Conservation and Restoration, General Director of Conservation, Helwan, El-Saf and Atfeh Sector, Supreme Council of Antiquities (SCA), and Professor, Higher Institute for Coptic Studies (ICS), Egypt

It is so clear that our global cultural heritage strengthens identities, well-being, and respect for other cultures and societies; it is a powerful tool to engage communities positively and, as such, is a driving force for human development and creativity.

Although we have made tremendous gains in the cultural heritage sector in education, facilities, new technologies, and partnerships, our global cultural heritage is threatened by continuing deterioration and loss resulting from a shortage of trained conservation practitioners, natural and man-made emergencies, and risks.

As it is important to establish new collaborative platforms

to more effectively protect and conserve the global cultural heritage and address global challenges especially by threats and disasters prevention and preventive conservation; the cultural heritage organizations and universities as well as individuals should work together with the other organizations and stakeholders on the national, regional, and global levels within their main roles and responsibilities to:

1. Strengthen the investment in research and educational opportunities, endeavor actively towards the training of human resources, and the pursuit of research necessary for international cooperation on cultural heritage and its protection and conservation, as well as endeavor to ensure the appropriate treatment for researchers and professionals, and the provision of well-equipped education and research facilities.
2. Working in development, networking, exchange and the transfer of knowledge and resources globally, and working on the development of new preservation approaches.
3. Define a comprehensive system of recognition of high-level professional qualifications, validated by the public authority and defined by professional organizations.
4. Encourage responsible stewardship and advance sustainable conservation policies and strategies. They also must obligate to a wide involvement in risk and emergency preparedness, advocacy, response, assessment, recovery, reconstruction and restoration, commit to increased community engagement, and raise public awareness regarding at-risk cultural heritage.
5. Integrate cultural heritage issues and conservation projects with other sectors to provide a lever for social and economic development.

Hello Walls II: Treatment Considerations for Chinoiserie Panels in a 20th-Century Gilded Age Cottage

Jeff Moore, Chief Conservator, Museum Affairs Department, The Preservation Society of Newport County

In 1901, interior decorator Jules Allard of Paris installed four large (83 in. x 120 in.) chinoiserie panels and three smaller overdoors in the Breakfast Room of The Elms, a gilded age cottage designed by Philadelphia architect Horace Trumbauer for coal magnate Edward Berwind. Three of the large panels are 18th-century Chinese export black-and-gold lacquer and the overdoors combine lacquer and japanning. A fourth large panel was commissioned by Allard to fill out the set. Treatment to date will be discussed including the character of the panels, treatment logistics, special fixtures, adhesive rationale, and varnish removal.

Making the Case for Conservation

F. Carey Howlett, Owner, F. Carey Howlett & Associates

Looking at the field of conservation, the attitudes of conservators, and the way we present our work within our institutions and to our clients, it is apparent we place greatest value on our knowledge, our skills, and our ethical sensibilities. These are our tools for developing sound, rational approaches to caring for and treating artifacts. While attention to these aspects of our work helps foster the highest conservation standards, there is no question that a focus on ethics and critical thinking can be intrinsically inward: the standards we set for ourselves may be foreign to all but a few related professionals. In and of themselves, they do not necessarily help us reach new clients or appeal to a broader audience, much less educate the public about our work.

Last year's theme for the AIC Annual Meeting was inadvertently telling. The title—*Ethos, Logos, Pathos*—was drawn from Aristotle's *Art of Rhetoric*, which described the three primary means for persuasion or, in a more current sense, the three elements for successful outreach. The subtitle— "Ethical Principles and Critical Thinking in Conservation"—referred only to the first two legs of Aristotle's system. Pathos, the third leg of Rhetoric, was curiously omitted.

Aristotle defined Pathos as a style of rhetoric that targets the emotions, engendering pride, indignation, fear, a promise of well-being, goodwill, pity or any other emotion intended to make a listener receptive to a particular argument. Emotional appeals, common in the realms of fundraising, marketing and politics, may not seem valid in our day-to-day function as conservators, as such appeals are often viewed as superficial or potentially deceptive. There is no question that most of us are passionate about our work, but if one stops to think about how we generally express that passion, it is nearly always in terms that, to an outside listener, probably seem a bit dry: trotting out our Code of Ethics, proclaiming the years of study and breadth of knowledge necessary to become a conservator, focusing on our fight against the forces of deterioration and emphasizing the role of science in our work. Hardly the Pathos Aristotle had in mind, and possibly a reason conservators are sometimes marginalized as being "too analytical," "too rigid" in our thinking, and "unable to see the forest for the trees."

So how do we develop positive emotionally based messages that increase the appeal of conservation to our current audience and attract a new public? There is no question that art and artifacts can inspire the imagination and foster a beneficial historic consciousness—a unifying emotional connection to the past that draws upon but is far deeper than mere historic knowledge. Objects have the power to sound the "mystic chords of memory" as evoked by Lincoln in his first inaugural address. We need to proclaim conservation as a value-added enterprise, as a field uniquely positioned to help discover, preserve and give voice to the messages inherent in objects, just as we identify, preserve and maintain their physical integrity.

Ultimately, of course, the objects speak for themselves. It is up to us to demonstrate our role in the process of amplifying their messages. To this end, how we present our work is important. When it comes to communicating with our clients and with the public, the pen is mightier than the swab. Although ethical principles and critical thinking are paramount to our day-to-day efforts, the ability to demonstrate the impact of our work upon the emotional reach and the depth of understanding of objects will be paramount to the success of our profession.

Ornamental Opulence: The French Régence Frame in the Metropolitan Museum of Art

Cynthia Moyer, Frame Conservator, Department of Paintings Conservation, Metropolitan Museum of Art

This paper will address the study, treatment and pairing of an 18th-century French Régence period frame (1715–1725) with a Peter Paul Rubens, (Flemish; 1577–1640) painted panel. The panel depicts the mythological subject of *Atalanta and Meleager* in the collection of The Metropolitan Museum of Art (MMA) in New York City.

This frame represents a superb example of an important period in French craftsmanship and design. This paper will include a description of the form and carved ornament which is at once typical and yet particular to the period. The methodology of the joiner and wood carver will be illustrated by including a description of the structure of the substrate of the frame using x-ray imaging. The methodology of the painter/gilder will be illustrated by a description of the materials used in and found on the gilded surface to create the distinctive water gilded effect. These materials will be analyzed using optical microscopy, FTIR and GCMS, and the results will be compared to other examples from the literature.

This paper will present the conservation treatment including consolidation, cleaning and loss compensation and the materials and methods chosen. Of particular note is the cleaning of the gilded surface, both in relation to the frame's condition and to the conserved painting with regard both to their specific visual requirements and also within the greater context of the collection. In addition, the structural requirements of the frame are taken into account in order to mount the panel securely.

Study of this frame also establishes a point of departure to explore the choice of this style and period frame for this Rubens within the greater context of the collection at the museum. As the first designated frame conservator at the MMA it is an opportunity to introduce an historical perspective to framing solutions. The informed decision making of dealers, collectors, donors, and curators is reflected in the Rubens frame and the collection as a whole. The use of other examples of these exquisite French Régence frames, particularly as they are paired with 17th-century Dutch works and 19th-century Impressionists' work, though they are not the same period or origin as the paintings they frame will be explored and addressed.

Photogrammetric Lines Documentation of Traditional Wooden Boats

Jonathan Taggart, Objects Conservator, Taggart Objects Conservation; Fabio Carrera, Associate Professor, Interdisciplinary and Global Studies Division, Worcester Polytechnic Institute; David Cockey, Alyssa Ascere, and Evelin Ansel

Photogrammetry is the use of multiple photographs, from different angles, to create 3D computer models. From these models, along with one accurate measurement, highly accurate measured drawings can be created. Even if these objects no longer exist, more information, such as the details of construction, can be extracted from these photographs.

This project began as an effort to document a collection of 23 at risk Venetian traditional wooden boats belonging to a private association of enthusiasts. Based on the principals of conservation, it has developed into a program of collaboration, advocacy, and outreach which includes students and faculty at Wooster Polytechnic Institute and its Venice Project Center, Arzana (an association for the preservation of traditional Venetian maritime materials, culture, and skills), a pre-conservation student who received a Royce Fellowship from Brown university to work specifically on this project, the Museum Small Craft Association, Center for Wooden Boats, Columbia River Maritime Museum, Penobscot Marine Museum, and others.

A description of the process for creating digital images for photogrammetric documentation will be provided, along with a description of the interpretation of this data to create lines drawings. Time permitting, a discussion of the pros, cons, and associated costs of this type of data capture compared to the use of total-station surveying equipment, laser scanning, point-cloud surface scanning, structured light, and tradition lines taking will be undertaken.

The goals for this project include: outreach to organizations on the edge of the preservation community, advocacy for the understanding and adoption of conservation principals, creation of lines drawings to preserve fundamental characteristics of boats that cannot be saved, and to produce a procedures manual to facilitate the use and development of these techniques by others.

Recent Investigations Into a Mechanical-Chemical Method for Removing Brass Corrosion from Furniture Brass

Delphine Elie-Lefebvre, Fifth Year Student, Furniture Conservation Program, the Institut National du Patrimoine, Paris; Richard Wolbers, Associate Professor, Art Conservation Department, University of Delaware; Elena Torok, Second Year Student, Objects Major, Mark Anderson, Head of Furniture Conservation, and Stephanie Auffret, Associate Furniture Conservator, Conservation Department, Winterthur Museum, Garden and Library

The "strappo" technique for mechanical bonding and detachment of art surfaces, particularly fresco, has been practiced for centuries. The technique has also been used for paint films and clear surface coating removal. Recently tests have been carried out, first, at the Centre de Recherche et de Restauration des Musées de France (C2RMF) during an Institut National du Patrimoine (INP) internship in Paris, and then at the Winterthur/University of Delaware Program in Art Conservation (WUDPAC) to evaluate the efficacy of using animal protein glue on a Japanese tissue matrix for the direct removal of copper alloy corrosion products from furniture brasses in situ. Test coupons and actual brasses were subjected to applications of varied protein glues over a range of pHs, and with different gel times allowed. Considerable success was noted with this in situ method, including ease of application and clearing, and reduced damage to the brass and furniture since disassembly is usually not required. Most remarkable was the evenness in the appearance of the cleaned brasses with respect to the removal of particularly difficult to solubilize copper corrosion products (e.g. sulfides).

To better understand the possible chemical mechanism(s) involved in the corrosion removal process, test mixtures, which included both natural protein and peptide fragments as potential reduction agents, were evaluated on test brass coupons. Specifically, the reduction of Cu+2 to Cu+ in the presence of bicinchoninic acid and various amide-containing moieties was tested, using the so-called "Smith" reaction as a model. The role of pH, and amino acid content was also evaluated.

This paper will present the results of both the mechanical and chemical testing, and suggest some of the practical ramifications for the use of this technique in furniture conservation.

Bookkeeper Deacidification—the Chemistry behind the Process

James Burd, President and CEO, Preservation Technologies, LP

Now in its 20th year of commercial operation, the Bookkeeper Mass Deacidification System is the world's most-used deacidification treatment. This presentation will look at the unique particle-based neutralization chemistry underlying the process. Independent testing has focused on the safety and effectiveness of the Bookkeeper deacidification treatment. Testing protocols use accelerated aging at elevated temperatures to demonstrate the potential life extension of paper. Mr. Burd will summarize these results and then present internal company research into the chemical mechanisms underlying the efficacy of the Bookkeeper treatment. Aging results at lower temperatures and issues of pH and alkaline hydrolysis will be discussed as well. The results support the findings that Bookkeeper is both safe and effective for preserving paper-based materials.

The Bookkeeper mass treatment process is operating at eight locations in six countries on four continents, and Bookkeeper Deacidification Spray products are used by conservators around the world. Millions of books and tens of millions of documents have been preserved by this technology. Initially developed by Koppers Company in the 1980s, the original method was licensed to Preservation Technologies, which further developed and commercialized the process. The company is headquartered in Cranberry Township, Pennsylvania in the United States. It has subsidiary operations located in Washington, DC, the Netherlands, Spain, and Japan as well as licensee operations in Poland and South Africa.

Evaluating Deacidification after 20 Years of Natural Aging

Anna Friedman, Conservator, National Archives and Records Administration (NARA)

The Smithsonian Archives (SIA) Record Unit 92 (RU-92) contains architectural drawings from 1840 onwards depicting Smithsonian Institution buildings and design drawings for buildings never realized. In 1989–1991, some drawings from RU-92 were selected for conservation treatment; a subset was deacidified with a non-aqueous deacidification surface spray. All treated drawings were encapsulated in Mylar. Upon return to SIA, the drawings were stored for 15 years in widely ranging temperature and humidity, followed by 5 years of consistently cool and dry climate control.

This research was conducted in 2010 to study the effectiveness of non-aqueous deacidification after 20 years. The deacidified drawings were measured on the front for surface pH and those readings were compared to pH readings of untreated drawings on similar substrates from similar time periods. The surface pH readings for the treated drawings ranged from pH 4.5 to 9.9 while untreated drawings ranged from pH 4.5–6.5, which is a predictable range for 19th century paper. In addition, drawings documented as having been treated and with a measured acidic pH on the front were measured for pH on the back. In these cases the measurements demonstrated that the drawings had been sprayed (or possibly brushed) with non-aqueous deacidificants on the back only. For example, one of those drawings measured pH 4.8 on the front and pH 8.8 on the back. When this non-aqueous deacidification treatment was performed, popular theory was that the chemistry would equalize through the paper over time.

Based on pH measurements that demonstrated the presence of a base, this research concludes that the deacidification chemistry is persistent, but not migratory. There does not appear to be a substantial qualitative difference in brittleness between the treated drawings and the untreated drawings after 20 years. One observed difference between treated and non treated papers was non-aqueously deacidified papers were far more absorbent than untreated papers. The pH testing was conducted with a drop of de-ionized water on the surface of the paper with a pH electrode to measure the H+ concentration. The water permeated the paper of the treated drawings faster and spread out farther, causing them to take much longer to dry. The drop of water beaded up on the surface of the untreated drawings and would blot dry after testing much faster than the treated drawings.

Because of these findings, collections staff is left with some questions and concerns which inform future decisions about the collection items exposed to non-aqueous deacidification. For instance, do materials treated with non-aqueous deacidification chemistry need different disaster preparedness plans than untreated materials because they wet up faster and dry slower? Is future budgeting for climate controlled storage more appropriate to the materials than non-aqueous deacidification? Would encapsulation with alkaline buffered paper interleaving achieve similar results to only spraying a drawing on the reverse? This small study provides insight into the effects, or lack of effects, that certain treatments performed on paper-based collections 20-plus years ago may have.

Durability, Quality Control, and Ink Corrosion Treatment with the Papersave Swiss Mass De-Acidification Process

Dr. Michael Ramin, Project Manager, Research/Analytics Department, Nitrochemie

Today digitalization is on everyone's lips. However, preservation of the cultural heritage is more than digitalization of the information and scans or photo-graphs of original items. Books and archive materials can tell us the story beyond the written information, about the person who manufactured the book, techniques in production of parchment, paper, cardboard, the organization of human knowledge and even fashion trends can

be found. Unfortunately, many books and archive materials are threatened by acid decay or ink corrosion. To preserve such originals mass de-acidification processes are necessary. After ten years in operation mass de-acidification processes proofed their suitability and efficiency in stopping the acid caused paper decay by the neutralization of the acids and the building-up of an alkaline reserve.

A comparative study showed the effectiveness of the mass de-acidification processes. Treatment quality was quantified according to the quality standards of the Papersave Swiss process. In addition, mechanical measurements were performed as well as studies on the dispersion of magnesium as a function of the paper depth (z-axis). The durability of the treatments was assessed by accelerated ageing. Vast differences were found in the distribution of the magnesium; whereas immersion processes distribute the alkali evenly within the pa-per bulk, it is observed, that dispersion processes attach the alkali more on the paper surface. These inhomogeneities lead to pronounced different mechanical properties after accelerated ageing.

Handling of cultural heritage requires high quality standards. In Central Europe, two different methods are used for quality control. In Switzerland the quality standards of the Swiss National Library and the Swiss Federal Archive are applied. Besides surface pH measurements the Swiss quality standards include the analysis of the alkaline uptake by XRF measurements, the homogeneity of the treatment, and color measurements. All measurements are performed with test books and original materials! Due to ten years on service, a lot of data is avail-able that can demonstrate the effectiveness of mass de-acidification and the high quality that can be reached with mass processes.

The second quality standard is the German recommendation for quality management in preservation. Unfortunately, this standard refrains from measurements on original items. Thus, only process control by use of test books is possible. However, the German recommendation gives standard procedures for a general process control. The kind of paper for this control is exactly defined and also the tensile strength after treatment and accelerated ageing has to be published by each provider of mass deacidification processes.

Magnesium and titanium based mass processes are not only useful for paper de-acidification, but also suited to treat ink corrosion. The advantages were the immobilization of the iron ions, and the absence of mechanical stress, as no swelling occurred during the process. The surface character and the morphological structure of the historical inks have not changed. Rag paper and iron gall ink showed before and after the de-acidification only minimal color change.

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Taking the Measure: Treatment and Testing in Mass Deacidification

Jeanne Drewes, Chief, Binding and Collections Care Division; Program Manager, Mass Deacidification, Preservation Directorate, Library of Congress, *Fenella France, Chief, Preservation of Research and Testing Division, Library of Congress*

The relationship between the preservation of paper and alkaline reserve has been known since the 1930s when Hanson examined a 16th-century book, observed the range of paper quality within the volume, and attributed this to the alkaline reserve. The Library of Congress has been involved in research into mass deacidification treatments since the 1970s, recognizing the challenges associated with efficient treatments. A wide range of chemical compounds and carrier mechanisms were investigated at this time, and over the past 40 years, a continued approach to improving the efficacy of mass deacidification treatments resulted in a pilot program in the 1990s. This paper will outline the improvements, challenges and underlying research that led to treatment process decisions and changes in measurement techniques and particle size. Since the efficiency of deacidification is generally measured by the effect of the treatment in raising the pH to 7.0 or above, the challenges of measuring the pH effectively has been one of the issues in determining how effective the treatment has been. The use of standard techniques is one of the critical factors in assessing the efficacy of these mass treatments, and using comparative measures has long been a challenge for accurately comparing different techniques. More significance should be attributed to the long-term stability of the treatment in maintaining the alkaline reserve, and many production treatments are in existence utilizing different chemicals, dispersion methods and particle size. The capacity to compare over 15 years of samples collected, both original data and re-testing of naturally aged samples provides a unique opportunity to assess the long-term retention of alkaline reserve, and the consequent validation of the treatment.

Wei T'o Paperguard: Comprehensively Deacidifying, Stabilizing, and Strengthening Paper

Richard D. Smith, Owner, Wei T'o Associates

In recent years, Wei T'o has concentrated on developing a one-time, comprehensive mass deacidification process for preserving archive and library collections. Determining how long comprehensive protection will protect is impossible; but the increased protection over alternative choices makes twice longer seem achievable. Besides deacidifying, PaperGuard protects against fungus, insect, and oxidative attacks, rejuvenates weak paper to meet scholarly needs, minimizes damage that disasters will cause, and will partially or fully transform into a disaster recovery system overnight.

PaperGuard's mass treatment operating phases are: (1) Vacuum drying books to 50 mtorr, (2) Immersing books in a liquefied gas solvent-deacidification solution, (3) Removing solution and solvent to deposit agents and alkaline reserve throughout the paper substrate and fibers, (4) Complete solvent recovery and recycling in vacuum and air conditioning type phases, (5) Catalyzing petrochemical gas free-radical monomers into stabilizing cellulose and strengthening paper, and (6) Reconditioning the deacidified, stabilized, strengthened, and sterilized books and documents for reader use.

The liquefied gas solvent-biocide-deacidification agent solutions consist of aluminum, magnesium, titanium, or zinc organo-metallic alkoxides dissolved in flammable or non flammable hydrocarbon liquefied gas solvents plus small quantities of ethanol and dissolved carbon dioxide co-solvents. The flammable and nonflammable solvent choices are pentane and isohexane or HFC-134a, and HFC-225. Catalyzing petrochemical gas monomers into free radicals for reaction with activated cellulose occurs in situ inside books and/or externally in an adjacent chamber. Re-humidification occurs gradually overnight in dedicated air conditioning rooms or more rapidly in moderately high vacuum chambers with water vapor. Processing is speeded through close control of operating and vacuum pressure changes. Mole-sieve dried and filtered (0.1 μ) solution components, agent and solvent molecules, and free radical gases and nano-size particles thoroughly penetrate paper substrates and fiber walls. The process is environmentally green, emits no non permissible contaminates, and deposits only stable, safe residues.

The Public Archives of Canada funded development and start-up (1981) of the original Wei T'o Mass Deacidification System, which was installed directly under the main auditorium of the National Library of Canada in downtown Ottawa. The American Chemical Society and the US National Science Foundation described the Wei T'o system as an advancement in chemistry and technology in their national nightly news TV announcements (1984–5); and NLC and Wei T'o received the 1999 EPA International Award for Protecting the Stratospheric Ozone Layer by eliminating CFC emissions. Approximately 1.3 million books and documents were deacidified before NLC stopped in-house deacidification in 2002. Many more single sheet documents and works of art were deacidified by brushing, dipping, and spraying with Wei T'o solutions or similar alternative products. Four competitors have mass deacidified many more books with closely related nonaqueous organo-metallic systems.

Wei T'o's initial products had many restrictive limitations: too short storage life, slightly too unstable, only deacidified paper, didn't protect against bio or oxidative attacks, strengthen weak paper, or offer deacidification that fully met needs for works of art. PaperGuard addresses those short comings. It stops or alleviates all significant causes of paper deterioration, strengthens weak aged paper, and may become capable of rejuvenating brittle books sufficiently for scholarly reading. PaperGuard can provide pre-selectable deacidification pH values for custom treatment of art colorants and media; and the system can be partially or completely modified overnight into a mass disaster recovery sterilizing and vacuum freeze drying system. Other improvements, never fundable at NLC, in design and operation will: (1) raise solvent recovery to over 99.5 percent, (2) provide fresh, non contaminated treatment solutions, (3) reduce, if not eliminate, visible treatment defects, (4) lower operating costs, and (5) increase operational safety and reliability.

A Comparative Study of Protective Coatings for Marble Sculpture in the Museum Setting

Laura Kubick, Smithsonian Post-Graduate Conservation Fellow, Smithsonian American Art Museum and Jennifer Giaccai, Conservation Scientist, Smithsonian Museum Conservation Institute. Contributors: Helen Ingalls and Hugh Shockey, Objects Conservators, Smithsonian American Art Museum

Marble is porous, prone to staining, and difficult to effectively and safely clean. Smithsonian American Art Museum has documented several occurrences of sculptures having been drawn on and even kissed by visitors, leaving bright lipstick marks on the surfaces of the sculptures, not to mention the grime that builds up from visitor handling. Applying a protective coating to particularly vulnerable marble sculpture in museums could prevent staining from occurring. However, few sources exist in the conservation literature about preventive coatings for indoor marble sculpture, none with a recent publication date.

This paper will present the study of four protective coatings intended for use on marble sculpture displayed in an indoor museum context. The coatings tested include Renaissance microcrystalline wax and a cosmolloid wax-ketone resin mixture, both of which have been used historically. The study also includes materials that have not been traditionally used as a marble coating: methyl cellulose and Avalure AC 315 Acrylic Copolymer. The coatings were applied to polished and unpolished samples of Carrara marble tile. A colorimeter, gloss meter, and Fourier transform infrared spectroscopy (FTIR) were employed to assess the coatings' aesthetic properties, reversibility, and ability to protect marble from red wine, lipstick, and permanent marker. A portion of the samples were also light-aged to determine if aging had any affect on the above properties. The research methodology and results will be presented.

In Their True Colors: Developing New Methods for Recoloring Faded Taxidermy

Elizabeth Nunan, Associate Conservator of Natural Science Collections Conservation, American Museum of Natural History; Judith Levinson, Director of Conservation, Division of Anthropology, American Museum of Natural History; Lisa Elkin, Chief Registrar and Director of Conservation, American Museum of Natural History; Corina Rogge, Andrew W. Mellon Assistant Professor in Conservation Science, Buffalo State College; Julia Sybalsky, Conservation Fellow, American Museum of Natural History; and Becca Pollak, Graduate Student in Art Conservation, Buffalo State College

In 2010–11, the American Museum of Natural History completed an ambitious program of renovation to the habitat dioramas in the Hall of North American Mammals. Created in the 1940s, these historic dioramas were conceived as a means to inspire wonder and appreciation for the natural world, and to educate visitors about the fragile ecosystems threatened by unregulated hunting and development. Having been on permanent display for over 70 years, many of the zoological specimens were faded to such an extent that they no longer reflected the natural appearance of living animals, compromising the overall impact and effect of the dioramas.

The renovation arose from a re-lamping project in which the original diorama lighting systems were to be replaced with modern fixtures. Previous testing in the Akeley Hall of African Mammals had demonstrated that it was possible to reduce heat and light levels inside the dioramas—while maintaining the desired visual appearance—through the use of energy-efficient lamps. As the re-lamping project would extend the exhibit life of the materials within the dioramas, the renovation team became motivated to explore complimentary methods of restoring naturalistic color to specimens that had become faded and desiccated in the original harsh lighting environment.

Several important factors limited the materials that could be considered for recoloring. As the lighting design in each diorama reflects a specific location, season, and time of day, the light levels often greatly exceed that of a typical art exhibition space. Additionally, the larger taxidermy mounts are permanently embedded into the wire-and-plaster matrix of the diorama floors and cannot be removed for treatment. Finally, the dioramas themselves are not air-tight and accumulate dust over time. For the treatment to be successful, any materials to be used must be lightfast, allow for application in-situ with no rinsing of excess colorant, and must affect minimal alteration to the physical characteristics of the hairs so that specimens can be cleaned and groomed again in the future.

Preliminary investigation into contemporary taxidermy restoration practices revealed few references to materials used in recoloring faded mounts. Some institutions have reported success with commercial hair dyes, while acrylic paints are commonly used among taxidermists. The AMNH conservation team ultimately chose to focus its investigation on Wildlife Colors acrylic paint (commercially available acrylic paints used by taxidermists), Orasol dyes (solvent-soluble metal-complex dyes with uses in conservation treatments), and XSL micronized pigments (water-dispersible pigments)

Conservators worked closely with the project taxidermist and partnered with outside conservation scientists to assess these materials against the necessary criteria. Physical attributes of colored hair samples were examined using SEM, and the lightfastness of dyes and pigments was tested using microfadeometry and accelerated aging. The investigation has contributed to a better understanding of aging properties in these materials, and has led to innovative recoloring methods that prioritize long-term stability and retreatability.

The Qero Project: Conservation and Science Collaboration Over Time

Emily Kaplan, Objects Conservator, Smithsonian National Museum of the American Indian; Ellen Howe, Conservator, Sherman Fairchild Center for Objects Conservation, Metropolitan Museum of Art; Ellen Pearlstein, Associate Professor, Conservation of Archaeological and Ethnographic Materials, UCLA; and Judith Levinson, Director of Conservation, Division of Anthropology, American Museum of Natural History

Since 1995, conservators from the American Museum of Natural History, the Brooklyn Museum of Art, the Metropolitan Museum of Art, and the Smithsonian National Museum of the American Indian have been carrying out a technical study of wood Andean ritual drinking vessels called qeros. Made and used in pairs, qeros have been produced in the Andes for millennia and provide an important link between the Andean past and present, they are still used today in traditional communities. This study focuses on qeros from the Inca and colonial periods decorated with a complex polychrome technique featuring abstract and pictorial designs and rich narrative scenes. Several chronologies based on style and iconography have been proposed, but prior to this project little work had been undertaken to identify the materials of manufacture and none had attempted to relate the results to chronology. This study aims to reconstruct context through an examination of persistence and change in materials, sources and technology. Collaboration between the project conservators and conservation scientists began with instrumental analysis of more than 300 samples at two museum labs, and now includes five conservation scientists at several facilities using numerous analytical methods. This paper discusses the results of the study and the collaborative process of a 16-year-long project involving multiple institutions, conservators, scientists and analytical techniques.

Some Unusual, Hidden, Surprising, or Forgotten Sources of (Possible) Sulfur Contamination in Museums and Historic Structures

Paul L. Benson, Associate Conservator of Objects, Nelson-Atkins Museum of Art

The common environmental sources of sulfur pollution in museums are well documented. Less well known are sources of sulfur that may have been incorporated into the artworks themselves or built into the fabric of the building. Molten sulfur has been used as an adhesive since antiquity and has continued to be used in the construction trades into the 1940s. Historically, sulfur has had a multitude of uses including as a strengthening material in hollowware jewelry, as an adhesive in ceramic repairs, and as a cement to anchor iron rods in stone. More recently, it has been used as a joining material for cast iron pipes in the plumbing trade, as a binder for graphite in pencils, as an electrical insulator, and as decorative inlays in furniture and musical instruments. Several examples of these unusual occurrences will be highlighted and a case history of a building construction related corrosion of ancient bronzes while on display will be presented along with remedial measures taken to prevent future contamination of these objects.

The Use of Agar as a Solvent Gel in Objects Conservation

Cindy Lee Scott, Third-Year Graduate Student, UCLA/Getty Conservation of Archaeological and Ethnographic Materials

Agar, or agarose, is a rigid polysaccharide gel that has found use in conservation cleaning treatments of three-dimensional porous objects in recent years, most notably by Italian conservation scientists Anzani (et al.) and Cremonesi. Used strictly as an aqueous gel, it has shown great promise as a poulticing material on porous plaster substrates for the removal of surface particulate matter and water soluble soiling.

This paper builds upon the work of Anzani et al., published in 2010, by using agar as a support material for multiple solvents as well as other aqueous cleaning solutions. Specifically, its uses for the cleaning of and adhesive reversal on three-dimensional objects are explored.

Though my original study focused on the removal of shellac from previously treated ceramics, the use of agar in this context has shown significant promise as a material for other uses in conservation. Agar is readily soluble in hot water, stable in both alkaline and acidic conditions, and (prior to adding other materials) is a safe, non-toxic, and eco-friendly material. The dispersion rate of agar can be tailored to the treatment by adjusting the concentration of the solution. In addition, agar acts as a molecular sponge; the gel, when used with solvents, is both a poulticing material as well as a solvent gel, solubilizing the impurities, drawing them away from the surface and holding those materials within its gel matrix. Current post-treatment analysis, including FTIR spectroscopy, shows great promise with respect to clearance.

www.cheminart.org: Chemistry in Art Scholars—A Virtual and Real Community

Patricia Hill, Professor of Chemistry, Millersville University; Anthony Lagalante, Professor of Chemistry, Villanova University; Nancy Odegaard, Professor of Anthropology, University of Arizona; Deberah Simon, Whitman College; and Erich Uffelman, Professor of Chemistry, Washington and Lee University

Chemistry in Art Scholars (CiA) is a faculty learning community focused on integrating science and art for the undergraduate science classroom. The community is a direct outcome of an annual series of workshops sponsored by the Chemistry Collaborations, Workshops and Communities of

Scholars program (cCWCS) and funded through grants from the National Science Foundation (NSF).

Although the CiA community is primarily designed for college-level science and art instructors to network and collaborate, and to access, share and develop curricular materials, it also promotes collaborations with and seeks opportunities for educators and others with interests in science and art to access and share resources and develop collaborative projects.

The newly developed CiA website (www.cia.org) provides free access to numerous resources, and once registered and signed in to the site, allows one to add resources, contribute to an on-line CiA Journal, participate in forum discussions, and find potential local collaborators for projects of mutual interest.

A CiA Leadership Council provides oversight of the virtual web community and also helps organize workshops, symposia, outreach and other community activities both nationally and regionally.

This presentation will demonstrate the CiA website and provide examples of ongoing collaborations between college science faculty, conservation scientists, and museum personnel fostered by the Chemistry in Art Scholars Community and cCWCS.

19th-Century Photography in a Modern Chemistry Lab

Dr. Corina Rogge, Andrew W. Mellon Assistant Professor in Conservation Science, Art Conservation Department, Buffalo State College; and Dr. Anikó Bezur, Andrew W. Mellon Research Scientist for The Museum of Fine Arts, Houston and The Menil Collection, The Museum of Fine Arts, Houston

College courses focusing on the interface of chemistry and art are increasingly popular at many academic institutions where they are seen as an attractive way to engage non-science majors. However, there are very few courses that seek to engage science majors in the art world. An upper-level course was recently developed for chemistry and chemical engineering majors that introduced students to the chemistry of 19th-century photographic processes and conservation science. Working with Toshiaki Koseki, the photograph conservator at the Museum of Fine Arts, Houston, the students learned to identify 19th century processes. They then made cyanotypes, van Dyke brown prints, gum bichromate prints, and salted paper prints using negative/positive processes or cliché-verre. They were also introduced to toning methods, which included sepia, selenium, and gold toning. The students learned the importance of non-destructive analytical techniques and successfully used x-ray fluorescence spectroscopy (XRF) to identify toning or stabilizing materials on salted paper prints and van Dyke brown prints. Attenuated total reflectance Fourier transform infrared spectroscopy (ATR-FT-IR) was used to identify organic binders on a selection of study collection prints. Students also had an opportunity to look at the size and constituents of the image particles using scanning electron microscopy coupled with energy dispersive x-ray spectroscopy (SEM-EDX). The course was well received by the students, none of whom had ever had the opportunity to make photographic images or interact with the museum and conservation worlds. In addition they had never used many of the instruments before and so learned new analytical techniques as well. The authors have published the salted paper print exercise in the Journal of Chemical Education ("An investigation into the creation, stability and X-ray fluorescence analysis of early photographic processes: an upper-level undergraduate laboratory," Web published July 8, 2011). This poster presents a holistic overview of this advanced course to the conservation field and discusses the full scope of experiments covered.

Ancient Binders for Roman Concrete: The Accuracy of the Scientific Descriptions in Vitruvius' *De Architectura*

Keven A. Wohlgemuth, Conservation Intern, Preservation Department, Arizona State Museum

In the third quarter of the first century BC, the Roman architect Vitruvius wrote his famous treatise on architecture, *De Architectura*. This exhaustive description of Roman architectural techniques has influenced architects from Vitruvius' day to the present and his architectural precepts defined the construction of Rome. Vitruvius, however, was not only an architect and author but indeed a scientist, dedicating space in his treatise to the scientific explanation of many of the mater ials he recommended for construction. These explanations covered everything from physical and chemical descriptions of different types of stone and timber to scientific observations of the Romans' renowned hydraulic concrete. This study demonstrates that Vitruvius' scientific descriptions were indeed accurate and that he was able to make not only physical descriptions but also extrapolate chemical and thermodynamic observations well before the development of the modern technology that we rely on to understand these scientific properties. In order to extract Vitruvius' meaning, I compare Vitruvius' text with recent, published technical studies and descriptions of the physical and chemical properties of ancient Roman concrete and I illustrate what properties, known to us now after technical analyses, were already explained by Vitruvius. This is important because it can assist scholars and conservators in understanding the diffusion of the use of particular construction materials within the early Roman Empire.

The language that Vitruvius used was based on a first century BC understanding of the physical world and as such, does not conform to modern scientific descriptions of physical properties. Therefore, it is necessary not simply to translate, but to interpret Vitruvius' observations of the physical and chemical properties of the building materials as he understood them. I focus on Book 2, in particular chapters 4, 5, and 6, which are those dealing with sand, lime, and pozzolana ash, respectively, as binders for Roman concrete. These chapters are ideal for this case study because they demonstrate the extent of Vitruvius' knowledge of the scientific properties of Roman concrete which has survived exceptionally well and has been the subject of several recent technical, scientific examinations.

Vitruvius seemed to have a very intuitive scientific mind and with *De Architectura* he established scientific bases for the architectural materials used in ancient Rome. His insight described the construction practices of some of the most revered and enduring architectural monuments in the ancient world. Understanding his knowledge and his meaning will allow contemporary scholars to recognize the breadth of scientific awareness in the ancient world and allow conservators to better understand the properties of the materials that they endeavor to preserve.

Applications of metigoMAP Software: from Large Scale Mapping to Micro-Scale Measurements

Julia Burdajewicz, Post-graduate Intern, Painting Conservation, National Gallery of Art

Since 2001, a German company, Fokus, has been offering metigoMAP as the first computer graphic program created specifically for art conservators. It was created as an alternative to advanced graphic software available on the market such as CAD and GIS programs that are being harnessed for specific aims of graphic conservation documentation. MetigoMAP enables two-dimensional digital mapping of various phenomena and provides convenient tools for creating, managing, laying out and publishing documentation projects. MetigoMAP debuted as software for documenting large-scale projects and objects—such as architecture, wall paintings, and mosaic floors. The author of this abstract has been testing metigoMAP for three years now, trying to find and to asses other possible applications of this software in the field of conservation and restoration of art.

One of the very important features of metigoMAP is the possibility of making precise measurements and quantity calculations. In the case of large-scale projects, such functions can help to evaluate scope, time, and cost of conservation. However, when applied to small objects or in micro-scale, it can provide very precise data that would be difficult, if not impossible, to acquire with the use of traditional methods. One of the examples of such micro-scale mapping carried out in search of information would be tracing and measuring various layers and components visible in cross-sections of samples taken from a work of art. MetigoMAP provides tools that would allow the user to easily and quickly get quantitative information about the structure of a sample, including thickness of the layers, sizes of particles of the components, etc. Another use could be for tracing and analyzing dimensional features of incisions, punch-work marks or other distinctive features of an artwork, useful for a comparative study in search of an authorship or an origin.

This poster will present and discuss these and other possible applications of metigoMAP.

Beyond Book Repair: Expanding the Role of Conservation at the Yale University Library

Christine McCarthy, Chief Conservator, Preservation Department, Special Collections, Yale University Library, Yale University

Academic research libraries continue to respond to rapid and expansive changes brought about by advances in computing and information technologies. Much has been written about these revolutionary changes and the ways in which libraries must reinvent or retool services and staffing models to continue to meet user expectations and access needs. These trends and changes influence the ways in which traditional analog collections are viewed. Again, much has been discussed and published about the interplay of analog and digital collections as well as the tensions sometimes created between the mandates to preserve collections and to digitize collections. In the midst of this ongoing transformation or revolution in research libraries, Yale University Library's Conservation Services took advantage of a renewed campus focus on materials culture to market its expertise more directly in the service of learning and teaching.

The typical treatments carried out by library conservators on rare materials were and remain very familiar to our librarians and collection curators. What is less clearly understood is the full breadth of the knowledge that supports those treatments, and the possibilities for leveraging that knowledge in the use of the collections for teaching. Through a series of outreach projects and collaborations with curators, faculty, and other conservators on campus, Yale University Library's Conservation Services, using its expertise in the areas of book history, materials and techniques, and scientific testing, has reintroduced itself to the campus and community as a partner in promoting teaching and enhancing learning through the study of objects, in addition to preserving collections for future generations of students and scholars.

Characterization of Traditional Japanese Colorants in Woodblock Printing using Multispectral Imaging: A Case Study

Gwenanne Edwards, Paper Conservation Fellow, Conservation Division, Library of Congress; Cyntia Karnes; and Lynn Brostoff

As many traditional Japanese colorants are dramatically altered by moisture, solvents, alkalinity, and light, a method is proposed to characterize their use in ukiyo-e prints. Characterization of these colorants may guide conservators making decisions for the exhibition, storage, and treatment of Japanese prints. Distinguishing colorants may also aid in the identification of the artist or time period in which the print was created. An 18th-century pillar print by Torii Kiyonaga is featured as a case study for the characterization of traditional Japanese colorants through imaging comparison of their spectral responses. The spectral responses of known samples are compared to those of the colorants in the Kiyonaga print in several imaging modes, including visible, infrared, false color infrared, ultraviolet reflectance, false color ultraviolet, and ultraviolet fluorescence. As possible, colorants are also imaged with a digital camera and appropriate filtration, a system more readily available to practicing conservators, to duplicate the results of multispectral imaging. Several colorants are characterized by comparison of the spectral responses. X-ray fluorescence and Raman spectroscopy are used to confirm the accuracy of preliminary colorant identifications. The influences of distinguishing the colorants on specific treatment decisions are described. In addition, the spectral responses of the blackened red lead in the print are compared before and after selective reversion treatment.

Community Conservation in the Andes: Possibilities and Learning

Boris Marquez, Manocomunidad Municipal Rio Yanamayo, Peru (LACS)

We believe that the foundation of conservation is inclusion. Many times in our region, we can relate it directly to the economic benefits that communities will experience, and more rarely, a long-term benefit may also occur. We suggest that there is not only a mandate for inclusion, but we also look back to the immediate historical memory. We look to the knowledge about the materials that have contributed to the technological evolution of construction, such as traditional architectural technologies based on pre-Hispanic techniques.

The cultural landscape of the Yanamayo River region of Peru is influenced by monumental archaeological structures as well as colonial and republican structures. When considered within the context of extent traditional Andean architecture, the interrelatedness is obvious, forming an approach to interpretation. The ancient technical knowledge of how to use space, materials, and plant fibers creates a useful amalgam for direct conservation intervention. Coupling this knowledge with our empirical understanding of the environmental impact on wood, mud, and textile fibers, provides an interesting means of recovery enabling the adoption of effective, directly applied intervention for Andean monuments.

The task of preserving the Yanamayo trail and hanging bridge brought to light certain questions. Would the project result in not only an increase in accessibility and tourism but also, would it be possible to develop conservation in the Andes? Despite social problems, is it possible to convince communities of the necessity to preserve cultural patrimony?

The approach to restoring and maintaining the historic bridge was developed with the participation of the people of Qesua Chaka (Cuzco). Through community participation in 2006, it was possible to develop the necessary technology to restore the bridge bindings using maguey. Maguey is a plant fiber that, through heating and cooling cycles, loses surface cohesion, requiring the people of the Yanamayo River region to develop ingenious methods for imparting durability to the bindings. The people of this region have also been developing intervention methods for the protection of the rock bridge supports and the pathways. For this reason the project is now on the list developed by the Peruvian State for inclusion as part of the Inca Trail on the UNESCO World Heritage List.

A Comparison of Microfading Test System Configurations at The Menil Collection

Maria Greene; Dr. Anikó Bezur, Andrew W. Mellon Research Scientist for The Museum of Fine Arts, Houston and The Menil Collection, The Museum of Fine Arts, Houston; and Jan Burandt

The Oriel Fading Test System (Newport) is a multi-component instrument designed for the in-situ, accelerated assessment of the lightfastness of colorants. User-based modifications of the light-delivery components of the system have included the use of achromatic lenses in focusing beam probes and the use of fiber optic reflectance probes. Compact xenon-arc light sources, operated without a light intensity control box, have also been explored in order to increase portability. The proliferation of "customized" Oriel Fading Test Systems prompted Druzik and Pesme to explore variability in the classification of light sensitive materials with respect to Blue Wool Standards (BWS) using combinations of different light sources and light delivery methods. Various designs offered comparable results for fugitive and relatively stable colorants.

In 2010 the Menil Collection acquired an Oriel Fading Test System, an additional compact xenon-arc illumination source (Apex), and fiber optic reflectance probes with 100 and 200 μm fiber diameters. Inspired by Druzik and Pesme's work, an inhouse comparison of system configurations was conducted to explore variations in colorant classification with respect to BWS and to assess the reproducibility of experimental setups in a museum environment. Testing of BWS one through three and seven Winsor & Newton gouache color paint-outs on paper was completed using eight system configurations, which varied in spectral power distribution, luminous flux, illuminated spot area (illuminance range: 3–5.5 million lux), and sampling geometry (0°/0° and 0°/45° with respect to surface normal). Light-induced color change was also measured using four system configurations on nine colors on a lithographic print by artist Michael Heizer.

With only a few exceptions, the classification of samples relative to the color change rate of BWS was consistent using all microfading system configurations tested. However, delta E values versus exposure dose graphs suggest deviations from the reciprocity principle, also observed by Hoyo-Meléndez and Mecklenburg. This highlights the need for further testing at lower exposure doses. Usability and reproducibility issues also arose during testing. While the fiber optic reflectance probes allowed faster setup, it was more difficult to test items with surface texture, including BWS, due to the proximity of probe tips to sample surface. The 0°/0° geometry of the probes also posed problems during the testing of glossy surfaces since spectrometer acquisition parameters are optimized using a diffuse reflectance standard. The relatively large spot diameter produced by the focusing beam probe, on the other hand, made it challenging to test fine lines without including information from adjacent areas.

Connect or Disconnect: A "Musselled" Moore Replica Becomes a Conservation Dilemma

Nancy Binnie, Senior Conservation Scientist, Treatment and Collections, Fine Arts, and Furniture Department, Canadian Conservation Institute, Ontario

Infestation Piece (*Musselled Moore*) created by artist Simon Starling was shown as part of a solo exhibition at The Power Plant Contemporary Art Gallery in Toronto from March to May 2008. The cast iron, zebra mussel-covered sculpture is a replica of Henry Moore's *Warrior with a Shield*, a 1954 bronze in the collection of the Art Gallery of Ontario. Prior to exhibition, the sculpture was submerged in the fresh water of Toronto Harbour, Lake Ontario, in order to allow the surface to corrode and become colonized by algae and other freshwater biofouling organisms such as zebra mussels. Upon retrieval from the lake, the sculpture was air-dried to allow desiccation of the adhering (desirable) biofouling. Conservators identified two main risks to the Power Plant Gallery visitors and facilities prior to the opening of the exhibition—emission of a disagreeable odor from the desiccated mussels and algae and the attraction of insect pests which might pose a hazard to the museums general collection. Other long-term issues related to stability of the corroded steel surface, retention of the shells, and appearance of the shells was brought to the artist's attention. Prior to exhibition, consolidants were applied under direction of the artist to encourage the retention of the mussel shells on the surface. During exhibition the sculpture continued to shed both shells and corrosion dust within the display hall, while a mildly disagreeable odor was also noted due to the rotted biomass retained in the thousands of mollusk shells on the sculpture surface. Upon the exhibition's closing, the sculpture was transferred to the Art Gallery of Ontario and placed on display until it was identified as the source of a persistent pest infestation.

This paper will discuss the "connect" and "disconnect" dilemmas resulting from a modern contemporary art piece during its creation and display for a sculpture where it has been the artist's intent to retain all mussel shells on the surface. While conservators were consulted prior to exhibition for advice on potential odor and stabilization treatments to improve the longevity of the sculpture as displayed when first exhibited, they later had to implement a conservation treatment to re-adhere mussel shells, stabilize rust, and remediate pest infestations. The sculpture has always been displayed in an open air gallery and not a sealed display case, and air circulation and architectural features of the building have allowed the attracted pests to spread within the building. While a clear "connect" has been possible with the artist to improve the longevity of the sculpture, an unfortunate "disconnect" exists as the sculpture is the source of an inherent risk to the general museum collection.

Conservation Documentation Practices in Academic Research Libraries: Documentation at Risk?

Laura McCann

In the spring of 2011, a survey was distributed to conservation professionals working in academic research libraries in order to gather data about conservation documentation practices. The data collected indicate that the vast majority of the respondents are in compliance with the minimal accepted standard stated in the AIC *Guidelines for Practice*. However, the majority of the respondents were not in compliance with the recommended practice for the preservation of conservation documentation as described in the commentary to the AIC *Guidelines for Practice*. In particular the data suggest that conservation documentation is rarely deposited in the institutional archives of academic research libraries for permanent retention.

The American Research Libraries (ARL) preservation statistics were used to identify academic research libraries with established preservation and conservation programs. A list of names and email addresses of 69 conservation professionals working in 42 academic ARL member libraries was assembled using library websites and reference services. The survey aimed to record basic institutional and demographic data, as well as information about individual conservation documentation practices.

After testing, the survey was distributed directly via email using web-based survey software. A total of 37 respondents completed the entire survey, and 30 of those agreed to participate in a follow-up questionnaire. Survey and questionnaire results confirm that the respondents produce and retain conservation documentation in both analog and electronic formats. It was reported that conservation documentation was produced consistently for special collections materials.

The poster will present the data collected, the corresponding AIC *Guidelines for Practice*, and the results of data analysis. In order to promote the preservation of conservation documentation and improve compliance with AIC *Guidelines for Practice*, a workflow describing the process of depositing conservation documentation into academic library institutional archives will be provided.

Conservation in the Spotlight: Maintaining Public Access to the Staffordshire Hoard While Delivering a Conservation Program

Ellen Promise, Winterthur/University of Delaware Program in Conservation, Class of 2012; and Deborah Cane, Dip. Cons., MA, ACR, Staffordshire Hoard Conservation Manager, Birmingham Museum & Art Gallery, Birmingham, UK

In 2009, one of the most important caches of Anglo-Saxon artifacts ever unearthed was discovered by a metal detector enthusiast in a farmer's field. The Staffordshire Hoard, as it is now known, comprises at least 1,700 fragments and objects of gold, silver and precious stones. The objects are most mostly martial in nature, including sword pommels, hilt collars, and possible helmet components. Although most have been damaged and distorted, seemingly torn from their original mounts, they exhibit the finest artistry and craftsmanship. Further information about these artifacts is gradually emerging through a process of conservation, analysis, and research.

Conservation is carried out by a core team of three conservators, who undertake the principle documentation, treatment, and storage of the objects, prioritizing those that have been slated for future exhibitions and loans. Collaboration has been central to the continued success of this project. This includes work with other conservators at institutions both locally and abroad. Conservation scientists, researchers, jewelry makers, and professionals from a variety of related fields have also contributed their time and expertise. The project is also committed to education, taking on a number of student placements for durations from two weeks to two months.

Due to its magnitude and historic significance, the Staffordshire Hoard has drawn continual and enthusiastic public interest. This began as soon as the find was announced. In a deviation from the typical protocol, the objects were put on display at the Birmingham Museum and Art Galleries prior to their acquisition. Members of the public were allowed to see their cultural heritage immediately, and they played a critical role in raising the 3.3 million pounds necessary for the Birmingham Museum and the Stoke-on-Trent Potteries Museum to jointly acquire the artifacts. Since this time, continued efforts have been made to keep the public updated on this project, with monthly tours, filmed and written blogs, and ample news coverage.

This symbiotic relationship with the public has yielded noticeable results for the Hoard project. Through strategic partnerships with organizations such as the National Geographic Society, the Staffordshire Hoard has elevated its profile. Visitorship to exhibitions of select conserved objects has been outstanding and individuals, trusts, businesses, and other sectors have been willing to support the project financially. Conservation work has been funded for a guaranteed two years. Needed equipment, such as a suite of microscopes, has been acquired.

This poster will outline the development of the conservation project and discuss how continually updating the public has reinforced the idea that the hoard artifacts are shared cultural heritage. With this sense of ownership comes a shared responsibility for their preservation, which includes fundraising for conservation and a dedicated exhibition space.

Conservation of Archaeological Sites in Atacama Desert: The Geoglyphs of Chug Chug

Francisca Gili Hanisch, Conservator, Specialty Archaeology, Archaeological Laboratory of the National Centre of Conservation and Restoration (CNCR)

Geoglyphs are a cultural manifestation that is present in only a few parts of the world including the United States, Peru, England, and Chile. In Chile, there is a wide concentration of them in the northern regions of Atacama and Tarapaca. A complex system of interchange was developed in this zone in the pre-Hispanic period using caravans that connected coastal, dessert, and highland regions. Different connection roads were established between important zones and one of the most symbolic icons associated with these trails are geoglyphs. Chug Chug is a geoglyph site related to a caravan road that connected two important oases in the Atacama Desert--Quillagua and Calama. Four hills contain numerous icons representing different symbolic references for caravans traveling in these arid zones in ancient times.

Initiatives carried out in the 1970s attempted to spread the word of this heritage zone and promote it as a tourist attraction. A small visitor center was built and administrated by the town hall of María Elena, a small town known for nitre mining. These days, this center is an uncontrolled touristic spot because of its distance from the town and lack of financial sources to sustain visits and control. The Chilean National Fund for Scientific and Technological Development known as Fondecyt funded a research project in 2009 entitled "Mobility Strategies in Pre-Inca trails connecting the central zone of Loa River and coast of the Atacama region (number 1090762)." In the frame of this project a conservation assessment was carried out. This assessment developed a process to characterize the principal agents and effects of alteration that this site presents, with the aim of generating an integral conservation plan for preserving Chug Chug for future generations. This poster will present this case to share both the method and the recovered information.

Creative Endeavors and Expressive Ideas: Emerging Conservators Engaging through Outreach and Public Scholarship

Submitted by the Emerging Conservation Professionals Network

Emerging conservators must not only master the science and craft of their field, but also learn to communicate their professional experiences in ways that promote and advocate conservation. The Emerging Conservation Professionals Network (ECPN) will highlight such creative endeavors and ideas by showcasing success stories in outreach and new media that are being applied by emerging conservators. This poster will illustrate examples of outreach projects that use traditional and new media, how those projects communicate the importance of conservation effectively with different audiences, and how the projects seek to make audiences feel more involved in the conservation of their cultural heritage. The presentation of this material will be designed to promote new ideas for engaging with the public in positive and creative ways. It will also provide successful examples for conservation professionals seeking innovative approaches to connecting with new audiences and engaging them with conservation related projects. ECPN solicited and compiled these case studies from submissions by our members, participants in our mentor program, and through our graduate program liaisons.

One case study is the project to design a conservation-themed exhibition *Conserving Antiquity*, at the Kelsey Museum of Archaeology at the University of Michigan, which is scheduled to open this coming fall. In preparation for this exhibit recent Winterthur/University of Delaware graduate and Samuel H. Kress Conservation Fellow Carrie Roberts is working with conservators Suzanne Davis and Claudia Chemello to develop innovative ways to engage visitors, including podcasts of "conservation stories" recorded by established conservators. Other case studies will feature approaches to raising public awareness, such as through conservation treatments that are performed in the public eye. The importance of social media to emerging conservators will be highlighted as a tool for public outreach, career networking, marketing, and engaging with allied professionals.

The poster will provide links to an additional online section designed to advise readers on creative and innovative approaches to outreach, including how to write a blog post, how to write a press release for a conservation project, and how to organize an informal professional gathering by using social media. This "how-to" section will be featured in companion posts on Conservators Converse, the AIC blog (www.conservators-converse.org).

Crossing the Boundaries Between Conservation Disciplines in the Treatment of Asian Thangkas

Camille Myers Breeze, Director, Museum Textile Services; and Kate Smith, Conservator in Private Practice

Asian thangkas are devotional paintings originally framed by layers of textiles and frequently rolled on their own wooden dowels for storage and transport. Ceremonial use and handling take a toll on each of the thangka's components, as do subsequent generations of conservation interventions. Over time, many thangka paintings are separated from their deteriorating fabric mounts and are never again interpreted as complete, three-dimensional artifacts. Stabilization of thangkas is often undertaken either by thangka conservation specialists or by teams of conservators whose specialties lie in paintings or textiles conservation, but not both. The latter case can result in treatments in which either the painting or the textiles suffer for want of understanding or guidance in appropriate, low-intervention stabilization options. When Museum Textile Services (MTS) began the conservation of a group of 18 Tibetan thangkas belonging to the Mead Art Museum in 2009, we set out to cross the boundaries between textile and paintings conservation. Kate Smith, paintings conservator in private practice, was brought on to the project as a consultant. Kate was essential in the development of a comprehensive treatment approach for the collection and in providing treatment assistance and training for the MTS staff. A thorough reading of existing literature on thangka conservation identified scholars in the field, several of whom were contacted during the project. The sheer size of the Mead Art Museum's collection was a challenge but the fragility of many of the textiles and paintings, as well as the presence of many sacred inscriptions and hand prints on the back of the paintings, were of primary concern. By the time the two-year project was complete, a series of treatment procedures had been created that address common challenges including when and how to clean and stabilize extremely fragile silk, replace a missing thangka mount with appropriate modern fabric; remove and remount a painting; and how and when to consolidate, line, and inpaint a thangka painting. We concluded that many of the skills required to conserve thangka paintings and their fabric mounts overlap and inform each other. With a better understanding across the conservation disciplines, composite artifacts such as Asian thangkas will receive more informed, appropriate, and reversible treatments. These 18 thangkas were exhibited in two groups over the course of the 2011–2012 academic year in *Picturing Enlightenment: Thangka in the Mead Art Museum at Amherst College*.

The Cycle is Broken: From Smuggling to Public Policies for the Conservation of Cultural Heritage

Ana Carolina Delgado Vieira, Museum of Archaeology and Ethnology—University of São Paulo (MAE/USP) (LACS)

In 2005, the Brazilian Court confiscated a significant collection of historically and culturally valuable archaeological and ethnographic objects from the Cultural Banco Santos Institute. Suspicion of illegal activity led the government to transfer the collection to the University of São Paulo and other public institutions for safekeeping. The seized objects are of great cultural value and, therefore, must be subject to ongoing maintenance and care with government access to promote research and the dissemination of information.

This emergency safeguard has helped prevent the continuation of an illicit market. The defense of this unique cultural heritage represented a real challenge in a scenario of scarce public resources and limited possibilities. Protection efforts are ongoing and urgent; examination, documentation, and communication of these new acquisitions help break the cycle of illegal trade. They are now more protected from international trafficking because policies have been developed for the conservation of collections. Adding these objects to a museum collection makes them available for scientific research, which is the main mission of these institutions today.

The collection, currently housed under judicial custody at the Archaeology and Ethnology Museum (University of São Paulo), is composed of about 3,800 objects. This large collection can be divided into four major segments: Brazilian archaeology, Mediterranean and Middle Eastern archaeology, Andean archaeology and ethnology, and Brazilian ethnology. Each area requires specific safeguards. To accomplish this great task force, all the technical and institutional efforts were mobilized to ensure that an operational chain of actions was initiated in anticipation of these objects entering the collection. From that moment, a series of curatorial work was done to organize, document, package, and make this collection available for both research activities and for the dissemination of information.

The value of cultural and scientific collection of the defunct Cultural Banco Santos Institute is unquestionable. Its custody, even in temporary state, represents new opportunities for the university to record information about material culture and provide an important addition to existing university museum collections. University researchers have already begun their investigation of the collection. The preservation in a university space enables a rich debate and an important contribution to research and scientific studies by motivating students and teachers.

This new sphere of action is only possible now that the collection has arrived at the University of São Paulo. It breaks the cycle of trafficking in cultural heritage and opens up a new and unprecedented perspective to this collection.

Designed by Sekka, printed by Unsôdô: A Study of Pigments in Japanese Woodblock Prints from the Dawn of the 20th Century

Nicole Garcia; Dr. Anikó Bezur, Andrew W. Mellon Research Scientist for The Museum of Fine Arts, Houston and The Menil Collection, The Museum of Fine Arts, Houston; and Tina Tan

Kamisaka Sekka (1866–1942), foremost among Japanese "designers" of the early 20th century, was a prolific creator working in numerous media, including painting, lacquer, textile, ceramic, and printed books. Venerated as a legitimate successor of the Rimpa tradition later in his career, Sekka demonstrated the stylistic transition from his early Shijō school training of lyrical realism to the decorative Rimpa style in a series of polychrome woodblock prints published monthly by Unsôdô (Kyoto) from February of 1899 to June of 1900. A total of 54 prints were later complied and bound into three volumes titled *Chigusa* (A Thousand Grasses), likely between 1900 and 1905.

A complete three-volume set of *Chigusa* entered the collection of Museum of Fine Arts, Houston (MFAH) in the fall of 2010. Metallic colors are used in many prints to achieve lavish visual effects. While the prints are in good overall condition, some discoloration of paper and metallic surfaces has occurred on areas of the prints that are in direct contact with areas of metallic pigments on facing pages. Although publications on techniques and materials related to traditional Japanese woodblock prints (ukiyo-e) are available to the English speaking audience, technical studies on post-Edo Era (1603–1868) woodblock prints are scarce.

This poster presents the early results of the examination and analysis of pigments used in the bound and unbound versions of the woodblock prints in the *Chigusa* series from the collection of the MFAH. Pigments were analyzed using the non-destructive techniques of optical microscopy, digital infrared reflectography, and x-ray fluorescence spectroscopy (XRF). Visible light microscopy was essential to establishing the application sequence of various colors, thereby aiding the interpretation of elemental analysis results obtained using XRF. Elemental analysis revealed the use of chrome yellow and unusual metallic powders in addition to inorganic pigments identified in published studies of late 19th-century ukiyo-e prints. Differences were noted in the choice of pigments used in executing bound and unbound versions of the same prints.

Desiré Charnay's Panoramic View of Mexico City

Diana Lorena Díaz-Cañas, and Maria Estíbaliz Guzman Solano, Adjunct Professors, National School for Conservation, Mexico (ENCRyM) (LACS)

Désiré Charnay, a well-known travel photographer and archaeologist, left an important legacy in Mexico—photographic documentation of different cities and archaeological sites from his first trip to Mexico between 1857 and 1861. His work includes many examples of historic photographic techniques such as salted paper prints and albumen prints. One of his most beautiful and impressive works is a panoramic view of downtown Mexico City, circa 1858. This highly detailed image is composed of five photographs contact-printed from five collodion glass plate negatives. The photograph was a gift to Manuel Orozco y Berra, one of Charnay's closest friends in Mexico.

In 2009, the post-graduate course in the conservation of photographs at the National School for Conservation in Mexico City began studying this photograph. Extensive research was carried out over the course of three years. Teachers and students have been collaborating with scientists, historians, art historians, photographers, curators, and conservators from different countries in order to identify the photographic technique and to propose and execute a suitable course of treatment for this masterpiece.

Development of a Pigmented Wax/Resin Fill Formulation for the Conservation of Paintings

Christine McIntyre, Art Conservation Program, Buffalo State College; and James Hamm

Pigmented wax/resin is a useful material for creating textured fills in oil paintings, whether subtle canvas weave patterns or large impasto shapes. Paintings and objects conservators have used various wax mixtures for years, but the lack of widespread use in conservation suggests dissatisfaction with the material or its handling characteristics. The most useful pigmented wax/resin mixtures balance malleability when warmed with a paint-like hardness when at room temperature. Some conservators may be reluctant to use wax/resin fills because of concerns over excessive softness (making the fills prone to deformation) or solubility in inpainting solvents. The Buffalo State College Art Conservation Program utilizes a pigmented wax/resin fill formula that contains beeswax, microcrystalline wax, resin, and pigments. Employing a high ratio of pigments, along with the proper proportion of the two waxes and a resin, yields a relatively hard and less soluble fill that can be fabricated and applied with ease.

The resin component that gives more hardness and tack to the fill, Laropal K-80, is no longer manufactured. The goal of this study was to modify the fill formula by using a replacement resin, in the prospect of achieving equal or better results, while more fully understanding the advantages and limitations of pigmented wax/resin fills in general. A questionnaire was emailed to conservators to gain insight into what wax fill materials and practices were being used elsewhere. In addition, a collection of aged pigmented wax fill samples, prepared 20 years ago by Frederick Wallace, was evaluated.

When new formulations were prepared and tested, each resin had different dissolution times and none of the mixtures were entirely homogenous. Working properties of each pigmented wax/resin mixture were evaluated by filling losses in a donated painting. Alternative waxes were considered and hardness tests were conducted using a handmade apparatus with weights and a micro-needle probe. In addition, application techniques and procedures that minimize clean up were explored. For longer-term study, a mock-up board with channels was constructed and filled with five pigmented wax/resin formulas, including the original. An identical board was made with additions of varnishes and inpainting media that tested compatibility. To test adhesion, cross-cut tests were performed on the original formula as well as a formula that used Laropal A-81. It was concluded that Laropal A-81 could replace Laropal K-80 in the original formula and achieve a similar, if not improved, pigmented wax/resin fill. The aim of this paper is to more fully inform conservators about wax/resin fills and to share the benefits of this particular formulation, which shows promising results.

Digital Infilling on Japanese Prints

Melody Chen, Independent Conservator

Among its vast holdings, the Museum of Fine Arts, Boston, is renown for its collection of Japanese prints. Over the past several years, many of these prints were documented with high resolution digital photographs as part of the Japanese Print Access and Documentation Project (JPADP), a project aimed at increasing the accessibility of the Japanese print collection to a broad audience. These photographs were invaluable to the treatment of a Chobunsai Eishi pentaptych, *The Hyogo Pleasure Boat and Others on the Sumida River Under Ryogoku Bridge*, of which there are two impressions in the collection. The impression that was in better condition was photographed for the JPADP, while the other impression required treatment to repair insect and handling damage. This Eishi pentaptych was treated using methods that are typical for a Japanese print treatment, which included surface cleaning, hinge and backing removal, infilling, and inpainting.

For infilling many of the small losses, a traditional method was used. A Japanese paper with an appropriate thickness and texture was selected and then toned with watercolor to replicate the original support. However, because several of the larger losses were located in areas with complex design elements, the decision was made to insert digital reproductions to fill these areas instead of inpainting or toning by hand. Working closely with the Photography Department at the Museum of Fine Arts,

the digital copies of the JPADP-photographed Eishi pentaptych were printed on a variety of papers, including a Japanese paper of similar thickness and tone as the treated Eishi pentaptych. However, because the papers were not designed for digital printing, the resulting prints were fuzzy and unclear. Next, an Asian-style Hahnemuehle paper designed specifically for digital printing was used. This paper was manufactured to replicate the physical appearance (chain and laid lines, and surface texture) of traditional, handmade Japanese papers. Because of its digitally prepared coated surface, the resulting prints were much more clear and sharp in comparison to the above-mentioned prints on traditional Japanese papers. The digital reproductions were then color corrected and size-adjusted using Adobe Photoshop. After these adjustments, the digital reproductions matched both the texture and tone of the Eishi prints. After filling the complex losses with inserts made from the digital reproductions, the pentaptych appeared visually cohesive. The digital fills are detectable from the recto when closely inspected, and they are easily identified when viewed from the verso. The digital reproductions are not sensitive to moisture and they pass the Oddy test.

This treatment shows that with a high resolution digital photograph, a digitally-printed insert does not require a paper of matching tone or texture, as is necessary when creating a traditional fill. These paper characteristics can be reproduced using image-manipulation programs such as Adobe Photoshop and specially designed digital printing papers. As advances in printing papers and printing technology are made, the ease of using digital reproductions may advance this method as a more widespread and convenient technique in cases where traditional methods falter.

An Easy Protocol for the Determination of the Botanical Origin of Natural Resins from *Bursera* that Joins the Use of Infrared Spectroscopy and X-Ray Diffraction

Delia Paola Lucero Gomez, Carole Mathe, and Cathy Vieillescazes, Laboratory of Chemistry Applied to Restoration of Artistic and Archeological Patrimony, University of Avignon, France; Lauro Bucio, Physics Institute, UNAM, Mexico; and Irma Belio, Biomaterials laboratory, Autonomous Sinaloa University, Mexico

Natural products are known to be complex mixtures of organic molecules. These organic materials may be identified by different analytical methods. However, certain spectroscopic techniques are advantageous, as they do not require the destruction of the sample. *Bursera* species are the source of oleoresins that have been used in different fields and cultures. In the pacific coast of Mexico, this botanic genre numbers more than 80 species. These resins are highly valuable because of their chemical composition. Oleanane-, ursane-, lupane- and hopane-like molecules have been documented to enter in good proportion in these materials. Their use in traditional medicine has been recorded as early as the 16th century.

Additionally, these resins have been often used in the artistic field as binders for paintings and in the composition of different kinds of varnishes. In the Mexican context, their use as adhesive materials in archeological Aztec pieces such as turquoise mosaics, ceremonial knives, and raw material for the decoration of figurines has been established, and recognized muralists such as Diego Rivera, Jose Clemente Orozco and David Alfaro Siqueiros included *Bursera* resins in the formulations of their paints.

In this context, non-destructive techniques such as XRD (X-ray diffraction) and IRTF (Inverse Fourier transformed Infrared) are invaluable for the professionals that are in charge of the conservation and the restoration of cultural objects, as it is generally difficult to identify such substances only by physical characteristics and olfactive observations. Moreover, processes of deterioration often make the interpretation of observations carried out on archaeological materials difficult. Such sample analysis presents a great interest for the scientist toward the understanding of the techniques employed in the fabrication of the piece.

Often analytical techniques are difficult to access for conservation professionals. Thus a simplified, fast approach for the botanical identification of these materials by means of FTIR and XRD is presented here, aiming to be useful as a first approach to these techniques for non-chemist professionals.

Educating To Preserve

Janet Díaz Navarro, Directora del Programa de Conservación Patrimonial y Servicios Bibliotecarios, Milenis Curbelo, Oficial de Programa de Conservación Patrimonial y Servicios Bibliotecarios, Antonio Núñez Jiménez Foundation of Nature and Humanity (FANJ), Cuba

Cultural heritage is part our memories and historic inheritance; therefore, we have the responsibility of preserving it for future generations. The deterioration of museum and archive collections constitutes a partial loss of history and the peoples' identity. This loss is incalculable in the social development of every community.

Among the causes that affect the conservation of this heritage is the lack of knowledge of the real value by the community and the people who work with it. This is why the first mission for the conservation community is to increase the awareness about these valuable objects, the place of cultural heritage in peoples' history, and the loss of cultural identity due to damage of this heritage.

To make this a reality, it is important to create an adequate strategy to encourage people to see museums as integral parts of the community and that it is important to care and preserve. It is essential to bring the community to understand that museums are not just entertainment; they are part of everyday life, and they can help us to understand present-day problems and occurrences since they recollect the history of which we are all a part. Museums help to preserve our knowledge and experiences from generation to generation, and that is why the conservator has to help people understand that everyone has a responsibility to preserve.

The Antonio Núñez Jiménez Foundation of Nature and Humanity (FANJ) has developed a program of activities in order to educate and prepare the institution's staff and the community in the conservation and preservation of their heritage. This way every citizen will consider this task as a necessity for his entertainment and well-being. This program was designed in order to reach different groups base on these demands. It includes talks, guided tours of the museum, films and documentary viewings, learning games and other activities.

We present our experience of how to use cultural heritage to support educational programs and raise awareness in children and youth about the great value in, and needs of, preserving collections. The collection "Amazon to the Caribbean by Canoe" is an example of how cultural materials help children and young people develop their intellectual capacity and at the same time it guarantees that the inheritance of our ancestors is passed to future generations.

Education and Public Outreach at the Heritage Resources Conservation Laboratory: A Case Study at California State University, Chico

Georgia Fox, Associate Professor, Department of Anthropology, Calfornia State University, Chico

Within the spirit of this year's theme of public outreach, this poster will explore the various outreach efforts, goals, and objectives of the Heritage Resources Conservation Laboratory (HRCL) in the Department of Anthropology at California State University, Chico. In view of the existing "curation crisis," the stabilization, care, and conservation of cultural heritage is especially critical as future employment opportunities may be directed toward addressing this current state of affairs. In this regard, the Heritage Resources Conservation Laboratory has been training students in archaeological and ethnographic conservation and collections care since the lab's inception in 2003. The lab serves as a teaching venue for the course "Conservation of Archaeological and Ethnographic Resources (ANTH 465)," as well as the setting for further training in related contract activity, including a recent project conducted for the National Oceanographic and Atmospheric Administration's Maritime Heritage Program. Other related efforts include collaborations with members of the Northern California tribal community, local high school students, and local museums. Public awareness of HRCL's efforts has also been disseminated in the press and media. Further public awareness of the importance of conservation has been integrated in museum exhibitions in the Valene L. Smith Museum of Anthropology on the Chico campus. In summary, this poster advocates for educational curricula to include courses in conservation and collections care in higher education and to encourage dialogue in this direction. Such exposure and training can only help better prepare students by fully grounding them in the theoretical and methodological approaches to the care and preservation of cultural heritage, especially within art, anthropology, history, and archaeology departments nationwide. By providing educational opportunities for students, they can develop heightened awareness of the AIC and the conservation community, as well as the necessary knowledge, skills, and training, which can better prepare them for matriculating into graduate programs in conservation and toward employment in cultural heritage management. The Heritage Resources Conservation Laboratory is working toward these goals and instilling the importance of conservation for both present and future generations.

Evaluation of Ultraviolet Filtration by Glazing and Display Case Materials

Morgan Simms Adams, Graduate Student, Conservation Center, Institute of Fine Arts, New York University; Steven Weintraub, Founder, Art Preservation Services; and Hannelore Roemich, Conservation Center, Institute of Fine Arts, New York University

The UV-filtration properties of over 20 samples of currently available glazing and display case materials are evaluated and the results of two methods for measuring UV filtration are compared. Materials examined include samples of glass, acrylic, polycarbonate, and polystyrene sheets in various thicknesses; materials advertised as "UV-filtering" or "museum grade" are compared to similar materials not designated "UV-filtering." Additionally, seven "naturally aged" glazing samples are examined to study the impact of long-term exposure under museum conditions on UV-filtration properties. The two methods for the evaluation of UV filtration are with a UV-Visible spectrophotometer and with an Elsec 764 UV meter. In both cases, a tungsten-halogen source with an enhanced UV output was used as the light source. The spectrophotometer was used in transmission mode, where the unfiltered light source was normalized at 100% transmission. This provided information on wavelength-specific filtration properties of the tested materials. The Elsec 764 UV meter provided output as microwatts UV/lumen. The samples examined are rated as excellent, moderate, and poor UV filters; comparison of the different types of glazing and display case materials reveals that effective UV filtration is available in polycarbonate, acrylic, and glass sheets. Finally, the preliminary investigation of the naturally aged samples reveals that UV filtration is not significantly diminished by gallery light exposure for the evaluated samples.

The Female Conservator as Protagonist in Modern Mystery Novels: A Demographic and Psychographic Profile

Cassie E. Johnson, Student

This paper details the findings of a pilot study on female conservators as protagonists in modern mystery novels. Such a topic complements this conference's theme of "Advocacy and Outreach," including its proposed session on "Conservation and the media: press, literature (including journalists)." This paper is pertinent to outreach and advocacy for the profession in that 53% of self-defined avid readers read fiction; furthermore, mystery and suspense is the most popular fictional genre at 19% (*Publisher's Weekly*). Conservation is not an entirely well-known profession, so for many readers the conservators of these mystery novels may contribute to a first and lasting impression of the field.

A convenience sample of the following books was used: *Waking Raphael* by Leslie Forbes (1993), *Death and Restoration* by Iain Pears (1996), *False Images* (2000) by Catherine Dunbar, and *Angels of the Flood* by Joanna Lance (2004). Using grounded theory, this study established a tentative demographic and psychographic profile of female conservators in those works.

The findings have twofold significance: They provide a provisional personality profile of female conservators as portrayed in popular fiction; in essence, the findings begin to define the fictional persona—accurate or not—of our profession. Additionally, the author ultimately will use the findings to develop a coding sheet to expand this profile to future studies with a larger sampling.

From Communication to Conservation: The Use of Photography as an Assessment Method in the National Museums of Chile

Josefina López, CONSERVARTS (private practice)

In 2011, the Department of Communications at the Directorate of Libraries, Archives, and Museums of Chile (DIBAM) commissioned a project for the creation of a comprehensive image bank of their institutions. The objective was to document the work they do, and the services they provide, highlighting their positive public roles. The photographs would be used for marketing and development purposes, both on the internet and in printed materials. The project was assigned to CONSERVARTS and undertaken by Josefina López, conservator and photographer, and assistant Constanza García. The first stage of the project addressed the DIBAM museums in and around Santiago, including the Museo Nacional de Bellas Artes, the Museo Histórico Nacional, the Archivo Nacional, the Biblioteca Nacional, the Biblioteca de Santiago, the Museo de Artes Decorativas, the Museo Histórico Dominico, the Museo Benjamín Vicuña Mackenna, and the Museo de la Educación Gabriela Mistral.

Although the main goal of this assignment was to promote the museums, it was also an opportunity to perform a thorough survey of the institutions' facilities and work practices. The process of photographing the institutions allowed observations to be recorded from various points of view: as a visitor, as an artist, and as a conservator. This process of creating a photography-based survey was the foundation for simple but important recommendations for improvements.

Each survey began with a preliminary museum visit, involving test shoots and staff interviews. Visitor behavior and the condition of the facilities were observed. Minor modifications that improved the appearance of public spaces were made. Then the full photographic survey was performed. To augment the photography component of the project, reports were also written in order to summarize the data collected, and also to support the images. The reports include suggested improvements, with particular regard to the conservation labs, storage areas, exhibition practices, and visitor services. Throughout the process it was easy to identify common problems with exhibition installation, interpretation, and visitor services. Issues with internal operations and personnel were more difficult to identify, often only brought to light through staff interviews.

In the interest of providing constructive, nonjudgmental feedback, a general trend was observed. It is often difficult, especially with constricting budgets, for staff members who have worked at an institution for long periods of time to identify problems and develop creative solutions. Herein lies the value of involving professionals from outside the institution. Similar to arranging a perfect photo shoot, simple improvements can improve an institution, making for a more positive visitor and work experience. Keeping in mind that small changes make big differences, our museums will continue to improve, remaining alive and attractive, as everyone wants them to be.

The Historic Museum of La Cruz, Chile: Significance and Challenges

Claudia Fabiola Farias Abarca, Head Curator, Historic Museum of La Cruz, Chile

The Historic Museum of La Cruz, Chile, located in La Cruz County, deep in the Aconcagua river valley of Quillota, was opened in 2002. This area's indigenous people were first invaded by the Incas of Cuzco in the 14th century, and then 200 years later, by the Spaniards. The need to protect and preserve the cultural legacy of the Quillota area led to the development of the Historic Museum of La Cruz. The collecting activities of the museum are governed by the rules set forth by the National Monuments and Museums Administration, and in so doing; the museum has rescued archaeological materials from several sites in La Cruz Valley. Included in its collections are "litico" objects, bio-anthropologic and ceramic pieces dated to 150 BCE.

Initial studies of some of the ceramics found in this region

resulted in challenges to previously held theories about the migration of the Incas into Chile. The Incas not only continued south but they also established a community in the valley and nearby coastal areas at La Cruz. When the Incas expanded their territory south, their culture melded with the indigenous people resulting in a unique style of pottery.

The mission of the Historic Museum of La Cruz is to illustrate the presence of indigenous cultures living in this area using 19th- and 20th-century archival materials and photographs, which are also of historical value. In order to achieve this institutional objective, which includes future historic research, it will be necessary to generate economic support. Outreach activities that gain the attention of donors, volunteers, and local youth may help to obtain this goal. This collection has enormous patrimonial value. For the museum staff and the community at large, it poses great challenges in terms of research, preservation, and promotion.

How the Excavation Techniques of the 18th, 19th, and 20th Centuries Determined the Fate of Opus Vermiculatum Mosaics at Pompeii

Kevin A. Wohlgemuth, Conservation Intern, Preservation Department, Arizona State Museum

Between 1759 and 1931, with the discovery and early excavations of the veritable "city-museum" of Pompeii, 37 opus vermiculatum mosaics were unearthed. During that time, nine directors of excavation imposed their own ideologies and methodologies on the excavation and preservation of these mosaics. This paper discusses how the decisions made by the early directors affected the physical and contextual states of preservation of the opus vermiculatum mosaics. The majority of these mosaics were discovered before the 20th century when the standard practice at Pompeii was to remove artifacts deemed historically or artistically significant for display at what would become the National Archaeological Museum of Naples. Because of this, many of the mosaics were preserved from the damage that is visible in the deteriorative state of some of the mosaics left in situ. The removal of these mosaics, however, stripped them of their contextual significance which is essential for understanding art in its architectural setting. It is only when both the artifacts and the context are preserved that a comprehensive understanding of the site is achieved. Therefore, ascertaining the motivations of the directors allows us to see how the balance between preservation of the object and preservation of context is manifested.

This study makes use of both contemporary, published examinations of Pompeian mosaics and mosaic conservation as well as historical documents, including excavation reports and correspondence between the directors of excavation and various officials within the Italian government and at Naples' National Archaeological Museum. By using both historical documentation as well as more recent research, I analyze trends in the way that the opus vermiculatum mosaics were treated based upon the time period in which they were discovered.

The opus vermiculatum mosaics provide an excellent case study because their exceptional construction and use of minute tesserae to achieve incredible detail made them valued archaeological discoveries deemed worthy of preservation by the directing archaeologists. The 37 mosaics comprise a small percentage of all mosaic pavements at Pompeii, yet they are the most represented mosaic type on display in the National Museum because of their superior artistic qualities.

The techniques of excavation for these mosaics were ultimately the choice of each individual director, but factors such as state of preservation and political pressure influenced their decisions. Conservation and preservation methodologies had not fully been developed when the opus vermiculatum mosaics were discovered at Pompeii, therefore, the excavation techniques of the 18th, 19th, and early 20th centuries played the most pivotal role in their preservation. Although the traditional methodologies that were deemed appropriate for the protection of mosaics during these times are not effective in the face of new, devastating elements such as pollution and mass tourism, through an understanding of their development at Pompeii it is possible to understand the decisions made by the archaeologists concerning these mosaics, how they affected the state of preservation of the mosaics, and how these mosaics might possibly be saved for future study.

The Introduction of a Multidisciplinary Approach in Contemporary Art Restoration in Chile: The Successful Case of Restoring the Work of Jose Ventunelli

Javiera Carola Gutiérrez Ibañez, Licenciada en Arte con Mención en Restauración, Pontificia Universidad Católica de Chile ; and Carolina Cox Mujica, Licanciada en Historia, Pontificia Universidad Católica de Chile, Master en Historia y Gestión de Patrimonio Cultura, Universidad de los Andes, Chile (LACS)

José Venturelli (1924–1988) was a Chilean painter that became internationally known for his mural painting, acrylic painting, and engraving. His work and technique was widely influenced by his long permanence in Latin America, Europe, and China, and is always anchored in the life of ordinary people, the social injustices of the industrial society and oppression. His awards include the gold medal at the Leipzig International Painting Exhibition in 1959, the issuance of his painting *Little Girl* in the form of stamps in the Democratic Republic of Germany in 1968, and a foundation name after him in Switzerland and Chile.

In March of 2011, Venturelli's foundation requested the help of the Chilean National Centre for Conservation and Restoration (CNCR) for the restoration of a group of pieces, mostly acrylics on canvas, that were showing an advanced level of deterioration.

The team in charge of the project faced two key challenges: First, the lack of previous experience of conservation and restoration of contemporary art in the country. Second, it was the presence of deterioration due to microorganisms. Both challenges pushed the team to look for a more innovative and integrated approach based in three areas: historical, visual, and scientific. The objective of the historical area was to reconstruct the social, historical, and political context of the work, to establish a first set of hypothesis around materials, techniques and iconography used by the artist, and to discover the artist's original conceptualization of each of the pieces. In the area of visual documentation, the use of techniques like macro photography, ultraviolet fluorescence and infrared transmitography/reflectography, allowed the team to observe preliminary drawings, pentimenti, grids, strokes or strata, as well as revealing the changes which broke the aesthetic reading of the works. Finally, in the analysis lab, the experts performed stratigraphical analysis and materials analysis using Raman and Fourier Transform Infrared Spectroscopy (FTIR), which complemented the study of techniques and materials used by the painter. At the same time, they identified the microorganism responsible for the deterioration of the artwork. The information that came from the lab was a key contribution in the decision-making process of the project.

This project demonstrates the techniques and materials used by Venturelli, leaving a tangible record of the information that was only in the minds of the people he met. At the same time, it is a breakthrough in the conservation area, given the new technical scenario that led to the study of new materials and processes barely used in restoration in Chile. This multidisciplinary approach led us to obtain successful results in the study and preservation of contemporary art. This has created new points of view about one of the most important artists in our country and has contributed to the dissemination of his work. For these reasons, this project represents a great contribution in all areas involved, especially the conservation of contemporary art.

Library and Archives Conservation Education Needs: Results of a Study of Current Practitioners

Jennifer Teper, Conservation Department, University of Illinois at Urbana-Champaign; and Laura Bedford, Assistant Book Conservator, Book Conservation Department, Northeast Document Conservation Center (NEDCC)

Upon the dissolution of the University of Texas at Austin's Book and Paper Conservation Training Program, numerous discussions took place simultaneously amongst practicing library and archives conservators concerning the future of professional education in their field. With the recent funding by the Andrew W. Mellon Foundation of pilot book conservation training modules at three of the established art conservation programs in the United States (University of Delaware, New York University, and Buffalo State College), the authors sought to gather information on the various training components practicing book and paper conservators felt were relevant to a successful career in library and archival settings. In examining the variety of training avenues, current practitioners travelled to gain their expertise and knowledge, the authors hope to identify the most valuable educational and experiential aspects so they might be prioritized in the evolving future of conservation training.

The authors designed a combination multiple-choice and open-ended question survey, which was posted on the Conservation Distribution Listserv, the BookArts-L listserv, and the Preservation Administrators Discussion Group listserv in the spring of 2011. Areas of focus in the survey included: educational background and training of practicing conservators, professional career paths, current responsibilities, the role of a degree in their ability to perform their given professional job, contributions to the field, and professional membership and activity level.

Data points collected from the 145 respondents will be presented independently and in combination to seek out latent correlations between topics such as educational training and degree of professional involvement, or on-the-job training and breadth of current responsibilities. Individual answers to open-ended questions will be parsed for clues to areas of development critical to optimal job performance, with the goal of illuminating positive aspects of all methods of training experienced by those currently serving as library and archives conservators. While some of these components may be of use to the developing graduate training programs, other approaches may lend validation to alternative training venues such apprenticeships.

Patterns of Degradation and Their Relation to Ceramic Production Technology

Marilen Pool, Brunella Santarelli, and Dr. Nancy Odegaard, Department of Preservation, Arizona State Museum, University of Arizona

The Arizona State Museum in Tucson, Arizona houses a collection of over 20,000 Southwestern ceramic vessels from both archaeological and ethnographic contexts. The collection has been designated an American Treasure by the Save America's Treasures program and was awarded a grant to fund the survey and re-housing of the collection. The Pottery Project lasted from 2003 to 2008 during which conservators surveyed the collection and cataloged the data in the Southwest Pottery Database. As a continuation of this project, the IMLS-funded "Conservation of Southwest Ceramic Vessels" phase of the Pottery Project began in October 2010 and will continue through 2012. The purpose of the Pottery Treatment Project is the treatment of 700 vessels that were identified during the initial survey as having a medium to high conservation priority.

The treatment protocol begins with documentation of

the vessel's condition, as well as any observable technological indicators, such as construction methodology and surface treatment. This data is recorded in a Microsoft Access database for conservation treatment reports, along with the description of the treatment and before and after photographs.

The most common construction technologies in the Southwest are the coiling and paddle and anvil techniques. Construction technologies vary by area and culture. Common surface treatments include slips and paints, both organic and mineral, and corrugated surfaces. The purpose for recording this data for all of the treated vessels is to determine if there is a correlation between construction technology and surface treatment and patterns of degradation. By incorporating this data in the initial condition report, it is possible to discern patterns of degradation and to improve understanding of how they relate to the technology of ceramic production.

Preliminary Analysis in Diversifying Museum Studies: American Indians in Conservation

Martina Dawley

Why do so few American Indians become conservators? An attempt to answer this question through an internship, internet resources, a literature review, and conversations with local conservators, led to the observation that there are very few conservators of American Indian ethnicity. As the topic the author's dissertation research, locating and interviewing American Indian conservators is a major component of this study. This poster will present the author's preliminary findings with a particular emphasis on the difficulties American Indians face becoming the custodians of their own cultural material and human remains. The broad questions this study seeks to explore include: why there are so few American Indian conservators, are there American Indian conservators who oversee American Indian cultural material and human remains in both tribal and mainstream museums, and how might practicing American Indian conservators help to empower Native nations.

Preliminary Results from an Investigation into the Color Shift from Purple to Brown in a Set of Madder-Dyed Cylinder-Printed Furnishing Fabrics from the Winterthur Museum

Anne Getts, Graduate Fellow, Winterthur/University of Delaware Program in Art Conservation; and Joelle D. J. Wickens, Assistant Conservator and Winterthur Associate Professor, Winterthur Museum

A curious shift in color from purple to brown has been observed in some of the printed textiles within the Winterthur Museum collection. Presented here are the preliminary results of the investigation into the color shift found in a set of quilted furnishing fabrics. Dyed with madder and cylinder-printed on cotton, the furnishings under investigation were constructed in 1953 from historic 19th-century fabric. These textiles were displayed in the museum approximately six months of every year, for four decades. Originally purple in color, the fabric has undergone varying, inconsistent degrees of discoloration. While some of the objects remain purple, others have shifted to brown.

Analysis with Liquid Chromatography-Mass Spectroscopy (LC-MS) indicated that no degradation products associated with alizarin or purpurin, the main colorants in madder, are present in the discolored areas; this suggests that the color-shift is being caused by unidentified external factors. Promising areas for further investigation include the oxidation state of the mordant and the effect of pH on the dye-mordant system.

By gathering information on the fabric and its history of use, the museum environment within which the furnishings were displayed, the condition of the textile objects, and the degradation pathways associated with the materials from which the furnishings were fabricated, hypotheses were formed to explain the cause of discoloration. It is thought that environmental factors have played a role in the color shift, in part by contributing to the degradation of the cotton substrate, which has in turn affected the pH of the objects. The ultimate goal for this research is to identify the cause of the color shift and use this information to develop a protocol to help prevent color-shifts in similar, madder-dyed objects.

Preservation Collaboration—Academic and Public Library

Holly Prochaska, Head of Preservation Services, Preservation Services Department, University of Cincinnati; and Jason Buydos, Public Library of Cincinnati and Hamilton County

Beginning in January of 2012, the Public Library of Cincinnati and Hamilton County (PLCH) and the University of Cincinnati Libraries (UCL) will begin a long-term collaboration to provide conservation and preservation treatments in an equally-managed, staffed, and equipped preservation lab situated on the University of Cincinnati's main campus.

Employees from both institutions will work on the general circulating and rare/unique collections of each institution. The division of labor for all work performed by the preservation lab will be split evenly between UCL and PLCH and will be tracked using a weighted point system. Additionally, both libraries will engage in mutual aid during disaster recovery.

The preservation lab will not only perform preservation services and conservation treatments on the collections of the joint owners, but will also provide these services to outside organizations. Revenues from contracted services will be used for supplies, equipment, and contract conservation of non-paper based collections (textiles, film, etc.) better addressed by specialty labs.

It is hoped that this collaboration between a public library

and an academic library will serve as a model for other Ohio institutions that have holdings of rare and fragile cultural materials in need of preservation.

The preservation lab project was recently bolstered by an $81,000 grant award from the State Library of Ohio, providing Year 1 support for equipment and supply purchases.

Promoting Conservation in the Archaeological Site of el Purutal, San Agustin World Heritage Site, Colombia

Maria Paula Alvarez Echeverry, Corporación Proyecto Patrimonio, Columbia

It is surprising that sculptures carved and painted in the 6th century AD by the inhabitants of the archeological area of San Agustin in Colombia have been preserved until now in such a good state of preservation. It is even more surprising that, at the beginning of the 2011, someone covered the polychromy of the 6th century with contemporary paints (enamel and vinyl). Instead of showing their age, these sculptures were renewed and had the appearance of false documents of the past.

Alarmed by the damage committed on these important sculptures, the Colombian Archeological and Historical Institute decided to hire conservators Maria Paula Alvarez and her collaborators Isabel Cristina Quintero and Camilo Betancur during the 2011 Holy Week (the peak of the tourism season) to conserve the sculptures. The conservation activities included removing the newly-added paint layers and recovering the original polychrome of the sculptures from El Purutal.

There are conservation procedures that allow for removing layers of varnishes or paintings and preserve underlying layers and original polychromy. These procedures involve the use of organic solvents which are volatile substances do not leave residues and allow the elimination of paint layers in a selective way.

These methods were well-suited to the case of the El Purutal sculptures. The treatment began with a photographic record of the sculptures and solvent testing. The most effective solvents were used to remove the recent paint (red, yellow, and brown) without affecting the original paint layer (red, yellow, ochre, black, white, and gray mineral pigments obtained from local soils and clays).

The removal of the contemporary colors in the two sculptures was satisfactory and reached a good balance of cleaning and preserving the original polycromy. However, in some small areas where the stone and the original paint layer was friable,the contemporary retouching could not be removed. The inability to fully remove these contemporary paints and the fact that the repainting happened indicates a threat to the preservation of these sculptures and the necessity of reduce vandalism through community involvement.

During the onsite conservation work, conservators patiently explained the procedures carried out on the sculptures in simple terms to visitors, guides, tourist services, park officials, and inhabitants of the region so they would better understand the threat to their preservation. The community response was very positive. People expressed both admiration and curiosity to know the nature of the original materials, the results of previous studies, and the details of the conservation process that allowed the recovery of original paint layer. They also showed interest in learning about the discipline of archaeological conservation in Colombia and understood the importance of been involved in the task of preserving cultural heritage. In summary, this conservation project allowed for the recognition of the value of this important archaeological site and raised awareness that will contribute to its long term protection.

Reaching Out/Looking In

Emily Williams, Conservator of Archaeological Materials, The Colonial Williamsburg Foundation

Over the past decade, Colonial Williamsburg's Department of Conservation has undertaken an ambitious set of activities aimed at reaching out to the general public and engaging them in the process of conservation. Among other programs these activities have included an Electronic Field Trip entitled *Treasure Keepers* that reached over six million fifth to eighth graders on each of its two airings, and the opening of an exhibit called *Conservation: Where Art and Science Meet*. During the course of each project, the conservation staff either took the lead in or played a major role in the shaping of the storyline but ultimately had to relinquish some control to colleagues in allied fields, such as exhibit design, film production, and educational resources.

This poster will discuss what was learned from each project and consider how comfortable conservators are (or are not) in allowing others a voice in the dissemination of their message. Many hours were spent parsing particular points of terminology and narrative and yet the question must be asked whether the public is ultimately aware of or interested in these nuances and whether they are important to the advancement of our field. To what extent does broadening our message create an impermeable barrier through which meaning is lost or a filter through which important information may pass more freely? When reaching out, who is our audience and how best do we share our values and vocabulary while making them meaningful within their values and vocabulary?

The Recovery of St. Trinity Episcopal Cathedral Wall Paintings, Port-au- Prince, Haiti: An Assistant's Perspective

Junior Norelus, Le Centre du Sauvetage des Bien Culturales, Port-au-Prince, Haiti (LACS)

Introduction

Most of the 14 wall paintings at the St.Trinity Episcopal Cathedral were destroyed during the terrible earthquake of January 12, 2010. A year later, among broken walls and piles of rubble, I saw only three standing murals: *The Last Supper* by Philomène Obin, *Native Procession* by Préfète Duffaut, and *Baptism of Christ* by Castera Bazile. The murals, painted on mortar, were severely cracked in many pieces and some sections were lost. It was almost impossible for me to imagine that anything could be rescued from that devastated site, let alone remove them from the walls, as wall paintings conservator Viviana Dominguez and architecture conservator Rosa Lowinger explained to me.

I was selected to work as an assistant for the project after being interviewed by the Haiti Cultural Recovery Center Chief Conservator Stephanie Hornbeck and Project Manager Olsen Jean Julian. I became part of a team composed of four Haitian artists and two woodworkers under the direction and supervision of Viviana and Rosa. They took turns working with us, and we had to continue on our own following their instructions. After working together, the conservators decided I would be the right person to supervise the project while they were not present. It was a challenging task but I was very happy to do it.

Methodology

We started by cleaning the paintings with very soft brushes. Next, we fixed the powdery paint with sprayed applications of gum arabic. We traced all the murals with plastic sheet and permanent marker. The walls were divided into fragments for removal. These areas were outlined with chalk and cut with a grinder; however, some of these fragments had large, deep cracks that were also used for dividing the segments. We chisled into the cracks to make sure they were separated completely from the wall and adjacent fragments. Small drawings were made of the paintings with a grid (with letters and numbers) that worked as a map to locate each of these fragments. We built a wood lattice structure on top of each fragment and chiseled from the edges into the back (between the wall and the mortar). We brought them down on light cardboard trays that we made for each fragment. Once we placed them on a table we leveled the mortar on the back with a grinder and also consolidated and secured the mortar with different methods that involved adhesive and mortars. The process continued with the removal of the facing and wood structure and reassembly of very small fragments.

The project was presented to the Haitian press and public in two press conferences (April and June). I and my co-workers, with the introduction of Ms. Dominguez, had to explain to the journalists various aspects of the treatment. My poster will briefly describe the process of stabilization and removal of the St. Trinity Episcopal Cathedral murals and how the project was presented to the Haitian media.

Restoration of the 1930s Point Farm Gardens and Landscape of Rose Greely

Betty L. Seifert, Curator, Administration Department, Jefferson Patterson Park and Museum

Current economics and low visitation create an ethical dilemma—restoration with the problem of finding appropriate cultivars and reincarnating the original plans versus adaptive use of historic gardens to provide revenue generation with an emphasis on looking good.

Rose Greely, a pioneer and noted landscape architect, designed gardens for the country home of Jefferson Patterson in 1934–1935. Rose concentrated on residential landscape design emphasizing the integration of the home into the garden. The designs for Jefferson Patterson were formal. The landscape surrounding the house included native plants and trees to form a park-like surrounding with a striking and beautiful view as a focus. These gardens with dry-laid stone walls, paths, boxwoods, and beautiful perennials were a real show place, attracting Garden Club tours as early as 1936. They are part of the life estate transferred to Jefferson Patterson Park and Museum after the death of Mrs. Jefferson Patterson. A restoration project was initiated in 2003 with volunteers who hoped to restore the original beauty of the gardens. However, money and support have dwindled in recent times. People who volunteered have also had to adjust their time due to economic factors. Coordination of state support, volunteer assistance, historic research and conservation of architectural features is the challenge presented in this paper.

The Sacrifice by James Nachtwey: Gallery Installation of a 32 ft. 3 in.-long Photograph with Flexible Magnets

Stephen Heer, Mountmaker, J. Paul Getty Museum

The Sacrifice, a 32 ft. 3 in. single-sheet inkjet print by the award-winning photojournalist James Nachtwey, was included in the exhibition *Engaged Observers: Documentary Photography Since the Sixties in the Center for Photographs* at the J. Paul Getty Museum in 2010. To display the photograph, alternatives to standard framing were required due to its extraordinary size and other criteria imposed by the artist, conservator, and exhibition curator. A simple but very effective system of using flexible magnetic strips to secure the photograph to the gallery wall was designed, tested, and implemented.

The method for mounting and displaying *The Sacrifice* had to meet several conditions considered essential by the artist

and the museum staff. Nachtwey specified an aesthetically minimal, if not invisible, mounting system absent of glazing. The photograph had to be mounted securely for the 19-week exhibition period. The installation process needed to be safely and feasibly executed by the museum staff. Finally the system had to be non-invasive; it could not cause permanent changes to the sensitive image surface nor could it involve applying attachments to the paper support.

By modifying commercially available magnetic strips, the mount technique successfully met these criteria. It is a low-cost, viable alternative for mounting oversize photographs, which have become more prevalent with advances in printing technologies. The poster will include details and images of the installation method including preparation of the gallery wall with a metallic receiver for the magnetic strips, methods and materials for isolating the magnet and receiver from the print, cosmetic treatment of the magnetic strips to minimize their appearance, and the actual installation process used to transfer the rolled print to the gallery wall.

Salt Damage Related to Physical Properties of Ceramics

Brunella Santarelli

A pressing concern in the conservation of archaeological ceramics is the damage caused by soluble salts. When salts crystallize in the pores of a ceramic their expansion affects the internal structure of the matrix and causes powdering and spalling of the surface, thus weakening the ceramic body. Salt damage is increased if the ceramic is not treated and stored appropriately after excavation. Salt damage to ceramics is of particular concern to conservators working with ceramics from the Southwestern United States. The Arizona State Museum in Tucson, Arizona has a collection of over 20,000 Southwestern ceramics; a survey of this collection identified damage caused by active soluble salts as a pressing concern to the preservation of the collection. Certain patterns of damage were observed during this survey. This research is concerned in identifying the factors that affect these patterns and how they relate to the preservation state of a collection.

The factors that affect salt damage are the identity of the salt, the characteristics of the substrate, and the environment. A set of Southwestern ceramics representative of the ones with the highest levels of salt damage in the collection of the Arizona State Museum was selected for a study of their material properties and how they relate to degrees of observable damage. A material characterization was carried out to study the physical properties of the ceramics: porosity, pore-size distribution, and permeability. Salts were introduced into the ceramic samples and they were run through an accelerated aging experiment to model the effect of extreme environmental fluctuations. Damage to the ceramic samples was assessed quantitatively by percent weight loss and percent increase in porosity. The results from this experiment showed that the physical properties of a ceramic sample determines the degree of damage a ceramic will exhibit from salt action. The construction technology and the surface treatment of a ceramic will also affect the pattern of salt damage observed. The identity of the salt is also an important factor, as the more hygroscopic salts caused the most damage.

This poster will explore the pattern of salt damage observed in the pottery collection of the Arizona State Museum and address the factors that cause salt damage with an emphasis on the preservation of Southwestern ceramics. Understanding these different factors can aid in understanding the pattern of degradation observed in collections, and can provide better guidelines for the treatment of ceramics with salt damage.

Silver Content Survey of Southwestern American Indian Silver Jewelry

Ida Pohoriljakova, Post-Graduate Fellow, Conservation Department, University of Pennsylvania Museum of Archaeology and Anthropology; Dave Smith, Adjunct Conservation Scientist, Teresa Moreno, Associate Conservator, and Nancy Odegaard, Head of Preservation, Arizona State Museum

Scholars and collectors have long suspected that silver used in American Indian jewelry has been used in varying compositions. As part of a documentation and condition assessment survey leading to reorganization and rehousing, a nondestructive study of silver quality was introduced through the use of a portable x-ray fluorescence instrument (pXRF), the Niton XLi with an americium source.

The goal of this study was to conduct a preliminary sorting of the silver jewelry objects based on variance of silver content in the alloy. A goal would be to use the data from this survey to develop a more comprehensive study of composition and alloy distribution in American Indian silver jewelry. It was important that this study not impede the condition and documentation assessment project. Nine non-reagent alloy standards were obtained or fabricated between 56% and 100% silver content and were used to construct a calibration curve. The resulting x-ray analysis curve was found to be linear with respect to percent silver and was evaluated using the least squares method of analysis to give the concentration and associated error for each sample. The older pXRF model proved to maintain its utility when using the americium source.

The silver jewelry collection at the Arizona State Museum is composed of an array of objects manufactured by American Indians from the American Southwest. The objects include buttons, rings, bracelets, squash blossom necklaces, concha belts, bow guards, bola ties, and other traditional items that are frequently ornamented with stone bezels and inlays. The collection is important for documenting the history of silver technology and craftsmanship practiced by the Southwestern American Indian tribes such as the Navajo, Hopi Pueblo, Zuni Pueblo, and Santo Domingo Pueblo.

The silver content aspect of the condition survey has revealed interesting results that will encourage further study. It has foremost shown that a greater than expected variance in silver content exists in the museum's silver jewelry collection. Furthermore, existing trends in the silver content are apparent; for example, objects attributed to different American Indian tribes reveal distinct levels of variance in silver quality. The survey is proving to be successful in exposing information previously unknown about the collection, enabling accessibility to the collection, and providing a wealth of opportunities for future research. This initial assessment will offer a starting point for advanced studies on Southwestern American Indian silversmithing technology, practices, and development.

Structural Stabilization with Visual Integration of Hooked Rugs: A Technique for Filling Lost Pile

Gretchen Guidess, Mellon Fellow, Conservation Department, Historic New England

Visitors touring Beauport, a historic summerhouse in Gloucester, Massachusetts, view and walk over many hooked rugs. These fragile floor coverings are still exhibited in their original historic house context creating a significant conservation challenge. Left unrepaired, tears and holes worsen and present a tripping hazard to visitors. This poster describes methods for creating stabilizing fills for these treasured, yet vulnerable objects.

Hooked rugs were made by pulling strips of fabric through a plain weave substrate using a hand-held hook. The loops, densely hooked with colorful fabrics, form intricate geometric, floral, or pictorial designs. When the substrate becomes damaged, the decorative pile is compromised. Unlike some restoration techniques used to repair hooked rugs, the proposed treatment technique does not remove original material, is reversible, and uses inert materials to recreate the pile.

Several fill methods of increasing intervention, which provide stabilization and visual integration, have been developed for use on the collection of hooked rugs at Historic New England. The approach to filling a loss depends, in large part, on the size of the loss. For smaller losses it was found that a backing fabric of a similar color is sufficient. This poster focuses on compensation and stabilization developed for larger losses. Strips of polyester felt are stitched through a plain weave cotton substrate so that small, quarter-inch loops protrude from the front surface. By properly massing and positioning the loops, the fill resembles the original pile. Where necessary, textile paints are used to adjust the color of the fill material to match the original. The fill is then secured in place by stitching it to the plain weave substrate. Oddy tests were performed on potential felt pile materials to ensure they had no deleterious effect on the original rug material.

Take a Picture, It'll Last Longer: How a Ceiling-Mounted Digital Camera Helped to Improve Preservation and Access to a Quilt Collection

Gaby Kienitz, Head Conservator, Mary Jane Teeters-Eichacker, Curator of Social History, and Steve Happe, Chief Photographer and Photo Archivist, the Indiana State Museum

The Indiana State Museum has an extensive collection of quilts, including the largest collection of Indiana Amish quilts in the world. Stored within rolling drawers of a custom-built compactor unit in a climate-controlled room in a new, purpose-built museum, that collection was visually and intellectually inaccessible. While the new climate-controlled storage fulfilled many preservation goals, the lack of adequate cataloguing with extensive descriptions, photographs and condition surveys resulted in unnecessary handling during exhibit planning, as quilts were carted up to conservation to be unrolled for examination by curatorial and conservation staff to determine suitability for each exhibition.

Many of the quilts had been surveyed in the mid-1980s for the Indiana Quilt Registry Project, but this information wasn't readily available. The museum has a catalog database that contains information that had been migrated more than 10 years before from a previous database with woefully inadequate fields. There were few images, descriptions were often frustratingly terse ("green and red quilt"), and sizes were incorrect. In the condition field for the database, the migrated comments consisted of single numbers usually ranging between 1 and 5, with no additional explanations.

Nearly three years ago, the cultural collections manager, the curator of social history and the textile conservator at the Indiana State Museum collaborated to begin a survey project to catalog, condition report and photograph the quilt collection, with the purpose of improving catalog data and updating storage conditions. The start of the survey was delayed for a period of time because of the technical considerations of how to photograph the quilts. Preservation issues (especially handling), space, and potential cost of the photography set-up prevented the start of the project until the staff photographer developed a method to install a remotely operated digital camera on the ceiling of the conservation lab, pointed down at a group of rolling tables below.

This ingenious, though slightly quirky, assemblage was not an immediate success, but by learning the limitations and exploring the possibilities of this system, it has opened the floodgates on a project that resulted in not only achieving the original preservation and access goals but also discovering additional benefits. The photography setup minimized handling of the artifacts during surveying and was efficient for staff in terms of time and ergonomics. Accurate photographs, descriptions and condition surveys have made exhibit planning efficient and entirely digital. The quilts have all been rehoused including the nearly 10% that

were discovered to have been stored on old cardboard tubes. Extremely fragile quilts were removed from rolled storage and are housed in their own custom, extra-large storage boxes. The catalog records from the quilt collection were the first to be available through the museum's website and are now the most visited artifact type of our online database. The project has been successfully extended to include all of the museum's flat textiles.

A Tale of Two Systems: Synergy in Managing Risks to People and to Collections

Catherine Hawks, Conservator, Research and Collections Department, NMNH, Smithsonian Institution; and Robert Waller, President, Protect Heritage Corp.

The two systems of managing health and safety and of managing preservation of cultural property have many parallels. Either, or both, can exist as predominantly habit-based systems. However, when managed from a proactive perspective, they can be considered goal-directed systems. In the first case, the goal is to maintain health and avoid accidents to people. In the second case, the goal is to avoid damage and loss to cultural property. Both goals are clear, widely accepted, and even inarguably noble and worthy, seemingly a great advantage for both systems.

Habit-based and goal-based approaches are not mutually exclusive. A well-managed goal-based system will foster adoption of good habits that then allow the systems to operate effectively and economically. Both health and safety and cultural property preservation systems will operate best when they are mutually supportive. In many instances, this mutual support arises automatically as a consequence of the basic similarities of the systems—both strive to avoid any unnecessary and harmful interaction of people, energy and materials.

As a simple example, wearing appropriate gloves while handling objects protects the wearer as well as the collection object/specimen from contamination. Similarly, avoiding abrasion and decrepitation of inherently toxic collection objects has clear benefit both to the objects and people that are near them. There are many such examples of complete correspondence of purpose between the health and safety and preservation systems. In these cases both systems will naturally be mutually supportive.

Not all potential intersections of the two systems align automatically. As an example, most institutions that care for cultural property conduct regularly scheduled health and safety inspections of all work areas. Few institutions have a similar routine comprehensive inspection for collection preservation issues. The management of risks to collections could benefit from including a collection care specialist in the team conducting a health and safety inspection. That specialist would be tasked to look for and document situations that pose, or exacerbate, risks to collections. This would both ensure the regularity of such inspections and foster synergism between the two systems.

Some examples of conflicts between the two risk management systems can also be found. For instance, an old collection of pharmaceuticals can pose many risks. From a health and safety perspective, disposal seems the obvious solution. From a curatorial perspective, keeping contents intact for future analysis may be important. The exercise of developing a creative solution that protects both people and collections can lead to improved understanding among all parties.

Viewing health and safety and cultural property preservation as parallel and closely related risk management systems opens the way to improvements in both. Combining the two encourages synergies that can lead to effective risk management and resource allocation by custodians of our collected heritage.

Tell Us Your Story! Preserve Your Story!

Karen Jones, Book and Paper Conservator in Private Practice

On April 25, 2011 Society of Rocky Mountain Archivists (SRMA) and the Western History & Genealogy (WHG) division of the Denver Public Library (DPL) teamed up to offer an event for National Preservation Week. Spearheaded by SRMA Preservation Representative Karen Jones, the event featured the opportunity to make an appointment for a free 15-to-20-minute conservation consultation with a professional conservator.

Members of the public were invited to bring in their family treasures in a variety of formats, and for this purpose Jones recruited five different specialists in the following formats: paper, books, photographs, textiles, paintings, and artifactual objects. Following the conservation consultation, Western History & Genealogy staff under Jamie Seemiller, program administrator, Western History & Genealogy, DPL offered the participants the opportunity to scan and/or digitally photograph their items, and opt to have these images included in the Institute of Museum and Library Services-funded "Creating Your Community" online participatory archives that will launch in January 2012 (creatingcommunities.denverlibrary.org). Laura Ruttman, SRMA outreach coordinator, facilitated the marketing and local arrangements with DPL.

We marketed the Preservation Week event through emailing a PDF flyer to historical societies and library listservs, posting on Facebook, Twitter, *The Denver Post*'s "Your Hub" website, and posting on the official National Preservation Week map. We found that for this event and our target audience, the most successful method was old-fashioned advertising: emailing flyers to be posted in various institutions.

The event was a success. There were approximately 40 registrants, many of whom brought multiple items to be examined, and thus they met with more than one conservator each.

The items reviewed ran the gamut: letters and family Bibles, colorful genealogical charts and scrapbooks, family photographs in multiple physical formats, silk wall-hangings and oil paintings, 19th-century projection paintings, dolls, teacups, an antique player harmonica (similar concept to a player piano!), and even a 12th-century sword! Our six conservators were busy the

entirety of the four and a half hour event, as well as five WHG staff who were involved using a flatbed scanner, a digital camera and tripod, and a large-format scanner.

Overall, the greatest measure of our success was that a large number of the participants asked if the event would be repeated next year. Many of the participants were eager to tell the stories behind their documents, in addition to receiving conservation advice, which indicates great interest in the Creating Your Community project.

And finally, of course, 40 more people now have an increased appreciation for the work of libraries, archives, and conservators.

Testing, Analysis, and Conservation of a 1566 Tyndale Bible

Ashley L. Bartman, Conservation Assistant, Ohio State University Libraries, Ohio State University

The subject of this research project is an English Bible translated by William Tyndale and printed by Richard Jugge in 1566. This Bible is unique in that each individual page of the text is covered with a slightly opaque yellow coating. The use of this unusual coating has also been observed on similar, contemporary Bibles and two other Tyndale Bibles. This project focuses on answering the questions of what the coating is, why it was put there, who put it there, and how to approach the preservation of such a rare document. Loose fragments of original material provided an opportunity to perform extensive instrumental analysis, which included Raman microscopy, attenuated total reflectance infrared spectroscopy, and Fourier transform infrared spectroscopy. Other non-instrumental analyses such as solvent testing and testing on period materials were also executed. According to the results of the analyses, it has been determined that the coating is wax, specifically beeswax. There is no clear reason for coating the pages with wax. A few possibilities include intentionally imitating a better known Tyndale Bible owned by Anne Boleyn, an early attempt at restoration, or as a disguise to protect the Bible from the hands of Cardinal Wolsey or Henry VIII's spies who were instructed to burn any Bibles they encountered. This study is significant to the field of paper conservation because the coating on the pages is so rare and has not been previously studied. Analyzing why the coating was applied could reveal important information concerning how people of the 17th and 18th centuries treated their important literature.

Two Conservators, 10 Million Objects: Advancing Conservation within the National Park Service

Brynn Bender, Senior Conservator, and Dana Senge, Objects Conservator, Intermountain Region Museum Services Program, National Park Service

The conservation program of the National Park Service's Intermountain Region Museum Services Program is designed to support the preservation of museum collections in its eight states of Montana, Wyoming, Utah, Colorado, Arizona, New Mexico, Texas, and Oklahoma. There are 90 parks in the region with a wide range of collection materials from historic, artistic and archeological provenance adding up to over 10 million items. Approximately 5.5 million are stored at the Western Archeological and Conservation Center, the physical home of the conservation labs. The remainder are stored at parks and repositories throughout the region. The conservation team is active both inhouse and onsite at parks to address conservation and preservation issues.

Outreach is a major part of the daily lives of the conservation team. This includes conversations with park museum staff to discuss issues large and small, addressing requests for assistance and onsite work to survey or treat collections. Parks often have different approaches to support their museum collection. Successful outreach occurs through cultivating relationships and trust between curators and conservators, continuing to improve communication and education, remaining receptive and flexible to other programs and specialists and project design that takes into account the specific assets or limitations of a park. Recommendations from the conservators are often used by park staff to advocate for special projects that will improve preservation of the collections.

The position of the conservation program within a regional structure of the National Park Service allows outreach and advocacy to exist on many levels including: open communication with an individual park regarding collection needs, identifying trends across parks to address a greater need, and participating on multidisciplinary teams to advocate for preservation. Through their work reaching out to parks to address preservation issues or playing a supporting advocate role for the park museum staff, the conservation team continues to develop improved methods of outreach and advocacy for conservation and preservation within the Intermountain Region of the National Park Service.

Under, Over, and in the Mix Of: A Practical Guide to Telling the Difference Between Types of Polychrome Decoration on English Earthenware Figures

Lauren Fair, Winterthur Museum, Garden, and Library

Earthenware sculptures of figures made in Staffordshire, England, in the 18th and 19th centuries fill a unique niche within the realm of ceramic art. Taking after the decorative traditions at the more notable European porcelain factories, such as Meissen and Sèvres, the Staffordshire potteries created their own market in England and abroad by manufacturing luxury goods in pale-bodied earthenware that were consequently more affordable to the working classes, allowing workers to set their tables and decorate their mantles in a style emulating that of the upper classes.

This poster will summarize and highlight the different decoration techniques present on these figures, focusing on the colored glazes, underglaze oxides (those known as "Pratt colors"), and overglaze enamels. For instance, through analysis it was determined that green glazes consist of copper oxide dissolved in lead glaze, while green underglaze colors consist of concentrated mixtures of blue cobalt oxide and Naples yellow and/or lead-tin yellow. Understanding this compositional difference not only helps to make visual distinctions, but it adds to the technological understanding of these objects.

While overglaze enamels may be easier to identify by eye, the information gleaned from this study further enhances our understanding of this decorative type. One example is that lead chromate compounds were found to be the coloring components of orange enamels from the late 18th and early 19th centuries in Staffordshire. This is an important discovery because the use of lead chromates in enamels has not been documented at Meissen or the other leading European porcelain factories of the time, thus demonstrating a technological advancement of Staffordshire potters and enamel makers.

The information comes out of a larger year-long fellowship funded by the Samuel H. Kress Foundation and completed by the author at Winterthur Museum under the supervision of the Conservation, Curatorial, and Scientific Research Departments. Winterthur currently holds the largest collection of Staffordshire figures in an American museum, allowing for an indepth study that involved collecting hundreds of x-ray fluorescence spectra on the three classes of colored decoration, as well as scanning electron microscopy and Raman spectroscopy data where microsampling was possible, for a selection of 37 figures from the collection. This poster will provide the reader with the basics, focusing on showing the differences—both visual and chemical—between three decoration types: colored glazes, underglaze oxides, and overglaze enamels.

It is the author's hope that the poster will not only provide a summary of a little-studied area of ceramic technology, but that it will also provide a point of reference for further exchange about the evolution of the pyrotechnologies of the 18th and 19th centuries.

The Use of Orasol Dyes for In-situ Recoloring of Taxidermy Specimens at the American Museum of Natural History

Becca Pollak, MA and Certificate of Advanced Study in Art Conservation student, Buffalo State College; Julia Sybalsky, Conservation Fellow, American Museum of Natural History; Elizabeth Nunan, Assistant Conservator, Natural Sciences Conservation Department, American Museum of Natural History; Judith Levinson, Director of Conservation, Anthropology Division, American Museum of Natural History; Lisa Elkin, Chief Registrar and Director of Conservation, American Museum of Natural History; and Dr. Corina Rogge, Andrew W. Mellon Assistant Professor in Conservation Science, Art Conservation Department, Buffalo State College

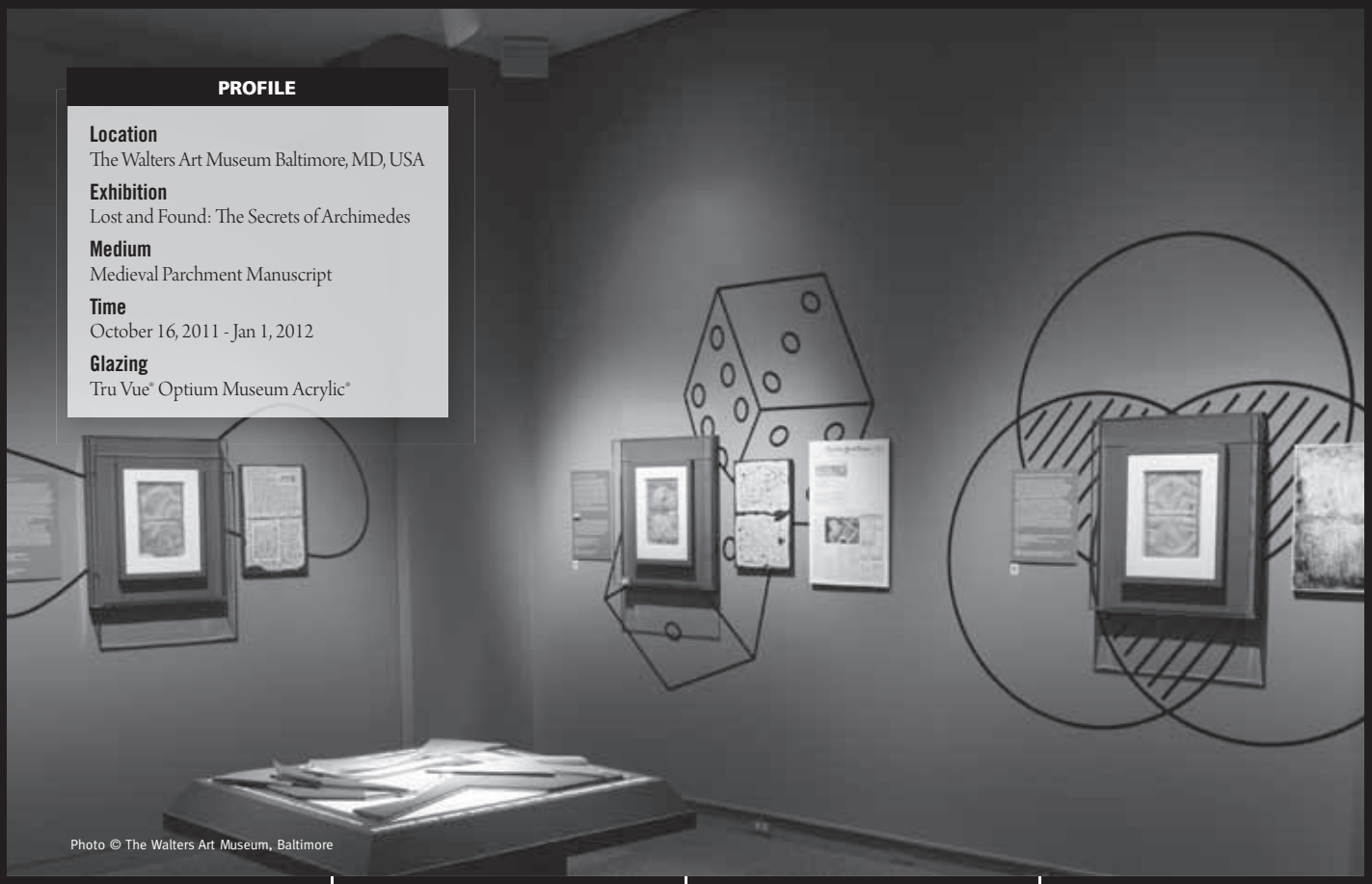
In 2010–2011, the American Museum of Natural History completed an ambitious program of renovation to the habitat dioramas in the Hall of North American Mammals. Each diorama is comprised of three main components: mounted taxidermy specimens, background paintings, and foreground materials both natural and manufactured. To effectively transport the viewer into each habitat, a seamless transition between the three-dimensional foreground materials and exactingly detailed background paintings must be maintained. Having been on permanent display in harsh environments for over 70 years, many of the zoological specimens had become faded to such an extent that they no longer reflected the natural appearance of living animals, compromising the overall impact and effect of the dioramas. As part of the re-lamping project, the renovation team worked to find a suitable colorant that could be used in restoring naturalistic color to specimens that had become faded over time. The scale of the project as well as its parameters led us to employ familiar conservation materials in innovative ways to achieve the desired visual effects.

Several important factors limited the materials that could be considered for recoloring. The high annual light exposure level necessitates that the colorants have a high lightfastness rating, to increase time between treatments. Because the specimens are permanently mounted into the diorama floor the treatments must necessarily be in-situ, without rinsing of excess colorant. To maintain the life-like appearance of the specimens there must be minimal alteration to the appearance and physical alteration of the hair. Reversibility and retreatability are also of concern for these unique and irreplaceable mounts. Colorants tested include commercially available taxidermist acrylic paints, 1:2 metal complex azo-dyes (Orasol) with known applications in the conservation field,and XSL colors, a new series of water-dispersible micronized pigments.

Colorants applied to different proteinaceous substrates including wool cloth and bison fur were examined using polarized-light and scanning electron microscopy to visualize changes in fiber morphology due to colorant application. The lightfastness of the test swatches was evaluated in comparison to Blue Wool standards using microfade testing with ultraviolet

filtering and in a light aging chamber with an ultraviolet component. Real-time fading within the dioramas themselves is ongoing.

Ultimately, the Orasol dyes were chosen as best suited for overall recoloring applications, mainly due to good general light fastness, limited effect on hair morphology as well as retreatability. In this poster, we discuss the challenges involved in determining the lightfastness of the dyes, including the effect of solvent choice on lightfastness. The origins of this solvent-sensitivity as well as proposed modes of interactions between the dye molecules and the substrates are also discussed. It is hoped that these results will illustrate the usefulness and applicability of this method and encourage other institutions with discolored and non-representative taxidermy mounts to consider it.



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202-452-9545 | fax: 202-452-9328
info@conservation-us.org
www.conservation-us.org

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