

Canadian Association for Conservation of Cultural Property

41st Annual Conference and Workshops

Organized by the Alberta Regional Group

Edmonton, Alberta

May 26 to May 30, 2015



Conserving the Past, Embracing the Future

PROGRAM AND ABSTRACTS

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High Level Bridge

Edmonton’s High Level Bridge is a massive structure and a significant landmark for the City of Edmonton and Civil Engineering alike. It is a steel truss bridge featuring 28 individual spans that sit 49 metres above the North Saskatchewan River atop concrete piers and steel legs. The bridge carries pedestrian, vehicular and rail traffic 755 metres across the entire river valley, linking the downtown core with Old Strathcona via 109th Street.

The construction of the High Level Bridge highlights the importance of the railway in the area’s development as the \$2 million cost was shared between the City of Strathcona, the City of Edmonton, Canadian Pacific Railway, the province of Alberta, and the Canadian government. Furthermore, it was a factor in aiding in the amalgamation between the City of Edmonton and the City of Strathcona as transportation of people and goods between the two cities was increased.

The High Level Bridge is one of the four great steel truss bridges constructed by Canadian Pacific before the Second World War and its incorporation of automobile, rail, and pedestrian traffic was original in Western Canada for its time. Its design and materials remain intact over these years and serve as an icon for the City of Edmonton. It is recognized by the City as a historic resource. One of the rivet hammers used during the construction process of the High Level Bridge has become part of the Edmonton-area Ritual of the Calling of an Engineer.

Construction of the High Level Bridge commenced in 1910 as per the design created by Phillips B. Motley, an employee of Canadian Pacific Railway, and was completed over three years by John B. Gunn and Sons. The bridge supported four different modes of transportation across the North Saskatchewan: automobile, train, streetcar, and pedestrian; however, streetcar traffic ceased operation in 1951 and train use in 1989. A tourist streetcar now runs seasonally on the upper deck while automobile and pedestrian traffic continue on the lower deck.

Researched and compiled by Travis Hnidan, CSCE Edmonton History Committee 2011/12.

To obtain additional copies of this publication, visit <https://www.cac-accr.ca/publications>

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2015 CAC Conference Organizing Committee

| | |
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| Conference Co-Chairs: | Alison Freake, David Turnbull |
| Program: | Margot Brunn |
| 3D Scanning for Conservators Workshop: | Carmen Li |
| Conservation of Audiovisual Collections Workshop: | Alison Freake |
| Translation: | Béatrice Leroux, Danielle Allard |
| Finances/Sponsorship: | Alison Freake, David Turnbull, Carmen Li, Cindy Colford |
| Registration: | Danielle Allard, Jennifer Bowser |
| Local Arrangements: | Lisa May, David Turnbull, Stephanie Shank |
| Tours, Silent Auction: | Stephanie Shank |
| Publications: | Margot Brunn, Katherine Potapova |
| Publicity: | Carmen Li, Katherine Potapova, Lisa May |
| Delegate Information/Speakers' Gifts: | Owen Thompson |

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| Webmaster: | Vacant |

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| | |
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| Grants and Awards: | Alyssa Becker-Burns, Tracy Satin, Kasey Lee |
| Job Descriptions (Ad Hoc Committee): | Cindy Colford, Laura Cunningham |
| Records Management and Archive: | Vacant |

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| | |
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| Bulletin: | Charlotte Newton, Janet Wagner |
| Directory: | Kendrie Richardson |

Conferences:

| | |
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| Conference Liaison: | Jessica Lafrance-Hwang |
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| | |
|-------------------------------------|------------------------------|
| Emerging Conservators (ECC): | Tasia Bulger, Megan O'Connor |
| Training: | Vacant |

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| | |
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| Nova Scotia: | Elizabeth Jablonski |
| Newfoundland and Labrador: | Beverly Lambert |



Message from His Worship Mayor Don Iveson



On behalf of City Council and the people of Edmonton, Alberta's Capital City, I welcome everyone to the 41st Annual Conference and Workshop of the Canadian Association for Conservation of Cultural Property.

This conference, appropriately themed "Looking Backwards, Thinking Forwards," focuses on preserving and displaying artifacts of historic and cultural significance, many of which reflect our nation's indigenous heritage. Edmonton has been a pehonan – a gathering place – for thousands of years, and we are honoured to host delegates from across Canada and beyond who work to keep our history alive. Our heritage is the link between our past and our present, and it is critical for all Canadians to be able to experience it firsthand through art and culture.

I thank the Canadian Association for Conservation of Cultural Property and the organizing committee, volunteers and sponsors who made this conference possible. For those visiting Edmonton, I invite you to get out and enjoy our fantastic local culinary and cultural scene.

Yours truly,

A handwritten signature in black ink, which appears to read 'Don Iveson'.

Don Iveson
Mayor



A message from the Edmonton Arts Council

The Edmonton Arts Council (EAC) is pleased to sponsor the Canadian Association for Conservation 2015 conference.

For nearly 25 years, the City of Edmonton has supported the vision of a dynamic urban landscape through its Percent for Art Policy. The works acquired via Percent for Art represent a significant cultural and financial investment. As steward of the Edmonton Public Art Collection, the EAC protects that investment through one of the very few integrated public art conservation programs in North America. Dedicated and knowledgeable, our conservation team oversees the routine maintenance of the Collection, restores artworks as necessary, and acts as an important resource during the preliminary and installation stages of the public art process.

Last year, the EAC coordinated the installation of 21 new public artworks and currently has 16 projects, in various stages of completion, on the books. With the installation of each, a snapshot of Edmonton is captured – the artworks talk about who we are, what we care about, how we are perceived – and project that view forward within our city's ever growing narrative. Conservators are protectors of this story - helping to preserve it and contributing to the evolving concept of our artworks within the public domain.

We all benefit from your expertise and efforts!

A handwritten signature in black ink, appearing to read 'Rm' or 'Paul Moulton' in a stylized script.

Paul Moulton, Executive Director

Acknowledgements

The organizing committee of CAC Edmonton 2015 gratefully acknowledges the generous contributions of the following:

Our employers, who continue to support our professional involvement in the activities of CAC and provided time and space for the planning of the 2015 conference:

- Alberta Historic Sites and Museums
- Alberta Museums Association
- Edmonton Arts Council
- Museums and Collections Services, University of Alberta
- Provincial Archives of Alberta
- Royal Alberta Museum.

Our colleagues in the arts and heritage community of Edmonton, who have been instrumental in delivering the CAC 2015 program and events:

- Art Gallery of Alberta
- Edmonton Radial Railway Society
- Old Strathcona Foundation
- Department of Biological Sciences, University of Alberta
- Department of Earth and Atmospheric Sciences, University of Alberta
- Fine Art Collection, University of Alberta.

Receptions, Banquet & Tours

Workshop Reception

Tuesday, May 26, 2015 6:00pm - 9:00pm

McKay Avenue School, Edmonton Public School Board Museum and Archives
10425 99 Ave. NW, Edmonton, AB

Join us for a tour and get-together at Alberta's oldest standing brick school (built in 1904) and the site of Alberta's first legislature (1906-07). Refreshments provided, as well as a cash bar. Learn more about the grand McKay Avenue School at <http://archivesmuseum.epsb.ca/home>.

Conference Reception & Raffle – Sponsored by Tru-View

Wednesday, May 27, 2015 6:00pm - 11:00pm

Yellowhead Brewing Co.
10229 105 St. NW, Edmonton, AB

Tru-View is our host for this evening's event, which includes a raffle fundraiser for CAC. Join us at the Yellowhead Brewery, an independent microbrewery named after the city's first commercial brewery that opened in the River Valley in 1894. Housed in the heritage Shaw Building, the brewery is one of the many examples of adaptive re-use in the downtown area. Refreshments provided, as well as a cash bar. Sign up for a brewery tour at the door (\$15.00/person, incl. a pint of beer), starting at 6:15pm.

CAC Banquet & Silent Auction

Friday, May 29, 2015, 6:30pm - 11:00pm

Muttart Conservatory
9626 96A St. NW, Edmonton, AB

Enjoy an evening with your colleagues at the Muttart Conservatory, a local botanical landmark comprising four glass pyramids nestled in Edmonton's River Valley. The Muttart preserves and grows one of Canada's largest botanical collections from temperate, tropical and arid climate zones.

Edmonton City Tours

Thursday, May 28, 2015, 3:30pm - 5:30pm

University of Alberta Collections Tour

Since 1908, when the University of Alberta was founded, various departments have been collecting and preserving representative samples of materials to support their academic work. This whirlwind tour of three collections held by the University of Alberta includes the University's Fine Art Collection, the Meteorite Collection of the Department of Earth and Atmospheric Sciences, and the Vascular Plant Herbarium of the Department of Biological Sciences.

Old Strathcona Heritage Tour

Join a representative of the Old Strathcona Foundation for a tour of this community which formed on the south side of the North Saskatchewan River at the turn of the 20th century. Learn more about the development of the area between 1891 and 1912, when it amalgamated with the relatively new City of Edmonton, and about how the area's unique character is being preserved today.

Downtown Walking Public Art and Heritage Tour

Explore downtown Edmonton's public art and built heritage with David Turnbull, Conservator at the Edmonton Arts Council. The rejuvenation of the downtown area includes the development of heritage structures and the installation of public art as a part of new infrastructure projects.

High Level Bridge Streetcar Ride & Tour

Saturday, May 30, 2015, leaving at 7:00pm and returning at 9:00pm

Take a trip across the High Level Bridge on the # 33, a 1912 streetcar restored and operated by the Edmonton Radial Railway Society, our sponsor for this tour. Also included is a visit to the Strathcona Streetcar Barn and Museum. The starting and return point is Jasper Terminal, located between 109th and 110th Streets on 99th Avenue. For further details, see <http://www.edmonton-radial-railway.ab.ca/highlevelbridge/>.

3D Scanning for Conservators

Tuesday, May 26 through Wednesday, May 27, 2015

Objective:

Through lectures, case studies, demonstrations and hands-on activities, this workshop provides an introduction to 3D scanning technology and the range of rapid-prototyping solutions currently available for conservators to use in condition reporting, reproduction, mount-making, or completing “virtual” restorations.

Participants will learn about new developments in the field of 3D scanning. They will be able to determine whether they wish to create a 3D scanning set-up within their home institution, to collaborate with other museums that already have 3D scanning equipment, or to turn to technologies available at local universities and businesses to provide solutions to specific conservation challenges.

- Location:** Northern Alberta Institute of Technology, Shell Manufacturing Centre, 11762 - 106 Street, Edmonton
- Workshop Lead:** **Dr. Pierre Boulanger**, University of Alberta, Advanced Man-Machine Interface Laboratory
- Instructors:** **Neil Wenger**, Northern Alberta Institute of Technology, Shell Manufacturing Centre
Angelo Beraldin, National Research Council of Canada
Dr. Peter Dawson, University of Calgary
Ira Laughy, Rapid3D, Calgary
- Demonstrator:** **Mark Weatherburn**, FARO Technologies, Calgary
- Workshop Coordinator:** Carmen Li, Royal Alberta Museum
- Presented with the generous support of our sponsors:**



AMMI

Advanced Man-Machine Interface Laboratory



Conservation of Audiovisual Collections

Wednesday, May 27, 2015

Objective:

Generally speaking, audiovisual preservation relies upon new technology and digitization processes to make sound and moving image collections available for client research as well as for institutional use in exhibits. While we are all familiar with the concept of digitization as preservation, how do we get there?

What measures must be taken to assess an object or collection before it can be migrated to a new format? How do we clean and prepare materials for information transfer? What are the requirements for vendors who do this work on or off-site? The mechanical nature of the objects and the limited availability of opportunities for hands-on exploration of these types of processes mean that most participants will not have had much previous experience with handling and treatment of audiovisual materials.

Location:

Provincial Archives of Alberta
8555 Roper Road, Edmonton, AB

Instructors:

Tom Bernier, Audiovisual Technician
Provincial Archives of Alberta

Braden Canon, Audiovisual Archivist
Provincial Archives of Alberta

Workshop Coordinator:

Alison Freake, Provincial Archives of Alberta

Presented with the generous support of our sponsor:

PROVINCIAL
ARCHIVES
OF ALBERTA

Conference Program and Schedule

| Thursday, May 28, 2015 | |
|---|---|
| 7:30 - 8:15 | REGISTRATION |
| 8:15 - 8:45 | WELCOME & OPENING: CAC President and Conference Co-Chairs Treaty 6 Elder Bob Cardinal Edmonton City Councillor Ben Henderson |
| INDIGENOUS COLLECTIONS Chair: Tom Hunter, University of Alberta | |
| 8:50 - 9:10 | Miriam Clavir <i>Museum Conservation and Collaboration: A Discussion of Changes and Challenges.</i> |
| 9:15 - 9:35 | Amanda McLeod <i>Lost Beads, Missing Stories: A Preliminary Study of the Effects of Relative Humidity on the Deterioration of Wampum Beads.</i> |
| 9:40 - 10:00 | Fran Ritchie <i>Overcoming the Inherent Problem of Detaching Hairs on Caribou Hides.</i> |
| 10:00 - 10:30 | BREAK: Sponsored by Edmonton Heritage Council |
| 10:35 - 10:55 | Carole Dignard and Sonia Kata* <i>Evaluation of Past Consolidation Treatments for Fragile Cedar Bark.</i> |
| 11:00 - 11:20 | Katie Fisher*, Joanne Schmidt* and Heather Dumka <i>Revenge of the Moths.</i> |
| 11:20 - 11:30 | Q & A |
| 11:30 - 13:00 | LUNCH BREAK (CAC-ACCR Regional Reps Meeting) |
| 13:05 - 13:35 | Margot Brunn <i>Per Guldbeck Lecture: Conserving the Past, Embracing the Future.</i> |
| TEXTILES AND OBJECTS Chair: Heather Dumka, Glenbow Museum | |
| 13:40 - 14:00 | Jane Dalley <i>The Octopus Bag - Mounting an Oversize Textile.</i> |
| 14:05 - 14:25 | Shirley Ellis <i>Deconstructed: Restoring the Intent and Integrity of a Rare Kainai Squirrel-Lined Baby Quilt.</i> |
| 14:30 - 14:50 | Renée Dancause <i>Loss Compensation for an Early Non-Standard Union Jack from the War of 1812.</i> |
| 14:55 - 15:15 | Evelyn Ayre, Carole Dignard, Alison Fleming* and Fiona Hernandez <i>Conservation of a Chinese Lion Dance Head.</i> |
| 15:15 - 15:25 | Q & A |
| 15:30 - 17:30 | TOURS |
| 18:00 - 22:00 | CAC-ECC MEET & GREET |

| Friday, May 29, 2015 | |
|---|---|
| 7:30 | REGISTRATION |
| 8:00 – 8:10 | WELCOME |
| BEST PRACTICES Chair: Irene Karsten, Canadian Conservation Institute | |
| 8:15 - 8:35 | Andy Holbrook* and Chris Knapp <i>On the Front Line: Delivering Care and Conservation to Imperial War Museum's Centenary Transformation.</i> |
| 8:40 - 9:00 | Emily Ricketts*, Laurence Gagné* and Alexander Gabov <i>Preserving "The Spirit of Sir John A".</i> |
| 9:05 - 9:25 | Jessica Lafrance-Hwang <i>Mixed Media: Conservation of the Communications Collection at The Henry Ford.</i> |
| 9:30 - 9:50 | Jesse Moffatt <i>At What Cost? The Preservation and Use of a Musical Instrument Collection.</i> |
| 10:00 - 10:30 | BREAK: Sponsored by Provincial Archives of Alberta POSTER: Boudicca Buteau-Duitschaeffer. <i>Rehousing Best Practices with Emphasis on Storage and Display of Paleobiology Unique Mixed Collections.</i> |
| 10:35 - 10:55 | Bethany Palumbo, Fran Ritchie* and Rebecca Newberry <i>Beyond "No Food or Drink Allowed in the Gallery": Best Practices for Food in Cultural Institutions.</i> |
| 11:00 - 11:20 | Elsbeth Jordan <i>Going with the (Work)Flow: Layered Responsibilities in a Digitization Project.</i> |
| 11:25 - 11:45 | Valerie Tomlinson <i>Thinking Inside the Box: The Evolution of a Condition Survey.</i> |
| 11:45 - 11:55 | Q & A |
| 12:00 - 13:30 | LUNCH BREAK (CAPC-ACRP Annual General Meeting) |
| DOCUMENTATION & ARCHAEOLOGY Chair: Carmen Li, Royal Alberta Museum | |
| 13:35 - 13:55 | Kelly Caldwell*, Caroline Guay and Joseph Sembrat <i>1 Terabyte and Counting – Documentation of the Masonry Conservation of West Block, Parliament Hill, Ottawa, Ontario, Canada.</i> |
| 14:00 - 14:20 | Alireza Farrokhi <i>Heritage Documentation in Practice – Laser Scanning the Okotoks Erratic.</i> |
| 14:25 - 14:45 | Gaby Kienitz* and Michele Greenan <i>Making the Right Bonds: Mending Pots and Building Relationships with Archaeologists.</i> |
| 14:50 - 15:00 | Q & A |
| 15:00 - 15:20 | BREAK: Sponsored by Archives Society of Alberta Poster: Fran Ritchie. <i>Cowboy Conservation: The Treatment of a Taxidermy Leatherback Turtle in Cordova, Alaska.</i> |
| 15:25 - 17:00 | CAC-ACCR Annual General Meeting |
| 18:30 - 23:00 | BANQUET & SILENT AUCTION |

| Saturday, May 30, 2015 | |
|------------------------|---|
| 7:30 | REGISTRATION |
| 8:00 - 8:10 | WELCOME |
| PUBLIC ART | Chair: Kristy Trinier, Art Gallery of Alberta |
| 8:15 - 8:35 | Laurence Gagné <i>Evaluation of Two Sacrificial Anti-Graffiti Polysaccharide Coatings for the Conservation of Outdoor Contemporary Murals.</i> |
| 8:40 - 9:00 | Fiona Hernandez <i>Un-Commissioned Public Art: Researching Graffiti Preservation in Melbourne.</i> |
| 9:05 - 9:25 | David Turnbull <i>The Great Divide: Public Art in Edmonton.</i> |
| 9:30 - 9:40 | Q & A |
| 9:40 - 10:00 | BREAK: Sponsored by Bruker Corporation Poster: Sophia Zweifel. <i>Exploring the Role of the Substrate in the Fading and Reversion Behaviour of Prussian Blue Dye.</i> |
| PAINTINGS | Chair: Priyanka Vaid, Glenbow Museum |
| 10:05 - 10:25 | Anita Henry* and Rebecca Renner <i>Conserving Alex Janvier's Morning Star: A Collaborative Project.</i> |
| 10:30 - 10:50 | Ruth del Fresno-Guillem <i>Interactive Preventive Conservation: Artist Interview as a Way of Prevention.</i> |
| 10:55 - 11:15 | Irene Cárdbaba López <i>Study of Cleaning Acrylic Emulsion Paint Films on Porous and Non-Porous Supports.</i> |
| 11:20 - 11:40 | Michael Doutre*, Ashley Freeman and Alison Murray <i>Accelerated Aging and the Stability of Contemporary Acrylic Gessos.</i> |
| 11:45 - 12:05 | Wendy Crawford, Paul Marcon and Bethany Jo Mikelait* <i>Gatorfoam to Improve the Structural Integrity of Paintings: Prevention of Damage from In-House Handling.</i> |
| 12:05 - 12:15 | Q & A |
| 12:15 - 13:30 | LUNCH BREAK |
| 13:35 - 14:05 | IGNITE SESSION Amanda Harding: <i>Everything in Its Place: Problem Solving a Travelling Exhibit.</i> H.F. (Gus) Shurvell: <i>The Use of XRF Analysis in Art Conservation.</i> Tim Greening and Alyssa Becker-Burns: <i>Portable X-Ray Fluorescence at the Royal Saskatchewan Museum: Starting a Survey for Heavy Metal Pesticides.</i> |
| DISASTER MANAGEMENT | Chair: Owen Thompson, Alberta Museums Association |
| 14:10 - 14:30 | Sue Warren <i>Canada Science and Technology Museum – Crisis Management.</i> |

| | |
|------------------------|--|
| 14:35 - 14:55 | Sarah Little*, Rebecca Delorme* and Sarah Storck* <i>Staying Afloat: The Challenges of Recovering from a Major Flood at a Small Museum.</i> |
| 15:00 - 15:30 | BREAK: Sponsored by Belfor Poster: Megan Doxsey-Whitfield. <i>Investigation of Sodium Dodecyl Sulfate and Hostacor IT as Flash Rust Inhibitors for Rinsing Archaeological Iron.</i> |
| 15:35 - 15:55 | Gail Niinimaa* and Irene Karsten* <i>Salvage and Recovery of Museum of the Highwood Artifacts after Major Flooding.</i> |
| 16:00 - 16:20 | Emily Turgeon-Brunet* and Amanda Oliver* <i>Worst Case Scenario: Preparing Alberta's Archives for Future Disasters.</i> |
| 16:25 - 16:30 | Q & A |
| CLOSING REMARKS | Alison Freake, David Turnbull and Cindy Colford |
| 19:00 – 21:00 | High Level Streetcar Ride and Museum Tour |

Museum Conservation and Collaboration: A Discussion of Changes and Challenges

DR. MIRIAM CLAVIR, CONSERVATOR EMERITA AND RESEARCH FELLOW, UBC MUSEUM OF ANTHROPOLOGY,
VANCOUVER, BRITISH COLUMBIA

This presentation first reviews changes in the last thirty to forty years that have prompted conservation's material-based field to recognize in its work the values related to the intangible attributes of objects in museum collections. These developments are illustrated primarily with Canadian examples of the museum conservation of Aboriginal peoples' cultural materials. The following question is then asked: today, is the conservation field as a whole sufficiently engaged in debates related to, for example, museums and galleries being concerned with bringing together people with people, not just people with objects?

The paper continues with an examination of three Canadian conservation projects whose goals or legacies have included a focus on relationships between people, rather than only on the preservation of material culture or sites. The first example is the process used by CCI and its Aboriginal board of advisors for a CCI conference in 2007. The second concerns the conservation of a natural site in an area of intense conflict in Ontario history. The third discusses a web project. The three examples provide differing illustrations of preservation projects involving sharing knowledge in ways that have attempted to recognize, benefit, and respect all participants despite their often-differing cultural values.

Lost Beads, Missing Stories: A Preliminary Study of the Effects of Relative Humidity on the Deterioration of Wampum Beads

AMANDA MCLEOD, SAGKEENG FIRST NATION (MANITOBA), SIKSIKA, ALBERTA

For the most part, inorganic materials such as rocks, minerals and shells are viewed as relatively stable objects within museum environments, largely unaffected by fluctuations in light, temperature and relative humidity (RH), whether on display or in storage. However, once the structure of these materials has been altered (such as in the manufacturing of beads from marine shells), the objects may become more susceptible to environmental conditions. In the case of wampum beads, which are manufactured from the northern quahog mollusk shell and are an integral part in the past and present histories of the people of the Eastern Woodland cultures of North America, incidents of breakage of the beads can lead to a loss of important textual information housed within the context of wampum belts. What exactly is causing this damage?

The structure of a wampum belt dictates that both the beads and threading material are necessary to form the text of the belt. The beads were woven onto threads (or wefts) using a loom held in place by leather ties (warps), which were tied off at either end with row dividers used to keep the warps taut and separate. Early belts were composed mainly of sinew threads (animal tendon or ligament) held in place with brain-tanned deer hide warps; later belts adopted the use of bast fibre threads in place of sinew (both are referred to as wefts in the weaving process). The loss of wampum beads with the aforementioned threading material still intact indicates a failure of the structure of the beads themselves. This breakage may be the result of many factors, such as the age of the bead, poor manufacturing, abrasive damage or inappropriate environmental conditions. This presentation will discuss research that examines one possibility, the effects of relative humidity on the structure of the shell beads, taking into account the common storage conditions for composite objects such as wampum belts in museum environments, both historically and in the present day.

A selection of beads was exposed to RH levels of 23% ($\pm 3\%$), 43% ($\pm 3\%$), 54% ($\pm 7\%$), and 85% ($\pm 3\%$) for a period of 60 days, with certain tests incorporating the organic compositional elements of wampum belts. The surfaces of the beads were examined both before and after RH exposure using Fourier transform infrared spectroscopy (FT-IR), optical microscopy, and scanning white light interferometry (SWLI). The results will be discussed in the presentation.

Overcoming the Inherent Problem of Detaching Hairs on Caribou Hides

FRAN RITCHIE, ANDREW W. MELLON FELLOW IN OBJECTS CONSERVATION, NATIONAL MUSEUM OF THE AMERICAN INDIAN, WASHINGTON, D.C.

For generations, humans living in Arctic and Subarctic zones have relied on the insulating properties of caribou hides for survival. This material has been essential to their way of life, and in order to understand these groups, museums have collected a large amount of objects constructed out of caribou hide. The National Museum of the American Indian (NMAI) in Washington, D.C., for example, cares for over 1,500 pieces identified as “caribou hide/fur.” However, this life-sustaining caribou hair has a major flaw: the long hollow guard hairs that provide warmth also moult, causing damage and deterioration to objects in the form of bald spots. So far, there has been no conservation research done to address this concern. For actively detaching hides and fur objects, the main protocol is to minimize handling, thus preventing these objects from being viewed by the public. My research investigates different techniques for the consolidation of loosening hairs on hides, relying on an understanding of the biological and cultural uses of the material. Phase One of the research project was devoted to gaining a deeper understanding of caribou and caribou garments by placing the material in context. I studied caribou physiology through consultations with mammalogists, and reviewed historic and contemporary literature to learn about the native relationship with caribou and to discover construction techniques of caribou clothing. Additionally, artists, cultural institutions, and anthropologists helped in contacting contemporary skin sewers to determine how they care for moulting hides. Phase Two focused on the experimental aspect of the project. A conservation literature search pinpointed previously used consolidants and applications, while communication with taxidermists in Alaska offered less-conventional solutions. After identifying the most promising adhesives and application techniques, I experimented on strips of commercially tanned caribou hide whose guard hairs were cut at the base but not disturbed. Cut guard hairs were viewed under the microscope before and after adhesive application to examine consolidation success or failure. In addition, the test strips were manually manipulated to observe the strength and flexibility of the set adhesives. The results successfully singled out the most useful adhesives and applications for working on specific areas of hides susceptible to hair loss.

Considering that native seamstresses use pieces of hide with particular hair qualities for specific purposes, a hide in a museum collection that is losing hair also loses valuable information for future researchers and source-community members hoping to study it. Hair stabilization, therefore, is important not only to preserve the original look of these pieces, but also to maintain their cultural value. Hopefully, the results of this research will be utilized in the future to help combat the inherent problems of maintaining caribou hides in museum collections.

Evaluation of Past Consolidation Treatments for Fragile Cedar Bark

CAROLE DIGNARD, CANADIAN CONSERVATION INSTITUTE, OTTAWA, ONTARIO; AND SONIA KATA*, INTERN OBJECTS CONSERVATOR, CANADIAN CONSERVATION INSTITUTE, OTTAWA

Two Kwakwaka'wakw (North-West Coast First Nations) masks were sent to the Canadian Conservation Institute (CCI) for treatment in 2014. Among many elements, both masks had extremely fragile cedar bark strands. Developing a treatment proposal for these artifacts instigated the re-evaluation of previous cedar bark consolidation treatments undertaken at CCI nearly 30 years ago.

Cedar bark is the secondary phloem of the Western red cedar tree (*Thuja plicata*) used by North-West Coast First Nations as a material for various utilitarian and cultural products. The structure and chemistry of cedar bark make it a tough, pliable, and waterproof material during use, but over time it becomes an inherently fragile material prone to brittleness, splitting, and exfoliation. This was particularly evident in one mask, which had shredded cedar bark strands that were actively splitting and shedding material. The current practice for many conservators is to accept the inevitable losses of cedar bark and to undertake minimal or no treatment. In the past, however, shredded cedar bark strands were often consolidated (though there is little published on such treatments). CCI treated 12 similar objects with cedar bark elements from the Canadian Museum of History (CMH) in the 1970-80s, so their treatment dossiers were reviewed for treatment options. All objects had cedar bark that was fragile, and in most cases it was consolidated. Each treatment employed a different method to consolidate the cedar bark. This provided an opportunity to evaluate previous conservation treatments and compare different consolidation methods nearly 30 years after treatment.

The previously treated objects were examined at the CMH in order to assess the current condition of the cedar bark. Criteria included brittleness, amount of loss, appearance, and overall success of the treatment. Documentation, including condition reports, treatment reports, and before- and after-treatment photographs, was also reviewed. The previous CCI approaches to treating shredded cedar bark strands fell into three groups:

1) No treatment. 2) Consolidation with dilute adhesives: methylcellulose in water or water/ethanol; Ethulose 400 in water/ethanol; Klucel G; PVA; Rhoplex AC33 in ethanol; and PVB in ethanol. 3) Physical supports, with or without adhesives: paper backings with Jade 403, wheat starch paste, or EHEC/PVA in ethanol; wrapping with cotton thread with WSP; physical stabilization with hair silk thread; and a Coroplast support.

The treatments with the best results will be further tested on sample cedar bark. The findings of this investigation will guide our treatment approach for the two masks.

Revenge of the Moths

KATIE FISHER*, JOANNE SCHMIDT* AND HEATHER DUMKA, GLENBOW MUSEUM, CALGARY, ALBERTA

The Indigenous Studies Collection at the Glenbow Museum in western Canada has almost 40,000 artifacts from around the world, stored and displayed in the museum and at an off-site warehouse. The majority of these artifacts are made from organic materials and are susceptible to damage from insects and other pests. In 1981, the collection at the museum had a clothes moth infestation which resulted in most of it being treated with ethylene oxide and the storage area being fogged with pyrethrum. These actions eradicated the problem, and later moth infestations were small and easily dealt with until recently. In 2010, webbing clothes moths (*Tineola bisselliella*) were found in sticky traps in the Indigenous Studies storage on the eighth floor. Only a small area of the collection was found to be infested and was subsequently treated using a rented freezer truck. After six months, it was discovered that the moth population had spread throughout the entire collection on two separate floors. A large-scale freezing project was initiated, with the final treatment taking place in September 2014. Over those four years, nearly the entire Indigenous Studies collection was inventoried, prepared for freezing, and treated. Throughout the process, the Glenbow team had to constantly adapt procedures to respond to unexpected moth behaviour, budget constraints, available supplies and staffing. Also, despite having a walk-in freezer on site, minimal treatment happened in-situ. Instead, we rented freezer trucks, and experimented with contracting professional movers.

In addition to treatment logistics, particular attention had to be given to the cultural sensitivities inherent to the collection. Specifically, the objects in the First Nations collections are not strictly historical artifacts. To those in the source communities, as well as those accessing the collections, they are living entities, encompassing the past, present and future. They are considered vital living links to cultural identity and family histories. In fact, many visitors, particularly those from Treaty 7 territory, come asking to visit objects and bundles by family name. Additionally, the bundles and other sacred items are often smudged and used by society members. Thus, there was a need for careful consultation with elders to ensure all the proper protocols were taken by those treating these items. Dr. Gerry Conaty, director of Indigenous Studies, arranged for a ceremony at a Cree Sweat lodge in Maskwacis, frequent smudging and visits from elders in advance of and throughout the process for relevant staff and interns. Offerings of tobacco were also given to every sacred object as it was prepared for freezing.

While there were many similarities between this present infestation and the one in the early 1980s, both the treatment methods and the handling protocols, especially for sacred First Nations objects, have greatly changed in the intervening years. Rather than strictly relying on museum staff for expertise, First Nations elders were consulted as equal partners in the process, thus acknowledging the value of traditional knowledge. This project also demonstrates the need for ongoing vigilance and resources to prevent future infestations of this magnitude.

The Octopus Bag - Mounting an Oversize Textile

JANE DALLEY, DALLEY-FROGGATT HERITAGE CONSERVATION SERVICES, WINNIPEG, MANITOBA

In April 2014, the Canadian Museum of Human Rights (CMHR) was designing the Indigenous Perspectives Gallery and required a conservator to mount a reproduction Metis octopus bag. The octopus bag/banner is made of navy blue wool decorated in traditional Metis designs using antique glass trade beads. The only unusual part of this request was that the octopus bag was 6.782 m high by 1.150 m wide (23 ft. high by 4 ft. wide). Approximately 60 lb. of beads were used in the creation of the banner and the total weight of the fabric and beads was 110 lb. Because of its size, the octopus bag/banner was made in 5 pieces: a top, a bottom, two sides, and a panel of machine-embroidered community names in the centre. The pieces were to be assembled for the finished piece. The key requirement for the mounting was for the bag to look as if it were floating against the black background of the gallery wall. I had some experience with large “floating” artworks (“Mounting of Oversize Modern Artwork at Le Centre de conservation du Québec,” IIC-CG 1992), so I expressed interest in the project and found myself drawn in by the technical challenge.

Several meetings were held with the beader, exhibit designers and other conservators to determine the safest and most effective way to mount it. Details of the installation, and the materials used in making the banner and their characteristics were discussed. A plan emerged that called for the octopus bag to be supported by a specially designed, custom-built frame that would not extend beyond the exterior of the banner and would not be visible when seen from the front. The five pieces of the octopus bag were to be mounted on five mounting panels, so as to spread out the weight of the beaded designs. The panels were to be mounted on the aluminum frame, which had five sets of attachments set on cross bars that screwed into the gallery wall. The work to assemble the bag was to be done “on the flat” at the CMHR.

By looking at the installation challenges of the octopus bag in a cooperative manner before it was even finished, it was felt that the mounting and preservation challenges were addressed well in advance of the gallery opening. Unfortunately, during the 7-month project that was the mounting of the octopus bag, not everything went as planned. This presentation describes the challenges, compromises and anxiety involved in bringing the project to a successful conclusion.

Deconstructed: Restoring the Intent and Integrity of a Rare Kainai Squirrel-Lined Baby Quilt

SHIRLEY ELLIS, ROYAL ALBERTA MUSEUM, EDMONTON, ALBERTA

More than 100 year old, a Kainai First Nation baby quilt in the Royal Alberta Museum collection was unique in the way that it was composed with a decorative quilted side and a thermal skin side for warmth. The cotton-quilted side was made up of vertical bands – some continuous and some formed of patchwork squares – while the thermal side was made from a series of gopher skins (Richardson ground squirrels) attached to a flour sack (“Cardston, Alberta” is still visible).

Over the years the quilt suffered from major rodent and moth damage, plus overall soiling and distortion. After colourfastness testing, it was determined that it could be safely wet-cleaned but the layers needed to be separated. Not an easy decision. After weighing the pros and cons, and after consultation with the curator, it was decided that the benefits of wet-cleaning outweighed the separation of the layers and the possible change in reassembly. The quilt top and the cloth to which the skins were attached were all separated and wet-cleaned. The skins were humidified and flattened, then secured to a nylon tulle backing for support and unification of the skin layer, allowing it to be reattached to the flour sacking.

Stabilization of the textile completed the treatment. Filling in the losses allows the visitor to view the quilt as a whole and to appreciate it for what it was. In the end, the baby quilt is more stable, its appearance has improved, and its lifespan has increased, making it more accessible for generations to come.

Loss Compensation for an Early Non-Standard Union Jack from the War of 1812

RENÉE DANCAUSE, CANADIAN CONSERVATION INSTITUTE, OTTAWA, ONTARIO

The CCI textile lab recently completed the treatment of an early non-standard Union Jack from the War of 1812. Several differences in design and construction distinguish this one from a standard Union Jack. The origins of the Union Flag, or more commonly the Union Jack, will be briefly discussed, followed by a description of the process of loss compensation.

This non-standard Union Jack, one of two remaining colours of the Third Regiment of York Militia, is significant for several reasons. Flags of this sort are rare, and usually nothing is known about the maker; but in this case, the names of some of the “young ladies of York” who constructed the flag are known. It was made during and not sometime after the conflict, as is often the case; and lastly, it was likely used during the War of 1812 at the Battle of York in April of 1813.

The standard pattern of the Union Jack as we know it was developed in 1801. The fact that a flag made 11 years later, in 1812, does not follow the established design can be considered characteristic of the period. This flag lacks the counterchanging seen in the quadrants of the “saltires” or the diagonals of the crosses. The flag is symmetrical, and thus the true “front” and “back” and “top” and “bottom” are unknown, and both sides are equally faded from being on display. This flag also lacks the royal cipher, a central medallion, and there is no evidence or remains of one.

Many questions regarding the approach to compensation for loss were dealt with in consultation with the client. For example, the flag has no hoist seam and lacks a significant portion of the fly end. As the flag is symmetrical, the problem lay not in determining how much of the flag was lost, but how to interpret the flag remains. Did the client want the losses at both fly and hoist ends filled? Which side would read as the front? Over time the top and bottom edges formed scallops from being hung at intervals with tacks. These distortions cannot be straightened and are now permanent. Was the flag to appear as though it has straight edges, as originally intended, using compensation fabrics to fill these gaps, or are the wavy top and bottom edges representative of the flag as it is today?

The approach chosen for loss compensation was that an exact reproduction of the flag was created and incorporated in the new pressure mount system. Numerous steps were required and hurdles overcome to reproduce the flag. This paper will give a glimpse of the work involved in this process.

Conservation of a Chinese Lion Dance Head

EVELYN AYRE, OTTAWA, ONTARIO; CAROLE DIGNARD, CANADIAN CONSERVATION INSTITUTE, OTTAWA, ONTARIO; ALISON FLEMING*, EDMONTON, ALBERTA; AND FIONA HERNANDEZ, OUJE-BOUGOUMOU, QUEBEC

The Chinese lion dance is said to bring good fortune and ward off evil spirits through the lion's animated expressions, colourful appearance, and joyful movements accompanied by music and firecrackers. Two people animate the lion's legs, with the front person operating the lion's head, wiggling its ears, opening its mouth and batting its eyelids. But all this partying takes its toll, and the lion head treated by the Canadian Conservation Institute (CCI) for the Royal British Columbia Museum (RBC), showed ample evidence of its colourful history: delaminating paint over nearly half of the object; structural damage to the bamboo armature; torn paper and fabric "skin;" soot soiling, and even some charring to the various decorative components: horse hair, yak pelt, rabbit fur, plastic eyebrows, metallic trim, silk ribbon, pompoms and metallic discs. In short, the lion looked quite worn out.

Treatment was conducted from May 2013 to September 2014 in CCI's Object lab, over the course of nearly 1150 hours. After thorough examination, pre-treatment photo-documentation and approval of the treatment proposal by RBC, treatment began. The lion head's multifaceted painted surface was painstakingly consolidated over many hours, and in some particularly friable areas, the ultrasonic mister was used to mist the consolidant. The surface was aqueously cleaned, and the varnish layer rejuvenated where required. Fur, trim and beard components were removed and wet-cleaned to remove the fine, ingrained soot. The splayed bamboo jaw and sprung areas of the main bamboo cane armature were repaired to stabilize the structure of the lion's head. Areas of torn and distorted paper and fabric "skin" were humidified, brought back into plane, and stabilized, and losses were infilled with Japanese paper. Areas of paint loss were inpainted after consultation with RBC, with the aim of minimizing the extent of inpainting to respect the object's history of use, while restoring visual cohesion. Decorative components were readhered with a stable, reversible adhesive; disfiguring aged adhesive was cleaned off metal discs; and a degraded polyurethane cushion was replaced with a stable material. The risk of acidic leakage from an old battery was eliminated by its removal and replacement with a digital photograph paper reconstruction.

The lion head, now stabilized, is ready for display as an example of 20th-century Chinese-Canadian west coast craftsmanship. Enlivened by its treatment, it exudes a bright energy while retaining the signs of its age – records of yesterday's parties.

On the Front Line: Delivering Care and Conservation to Imperial War Museum's Centenary Transformation

ANDY HOLBROOK* AND CHRIS KNAPP, IMPERIAL WAR MUSEUM, LONDON, U.K.

Imperial War Museums London (IWM) re-opened in July 2014 following a major renovation, over a year of closure, and nearly four years of planning and content delivery. A \$60-million building program has transformed the visitor experience, delivering a state-of-the-art First World War gallery in time for the centenary of the outbreak. The project also delivered an architecturally ambitious new main atrium gallery, containing suspended aircraft, 25-ton tanks, objects cantilevered over the edge of balconies, and other challenging and unique object displays across five floors. Designed by Foster and Partners, the transformed IWM also includes new shops, cafés and public facilities.

The project has been unique for the level of intervention in the building and the ambition of the new architecture and the displays. Most of the plans have been successful, but in any case it is always vital to showcase experience – for better or for worse.

With that in mind, the paper will present and explore the project team's experience with:

- The development and delivery of the galleries;
- The ethical challenges that a conservator faces on a building site;
- The importance of risk management in a huge capital project;
- How to work effectively in partnership with designers, architects and builders;
- The importance of planning (or why you should always double-check everyone's measurements);
- How to work with structural engineers – understanding floor loading;
- How to decant 8,000 objects accountably and safely in 3 weeks;
- The innovative techniques of conservation and display design that we developed and employed for the 1,500 objects that are now displayed in the new atrium and First World War galleries – from a 14-metre Harrier Jet aircraft to a model of a chocolate soldier to Paul Nash's iconic painting, *Menin Road*;
- The lighting display matrix we developed as a risk management tool for light-sensitive objects;
- How IWM manages hazardous collections (asbestos, munitions, radioactive items) in displays;
- How we used filming, photography and blogging to record and promote the behind-the-scenes work;
- And what happens if you don't get it right first time....

Preserving “The Spirit of Sir John A”

EMILY RICKETTS*, LAURENCE GAGNÉ* AND ALEXANDER GABOV, CONSERVATION OF SCULPTURES, MONUMENTS AND OBJECTS, KINGSTON, ONTARIO

For over four decades, the picturesque waterfront of Kingston, Ontario has been home to an icon of Canadian industrial heritage. The Locomotive CPR 1095, affectionately nicknamed “The Spirit of Sir John A”, served southeastern Ontario for nearly half a century before it was donated to the city in which it was originally manufactured. As a celebrated addition to Kingston’s cultural heritage collection, the recent efforts to relocate and preserve Engine 1095 have proven to be extraordinary. For a team of local conservators, this project was not only about the challenge of treating an object once capable of towing twelve tons of coal. More importantly, it demonstrates how passion for local heritage and eagerness to collaborate can lead to innovation and make a community proud to take a closer look into its past.

A combination of intense service on Canadian railroads, followed by full exposure to an extreme outdoor environment, and lack of an effective maintenance plan had left Engine 1095 with extensive structural and visible damage. Fortunately, in 2007, a local interest group brought the vulnerable state of the locomotive to the attention of the municipal government. This assembly, known later as the “Engine 1095 Restorers,” was the catalyst whose actions resulted in an extensive and uniquely collaborative restoration project.

When they first brought their proposal to City Hall, the goals of the Engine 1095 Restorers were fairly simple: a good cleaning and minor constructions to restore stability and safety. These early ideas evolved into a treatment plan that included Kingston City Hall, a number of local industrial unions, ERA Architects, volunteer and student initiatives, and Conservation of Sculptures, Monuments, and Objects (CSMO). The collaboration between these groups resulted in a restoration plan that was grounded in historical accuracy and maximized future preservation. It took hundreds of workers and volunteers over three years to transform the dilapidated engine into “The Spirit of Sir John A,” a shining example of Canadian industry in the past and present.

For the CSMO conservators, working with Engine 1095 has presented many challenges. A voice among many, CSMO was responsible for working with the goals of the aforementioned teams while still emphasizing the needs of the locomotive from a conservation perspective. This brought the opportunity to expand the role of conservation beyond traditional treatment. CSMO has begun work on a comprehensive photogrammetry and 3D laser scanning project that will result in the creation of a three-dimensional digital record of the locomotive. Not only does this type of virtual surrogate serve as ideal documentation for this industrial artifact, but it could also lead to exciting and innovative methods of public engagement. Possibilities include the creation of interactive online exhibits and the manufacture of precisely accurate models through 3D printing. By embracing the technologies of the future, CSMO, and all involved with the restoration of Engine 1095, hope to ensure continued appreciation of this titan of Canada’s industrial past.

Mixed Media: Conservation of the Communications Collection at The Henry Ford

JESSICA LAFRANCE-HWANG, THE HENRY FORD, DEARBORN, MICHIGAN

The Henry Ford is currently undertaking a multi-year IMLS grant-funded project to locate, conserve, research, catalogue, digitize and rehouse over a thousand objects from its communications collection. This collection represents over a century and a half of advancements in the field of communications, including objects related to the work of Charles Apgar, Charles Jenkins, Amos Dolbear, and John Hays Hammond Jr. For decades, this collection has been stored amongst a variety of other industrial and power-generation equipment in a warehouse on the museum campus. Mould was discovered in the storage facility in 2003, at which time dehumidifiers were installed; however, other environmental controls are minimal and little air exchange occurs. Although inventories of specific object types such as telephones and typewriters have been carried out, the majority of the communications collection has not been thoroughly catalogued. As a result, much of this collection remains a mystery. Due to the size of the collection and wide range of the activities at The Henry Ford, the resources were not previously available to address major conservation, registration, and curatorial issues related to this particular group of objects despite their significance.

Retrieving and conserving these objects in batches is the first step in the project. Due to the volume of objects, practical treatment decisions and the rapid adoption of new protocols are a necessity. Little can be determined from the catalogue records about what might be found as areas of storage are systematically cleared, and what condition these objects may be in. The objects within this collection vary greatly in size, from a dollhouse radio to a Xerox 914, and encompass a wide range of traditional and modern materials. As a result, the conservation requirements can vary with every batch. It is assumed that all objects are contaminated by mould and many also contain hazardous materials such as cadmium corrosion products and asbestos. Apart from the expected deterioration caused by the lack of environmental control in the storage building, we also encounter interesting deterioration issues across a range of material types due to inherent vice, and proximity of incompatible materials in storage.

This presentation will provide an overview of the project as we reach the final quarter of the grant, and case studies to highlight the conservation challenges faced along the way.

At What Cost? The Preservation and Use of a Musical Instrument Collection

JESSE MOFFATT, NATIONAL MUSIC CENTRE, CALGARY, ALBERTA

The National Music Centre (NMC) is Canada's only music venue for the presentation, preservation and amplification of music history. NMC is motivated to make music history accessible and continuing. Setting it apart from other collecting institutions, NMC creates spaces and opportunities for visitors and artists to interact with 'living' musical instrument collections. NMC's unique approach to a living collection of musical instruments aims to carefully balance preservation of collection artifacts with responsible artifact access, giving its audience the fullest experience of music possible. When appropriate, NMC uses its musical instruments for creating, performing, and recording new music, and for use in exhibitions and public programming.

For over a decade, NMC has been providing interpretive and artist access while not losing sight of our more global challenge: How does a museum provide a 21st-century approach to accessing its collections while balancing the collections' care?

We will share our experience in managing the use, maintenance and preservation of our musical instruments collections by sharing a musical instrument use matrix developed by Dr. Bob Barclay (formerly of the Canadian Conservation Institute); discussing the impact of that use; and presenting our long-term plan to preserve the collection in perpetuity. This will be illustrated by a case study demonstrating ways in which the long term care of a collection can coexist with an approach that is exciting and engaging because it recognizes progress and the possibility of future development. Preserving the past and recognizing the demands for the future are both possible but costly. It requires a team of professionals to control and monitor access extensively.

Musical instruments are among the most highly dynamic, interactive and evocative of artifacts; conserving them in a non-playing condition excludes the possibility of exploring their original intended function as producers of sound. This paper aims to describe NMC's efforts at a balanced approach, which provides access to a living collection while preserving the collection in perpetuity. The lessons we have learned may be appreciated by others working with collections that would benefit from a reasoned and sensitive approach to access.

Beyond “No Food or Drink Allowed in the Gallery”: Best Practices for Food in Cultural Institutions

BETHANY PALUMBO*, OXFORD UNIVERSITY MUSEUM OF NATURAL HISTORY, OXFORD, U.K.; FRAN RITCHIE*, SMITHSONIAN NATIONAL MUSEUM OF THE AMERICAN INDIAN, WASHINGTON, D.C.; AND REBECCA NEWBERRY, SCIENCE MUSEUM OF MINNESOTA, ST. PAUL, MINNESOTA

Museums, people and food are closely tied together. From staff members’ brown bag lunches, to the cafeteria, or a catered donor event, food service is a necessity in modern museums and institutions. At the most basic level, food vendors feed visitors and generate revenue. The focus on healthy, sustainable nutrition also fits well into the educational mission of the museum field.

On the other hand, the presence of food in the museum presents a challenge to the long-term preservation of museum collections. Incorrect disposal of food waste and insufficient housekeeping both contribute to pest infestation, while food and beverages carried through areas with collections can spill and soil objects, causing damage that may not be reversible.

While balancing the necessity of food service and the needs of the collections is a challenging prospect, documented recommendations in regard to food management within museums are lacking. The Conservation Committee of the Society for the Preservation of Natural History Collections (SPNHC) has decided to address this dearth of information by creating the document “Best Practices for Food in Museums.” To prepare the document, members of the Conservation Committee reviewed existing resources and, in April 2014, presented an online survey about food use in museums and cultural institutions. 351 people from 21 countries participated in the online survey, which was publicized through 22 museum list serves and social media sites. Several participants also shared their own institutional food policies.

The results of the survey guided the creation of a “Best Practices for Food in Museums.” The document will be published through the SPNHC website and will be reviewed periodically. This presentation will discuss the survey and case studies that helped inform the resulting guidelines that institutions can use to protect vulnerable collections while supporting food services.

Going with the (Work)Flow: Layered Responsibilities in a Digitization Project

ELSPETH JORDAN, CARDIFF, U.K.

Project-based conservation is rarely static, and it can offer new opportunities for hands-on conservation. The responsibilities of the conservator change as the project moves through its various stages.

In 2012, Amgueddfa Cymru-National Museum Wales received a grant from the Esmée Fairbairn Foundation to digitize a portion of their collection of over 700,000 photographic images. Initially the project was conceived without a permanent conservator, relying instead on the archive conservator one day a week. It soon became apparent that the varied nature of the materials (including glass, paper, and film) and the state of the collection would need more permanent help. The decision was made to hire an assistant photography conservator to facilitate the project. The role was originally conceived to provide cleaned and stabilized material to be scanned, but it came to encompass five areas. These were Documentation, Treatment, Exhibition, Outreach and Legacy.

Documentation: A new photograph-specific condition and treatment report was developed to encompass all the museum's photographic material.

Treatment: Due to the variety of materials and storage conditions, treatments ranged from a light brushing to extensive cleaning, repair and stabilization. Actions included removing adhesive from emulsion and repairing glass-plate negatives.

Exhibition: Innovative methods of displaying glass and paper negatives using light boxes were developed. A new moisture-free method of mounting water-sensitive photographs was also employed.

Outreach: Knowledge was shared through providing study days for other archive conservators. New audiences were also sought; this included allowing children to clean glass-plate negatives for the first time.

Legacy: Resources for staff training are in production, including photograph-specific handling guidelines and YouTube videos. The increased visibility of the photographic collection helped the archive and preventative conservation team present a strong case for freezer storage for film negatives.

This paper will discuss the challenges of balancing the various needs of the digitization project. Specific attention will be paid to practical solutions, including treatment and display.

Thinking Inside the Box: The Evolution of a Condition Survey

VALERIE TOMLINSON, AUCKLAND WAR MUSEUM, PARNELL, N.Z.

The Auckland Museum in New Zealand had its origins in 1852, making it New Zealand's oldest museum, and one even older than Canada. Since 1852, the museum has undergone various relocations, updates, and renewals, alongside considerable development in accepted museum practices. The museum is currently embarking on an ambitious 20-Year Plan (*Future Museum*), with a strong focus on "collection readiness". In 2009 the museum had already decided to instigate a comprehensive condition survey of all 3.5 million-plus artifacts in its multidisciplinary collection. Initially expected to take two years and now going into its sixth year, the survey continues today as a key element of the Storage Optimization and Improvement Project, and has undergone various evolutions. This paper presents the planning and processes involved, and some of the results.

The presentation outlines the design of the condition survey, how that evolved when put into practice, and why. It will cover some of the preliminary results. In doing so, it will include recent findings around pest management, disaster preparedness, and environmental requirements, and will highlight some cultural concerns around taonga Māori (treasures of the indigenous Māori). These issues all become linked in relation to storage, and the presentation will then focus on storage practices.

One of the issues encountered was the inconsistent and often unsatisfactory state of packing and storage of parts of the collection. Throughout the survey, addressing packing conditions was identified to be a major challenge ahead. Many of the problems were historic, reflecting both changes in the museum, and the evolution of thinking around good museum practice. To address these, packing standards were investigated. A new standard is being developed, which aims to be standardized, quick and easy to upgrade, and relatively inexpensive, but which still maintains museum standards to best practice levels for the needs of the artifacts. It's in the box!

To date, the collections surveyed include the ceramics collection; the furniture collection; most of the other applied arts material; a large percentage of the ethnographic collections, including all of the indigenous Māori carvings; most of the textiles; about half of the oversize objects; and a large proportion of the galleries. Still to be reviewed are the firearms, ordinance and other war materials, numismatics, the remainder of the ethnographic and historical collections, all of the natural history collections, and all of the documentary heritage materials. So this is very much a "work-in-progress."

In the Māori worldview, the past is what is in front of us. It is what we can see. The future is what is behind us, what we can't see and don't know, and so we walk backwards into the future. Examining the museum stores involves looking back into the museum's past, and in doing so we will divine our way forward into our "Future Museum."

1 Terabyte and Counting – Documentation of the Masonry Conservation of West Block, Parliament Hill, Ottawa, Ontario, Canada

KELLY CALDWELL*, CAROLINE GUAY AND JOSEPH SEMBRAT, CONSERVATION SOLUTIONS INC, OTTAWA, ONTARIO

The West Block is one of three building ensembles that comprise the original Parliament Hill complex in Ottawa. Constructed in a mid-19th century Neo-Gothic style, the West Block is faced entirely with stone, primarily random ashlar of local Nepean sandstone, accented by sculptural and ashlar stones in Berea sandstone and Potsdam sandstone trim. The building is currently undergoing a major five-year rehabilitation project, which includes modernizing building systems, structural and interior upgrades, enclosing the courtyard to create a temporary home for the House of Commons, and conservation of the exterior masonry. The authors are currently under contract and tasked with the masonry conservation oversight for the building.

An integral part of the conservation process is thorough and on-going documentation. This includes as-found condition assessments, recording daily observations and conservation processes, and photography of all stages of work. Documenting an active construction site presents its own challenges, and due to the enormous scale and sheer volume of data that is created on a daily basis, this project is almost certainly the largest of its kind in Canada. The use of modern portable electronics and technology has become an essential tool for this project, as it allows for the real-time transfer of information and reduces the redundancy that is encountered in conventional techniques.

The authors will discuss their survey methodology that was employed to record and track a vast and ever-increasing amount of information, which includes AutoCAD drawings and high-resolution photography. This is not just for posterity, but to provide an accurate tracking of conditions, scope of work, and record of treatment, accessible in real time by the conservators, the contractor, and the construction manager, and to provide the basis for calculating monthly billing requests.

Heritage Documentation in Practice – Laser Scanning the Okotoks Erratic

ALIREZA FARROKHI, HISTORIC RESOURCES MANAGEMENT BRANCH, ALBERTA CULTURE AND TOURISM,
EDMONTON, ALBERTA

The word “Okotoks” translates from the Blackfoot language as “Big Rock.” The name was given by the resident indigenous people to a very large boulder that is known as a glacial erratic. It is about the size of a two-story house and is estimated to weigh nearly seven million kilograms. The Big Rock is significant both geologically and culturally. It is one of the largest glacial erratic in North America and has great spiritual value, mainly because of its association with Blackfoot oral traditions and partly due to the rock art painted on its surface.

The site is sacred to Blackfoot people who continue to conduct ceremonies there and hold the site in great reverence. Unfortunately, in recent years the Rock has been subjected to extensive and frequent incidents of vandalism. Removal of the graffiti from the surface of the rock poses a serious risk to the fragile rock art underneath. To better manage the site and protect the pictographs, an accurate map of the location of the rock art was needed.

In early October 2013, the entire external surface of the Okotoks Big Rock, including some internal crevices, was scanned during two days of field work. The result is a strikingly accurate rendering of the Okotoks erratic, both in its geometric shape and in the plotting of all known rock art images. The project also resulted in the production of an accurate 1:200 scale model of the Rock that will be useful for planning and educational purposes.

This presentation will provide a brief introduction to the Okotoks erratic and will showcase the laser scanning project capturing the geometry of the rock along with the location of the known pictographs. It will also highlight challenges that were faced during the course of the project, and the opportunities it provided to better manage and protect this very special place in Alberta.

Making the Right Bonds: Mending Pots and Building Relationships with Archaeologists

GABY KIENITZ* AND MICHELE GREENAN, INDIANA STATE MUSEUM AND HISTORIC SITES, INDIANAPOLIS, INDIANA

The Midwestern U.S. is a rich source of prehistoric Native American artifacts – representing centuries of sophisticated cultures that were spread across the region. One of the larger artifact types from these cultures in terms of both volume and variety are low-fired ceramic sherds. In repositories across the Midwest, archaeologists manage hundreds of thousands of sherds, some of which are new collections requiring stabilization and reconstruction, but many of which are legacy collections containing mended vessels or portions of vessels. Conservators are scarce, and are often viewed as impediments rather than aids to the processing of collections. Archaeologists faced with massive quantities of ceramic materials and limited resources have typically relied on ad hoc knowledge and training transmitted from fellow archaeologists. This divide between archaeologists and conservators has resulted in archaeological materials being processed in isolation, using techniques and materials that may be detrimental.

This case study reviews the experiences of the past five years, during which Michele Greenan, Director of Archaeology, and Gaby Kienitz, Head Conservator at the Indiana State Museum and Historic Sites, have engaged in a program of helping Midwestern archaeologists acquire the knowledge and skills to carry out currently accepted conservation standards of practice for mending low-fired ceramic vessels. This program was designed to change how archaeologists are processing and curating ceramic collections, as well as to help build the professional relationship between archaeologists and conservators. During the program, archaeologists are essentially being trained as conservation technicians in addressing the bulk of low-fired ceramics while being encouraged to save their resources for hiring a conservator for the more intractable problems. By teaching workshops at different venues, presenting a paper and a demonstration at a regional archaeological conference, and making use of social media, efforts have been made to mend the gaps in knowledge, skills, and also the relationship between archaeologists and conservators. The progress of this program and future plans will be presented in light of previous and recently accumulated feedback from past students.

Evaluation of Two Sacrificial Anti-Graffiti Polysaccharide Coatings for the Conservation of Outdoor Contemporary Murals

LAURENCE GAGNÉ, KINGSTON, ONTARIO

In recent years, the conservation of outdoor contemporary murals has attracted much attention and concern as many murals were in a serious state of decline. The issues surrounding the preventive and active conservation of outdoor contemporary murals are numerous and multidimensional. Among these, graffiti vandalism is probably one of the most damaging to murals. The efficacy of PSS 20 and APP S, two sacrificial anti-graffiti polysaccharide-based coatings, was tested in this study. These coatings are described by their manufacturers as being easily reversible, clear, non-toxic, biodegradable, environmentally friendly, and compatible with most surfaces, including painted surfaces. They thus present promising properties. The objective of this study was to verify the efficacy of the new products, providing new tools to artists, conservators, and concerned authorities to face the growing challenge of graffiti vandalism.

PSS 20 and APP S were tested for their stability and reversibility in response to accelerated aging and graffiti vandalism. Mural surrogates were prepared on two different substrates: red clay bricks and cement boards. The substrates were covered with a layer of high-quality primer, with an excellent lightfast acrylic paint layer, and then with the PSS 20 and APP S anti-graffiti coatings. The properties of the coatings, including pH, colour, gloss, adhesion, abrasion resistance, and overall surface appearance, were measured before and after accelerated aging. The ability of the coatings to act as a barrier layer against graffiti was evaluated at three different times: before, after three years, and after ten years of artificial aging. A layer of spray paint and felt marker was applied to the surrogates. After graffiti and coating removal, cross-sections of the surrogates were made and evaluated using optical and scanning electron microscopy; possible abrasion of the paint surface and penetration of graffiti materials were evaluated. In order to study their chemical deterioration, the coatings were analyzed using Fourier transform infrared spectroscopy, size-exclusion chromatography, and water contact angle. These analyses were performed through the different aging stages. The experimental results of this study have provided new insight about the efficacy of the PSS 20 and APP S anti-graffiti coatings.

Un-Commissioned Public Art: Researching Graffiti Preservation in Melbourne

FIONA HERNANDEZ, OUJE-BOUGOUMOU, QUEBEC

Since its illegal beginnings in the 1970s, un-commissioned art around the world has increasingly woven itself into the cultural fabric of the city. Graffiti and street art occupy the space between train lines and laneways; art and vandalism; counter and popular culture; institutionally sanctioned production and damage to personal property; touristic attraction and grounds for a hefty fine; anti-capitalist movement and advertisement campaign. Members of graffiti/street art communities have been involved in preserving and sustaining street culture since the 1980s, using photography, publications and, more recently, online platforms to extend the life of their work. In the last 20 years, cultural and heritage institutions have gained interest in street art and graffiti as a significant cultural movement with aesthetic and historic value. City councils, policy makers, galleries, heritage institutions, academics, property owners, artists and private individuals are involved in negotiating the space for graffiti/street art in our cultural landscape. In spite of this growing debate, very little is published within conservation on the preservation of this medium. What can conservators add to this growing dialogue?

This study examines preservation in the street art and graffiti scene in Melbourne, Australia, as an example of communities that manage and maintain their own preservation, and a subculture highly connected with photography and online platforms. The research looks at street art and graffiti through the lens of contemporary art conservation, using the artist interview model developed by the International Network for the Conservation of Contemporary Art (INCCA). An interdisciplinary cross-section of graffiti and street art professionals were interviewed, including street artists, graffiti writers, graffiti photographers, curators, policy makers, academics and conservators. It presents definitions of artists' practices, such as the importance of ephemerality and the role of authenticity and copyright; current conservation approaches, using physical, photo-documentation and narrative approaches; and the role of institutional collaboration within the subculture.

Street art and graffiti is an opportunity for conservators to engage with communities that actively document and sustain their own heritage. This study presents entry points in which our training, material literacy and ability to work in a cross-disciplinary fashion are crucial in developing long-term plans for the conservation of contested heritage.

The Great Divide: Public Art in Edmonton

DAVID TURNBULL, EDMONTON ARTS COUNCIL, EDMONTON, ALBERTA

The City of Edmonton's Public Art Collection includes approximately 250 artworks; nearly 200 of these were acquired since the city adopted a Percent for Art policy in 1992. The Edmonton Arts Council, a not-for-profit society funded by the City of Edmonton, coordinates the management of the collection. In 2008 a Public Art Master Plan was created; one of its recommendations to the City was the implementation of a conservation program to work with existing artworks while integrating into the acquisition process for newer public artworks. Case studies will examine some of the challenges of working with older works in the collection and some of the procedures put in place, moving forward to integrate new commissions into future Capital projects.

Conserving Alex Janvier's Morning Star: A Collaborative Project

ANITA HENRY*, MONTREAL, QUEBEC; AND REBECCA RENNER, CANADIAN MUSEUM OF HISTORY, GATINEAU, QUEBEC

Anita Henry and Rebecca Renner will present the conservation project of the Canadian Museum of History's mural painting *Morning Star*. The mural was painted by the Albertan Dene Suline artist Alex Janvier and his son Dean in 1993 on the domed ceiling at the south end of the Grand Hall of the Canadian Museum of Civilization (renamed the Canadian Museum of History in 2013) in Gatineau, Quebec. The abstract painting measures 19 metres (62 feet) in diameter, covers 4,500 square feet of ceiling, and rises 27.4 metres (90 feet) above the granite floor of the Grand Hall. Its iconography represents aboriginal values and philosophies, as well as the clashes that occurred between First Peoples and Europeans since the latter's arrival in the New World.

Janvier used acrylic artists' materials to paint *Morning Star*. He prepared the drywall ceiling with acrylic ground and used acrylic emulsion paints for painting. After completion, the artist varnished *Morning Star* with acrylic matte emulsion, which was applied with rollers. As the matte emulsion was applied and dried, white semi-opaque bubbles formed on the surface. Areas of roller overlap appeared as white bands, which broke up the visual unity of the colour fields. Other minor damage had occurred over time, but only a rust stain from a sprinkler head was considered visually disturbing.

The conservation project involved the collaboration of the Canadian Museum of History (CMH), the Canadian Conservation Institute (CCI), Anita Henry, and the artist. The philanthropists Ralph and Roz Halbert, who had originally commissioned the mural, provided the funds for the conservation project. CMH's conservation staff conducted research and evaluated risks to the mural. CCI performed pigment and varnish analysis, prepared a preliminary condition assessment, carried out solubility testing, and helped to determine the appropriate conservation treatment protocol. Anita Henry carried out the conservation work itself.

Rebecca Renner will introduce the project's inception, the conservation management aspects of the project, and CCI's analytical results. Anita Henry will present the artwork's iconography, the artist's technique, her solubility testing, on-site inpainting media testing, and the final choice of inpainting medium to reduce the white banding and rust stain. She will also present the challenges of working on-site. One unusual aspect of the project was the requirement to operate an 85 - 95 foot boom lift to reach the artwork.

Interactive Preventive Conservation: Artist Interview as a Way of Prevention

RUTH DEL FRESNO-GUILLEM, RICHMOND HILL, ONTARIO

In this paper, I will argue that interviewing emerging artists would make a strong contribution to the conservation of their artwork. While the artist interview is used with important artists or when an artwork needs to be restored, very little has been used with emergent artists or before the need for restoration.

Big and small art collections (even artifacts collections) may include fascinating productions. When these have a comprehension problem or a deterioration situation, we all wish the creator were sitting next to us guiding our hand or helping us in making our decisions. This has been the main aim in our research: listen to the artist. How exciting and helpful would it have been for Gianluigi Colalucci, the Sistine Chapel restorer, to be able to talk with Michelangelo about his intentionality and the deep architecture of his thoughts? We have developed a series of questions that have driven the artists into the unknown world of art conservation. Using the interview as a methodology of prevention, a very powerful tool of knowledge before deterioration, we are able to use the information for the benefit of the artwork conservation to manipulate, exhibit or store the artwork. In this research, 81 emergent artists have been interviewed so far. These 81 are responsible for the art productions of the Art and Diseases Chair of the UPV (Polytechnic University of Valencia, Spain) and AbbVie, a global biopharmaceutical company (owners of the art productions and promoters of the art project Perspective Art Inflammation and Me and Perspective Art Liver Diseases and Me).

The interview has been done with the objective to gather as much information as possible about each art production. Collected information is about materials, conceptualities or artist's intentionality, directly through the artist's voice.

With this information, we are developing a series of documents that will make each of these artworks self-sustainable from a conservation point of view. In these documents, we will find detailed information about materials and procedures; how the artists have thought about the idea of damage; how the artists accept the ageing of their artistic production; how the artists have conceived of their art in an exhibition (exhibition instructions); how to tackle damage with replacement or fixing; or the possibility of their art being ephemeral, to disappear over time. Each art production will be documented to be respected and at the same time to ensure that if at any time intervention is needed, the professional who will be doing this work will have in his hands all the information he needs to make the correct decisions without losing time. This work methodology could have very good results in any collection, gallery or museum, especially when working with young or emerging artists. We encourage using it before we need to ask for a restoration, before it becomes a necessity, as prevention. This methodology may be used for artifacts, books or traditions as well.

Study of Cleaning Acrylic Emulsion Paint Films on Porous and Non-Porous Supports

IRENE CÁRDABA LÓPEZ, UNIVERSITY OF THE BASQUE COUNTRY, ANDOAIN (GUIPUZCOA), SPAIN

In order to understand the conservation and restoration of contemporary art, it is essential to take into account the development of technology and the evolution of materials and production methods. In fact, nowadays there is an implied duty regarding conservation issues: to thoroughly analyze the aforementioned elements in order to devise the most suitable treatments for the degradations that plague the greatest artistic exploits of the last century. This research aims to find a solution to one of the most recurrent problems in artworks made out of acrylic emulsion paint films, a very common technique in contemporary art. Trying to adjust conservation treatments to this kind of paintings is a task that presents both large problems and the need to evaluate new intervention strategies. Additive migration, swelling of the paint film during the cleaning procedure and the removal of airborne dust and dirt deposits, among other factors, are only a few of the obstacles ahead, owing, on the one hand, to the fineness and the aqueous sensitivity of the paint film, and on the other hand, to its complex composition.

This research work is inspired by a series of projects developed by the Getty Conservation Institute and the Tate Museum of London in collaboration with other specialists. Moreover, the present work expects to go further in this investigation by carrying out cleaning tests in acrylic emulsion paint films applied on porous (canvas) and non-porous (methacrylate) supports. Concerning this test, an experimental method based on samples has been designed by employing both supports, distinct pigments, brands and degradation agents. In addition, analyses of the testing results have been carried out in order to assess them and to come to more precise conclusions about the cleaning of both types of artworks. This process has been assisted by a specific computer program, which is also a relevant aspect of this study. Afterwards, the same cleaning method has been used on a real painting.

Accelerated Aging and the Stability of Contemporary Acrylic Gessos

MICHAEL DOUTRE*, ASHLEY FREEMAN AND ALISON MURRAY, ART CONSERVATION PROGRAM, QUEEN'S UNIVERSITY, KINGSTON, ONTARIO

Gessos are often used to prepare the surface of a substrate for the pictorial layer and to act as a physical support. Because of the roles gessos play in the structure of a painting, the longevity of artworks composed with gessos is therefore closely linked to the aging properties of the gesso itself. While an artificial aging regime will never fully recreate natural aging, it can simulate some of the effects of age. An accelerated aging technique raises the rate at which certain changes occur in a material, speeding up the change of certain properties over others. Understanding the sorts of changes induced by each aging technique will allow conservators to anticipate the types of changes these materials may experience as they age. In this work, the effects of various artificial aging methods used to simulate the changes that occur with aging were examined and compared for modern emulsified acrylic artists' materials. Prepared films of contemporary acrylic gessos included Golden® Acrylic Gesso, Golden® Thick Gesso, Golden® Light Molding Paste, Liquitex® Acrylic Gesso, Liquitex® Super Heavy, Beckers® Latexspackel, and Flügger® Acrylspartel. The films were exposed individually and sequentially to intense visible light, intense ultraviolet light, and elevated temperatures. This allowed for the evaluation of the relative effects of each aging regime on the chemical, physical, and optical properties of each acrylic gesso. Uniaxial tensile testing and immersion were used to evaluate the physical properties of the materials, while visual stability was assessed for colour and gloss changes. Chemical changes were observed using Fourier transform infrared spectroscopy.

Gatorfoam to Improve the Structural Integrity of Paintings: Prevention of Damage from In-House Handling

WENDY CRAWFORD, CINCINNATI ART MUSEUM, CINCINNATI, OHIO; PAUL MARCON, CANADIAN CONSERVATION INSTITUTE, OTTAWA, ONTARIO; AND BETHANY JO MIKELAIT*, TORONTO, ONTARIO

Gatorfoam is a board of polystyrene foam laminated between two panels of proprietary resin-coated wood fibre veneer. A study was conducted to investigate the function and effectiveness of Gatorfoam in paintings conservation as a rigid, direct-contact support placed between the stretcher and the canvas. This material in theory would provide a stable physical support for a fragile painting by dampening vibrations due to handling, reducing the effects of shock, and minimizing the effects of varying humidity and temperature. This research evaluated the physical stability Gatorfoam imparts to a painting exposed to shock due to accidental dropping during in-house handling, using mechanical testing. Surrogate paintings with brittle gesso coatings were subjected to corner, edge, and flat drops following ASTM drop test standards, using an affixed accelerometer, at the Canadian Conservation Institute in Ottawa. Fragility ratings were assigned to facilitate the comparison of these very uniform samples with and without Gatorfoam supports, which allowed a measure of quantification of the degree of improvement the Gatorfoam treatment provided. While this rating cannot be applied to paintings universally due to their inherent uniqueness based on the materials used to create them, the artist's technique, and their state of degradation, it does provide a useful reference point, and a platform of comparison. Additional surrogates were prepared with a Coroplast backing board, and these were drop-tested to assess whether the more invasive Gatorfoam treatment provided sufficiently better protection to warrant the higher risk involved in removing the painting from its stretcher.

The Gatorfoam treatment under investigation provided substantial structural improvement to the paintings, and significantly protected the paintings against drop damage. The Gatorfoam provided 2.2 - 2.7 times (123% - 172%) improvement in its ability to withstand impact (measured in G-force) and 4.6 times (360%) higher drop height when dropped on its corner. The Gatorfoam provided 1.8 – 2.1 times (83% - 106%) improvement in ability to withstand impact, and 1.2 – 1.6 times (22% - 62%) higher drop height when dropped on its edge. Additionally, the results established that the Gatorfoam treatment is indeed more effective than a Coroplast backing board in defense against shock. Conservators can use the information obtained in this study to make a better-informed decision when weighing the risks related to removing a painting from its stretcher for the purposes of structural and mechanical stabilization.

Canada Science and Technology Museum – Crisis Management

SUE WARREN, CANADA SCIENCE AND TECHNOLOGY MUSEUM, OTTAWA, ONTARIO

On September 11th 2014, the Canada Science and Technology Museum was evacuated and closed after air quality testing showed unacceptably high levels of mould. The precautionary tests were undertaken after contractors opened up a section of drywall along one of the exterior walls and discovered the presence of active mould. This was not entirely unexpected, as the museum had been battling a leaking roof for almost a year. Roof work was initially expected to be undertaken last winter, to address localized leaks and a corroding sheet metal layer. In October 2013, contractors cutting through one section of the roof dislodged white powder, which testing confirmed to contain asbestos. This radically changed the scope of work and projected costs, so the museum focused on clean-up and containment of the asbestos, monitoring of air quality, and management of the leaks throughout the winter of 2013-14. Conservators were constantly on call to cover objects when new leaks appeared. During this time, the museum was actively seeking funding to finance a complete roof replacement.

The closure was an extreme measure and put at risk the entire display collection. Conservation staff was no longer permitted inside the building, so the contractors were instructed to cover artifacts at risk from leaks. Furthermore, the building temperature and humidity were not stable due to the contamination of heating and air circulation systems, which had to be taken off-line for cleaning. The museum environment at this time was categorized as “primarily contaminated with settled spores that were dispersed directly or indirectly from [the presence of actual mould growth], and which may have traces of actual growth” (consultant’s report on air and bulk sampling.) This meant that all interior surfaces now had to be decontaminated, and that all artifacts coming out of the museum would have to be decontaminated also. The consultant’s recommendation was for HEPA vacuuming of all surfaces and disinfecting all non-porous materials as per procedures outlined in the *Mould Guidelines for the Canadian Construction Industry (CCA 82)* and the *IIRC Standard for Professional Mould Remediation (IIRCS520)*. These standard procedures are transferable to historic artifacts, with some minor exceptions; so a methodology for decontamination of artifacts was developed with these, and with the CCI Bulletin 26 “Mould Prevention and Collection Recovery: Guidelines for Heritage Collections.”

Conservation and Collection Services is tasked with this major move, which, unfortunately for us, is to take place during February and March of 2015 (after the time of writing of this abstract). The winter timeline presents challenges for movement of large objects outside, such as adverse weather, slippery roadways, and cold-temperature work. For those of us working inside the museum on decontamination and dismantling of exhibits, working in full-face respirators and hazmat suits presents its own challenges and risks.

This presentation will elaborate on the steps leading up to emptying the museum, the process of safely moving and cleaning the display collection, and the challenges of working in a hazardous environment, with tight deadlines, and in an Ottawa winter.

Staying Afloat: The Challenges of Recovering from a Major Flood at a Small Museum

SARAH LITTLE*, REBECCA DELORME* AND SARAH STORCK*, MUSEUM OF THE HIGHWOOD, HIGH RIVER, ALBERTA

In July 2010, the Museum of the Highwood, a small western heritage community museum in High River, Alberta, suffered a devastating fire resulting in many damages and the loss of approximately 2% of its collection. Yet by the summer of 2013, the Museum was moving forward and finally looking beyond the shadow cast by the long and tedious fire recovery process. The museum had re-opened to the public, had completed the majority of conservation treatments stemming from the fire, and had undergone several temporary collection moves before successfully rehousing its entire collection in a newly acquired off-site storage facility within walking distance to the museum. All appeared to be back on track.

Then, on June 20th, 2013, the Town of High River was overcome by surging flood waters that forced the evacuation of the entire town. The costliest disaster in Canadian history (\$1.7 billion), this flood occurred without warning and caught the town, its business owners and its residents completely off-guard and unprepared. A staggering 95% of the Town of High River was physically affected by the destructive powers of the flood waters. Eleven anxiety-ridden days passed before museum staff were finally permitted back into the town to assess the damage and begin salvaging the collection....and their homes.

Now the Museum of the Highwood finds itself in the midst of a post-disaster recovery situation once again, only this time the estimated object collection loss is 80%. This presentation will illuminate the challenges faced by a collections manager coordinating the flood recovery plan as a new staff member at this small museum, working within the confines of limited budgets, space, time and staff. For the only collections staff member, implementing a complete rehousing and inventory project, reviewing policies and the disaster plan, and troubleshooting the dissociation problems that stem from incomplete records, all while continuing to maintain the day-to-day museum tasks, has been fraught with its own set of trials. Luckily, two additional collection positions became available at the museum, a Collections Technician and a Fleming College Museum Management Intern. These two emerging professionals will also share their perspectives on what they learned and on their involvement in the recovery efforts.

Salvage and Recovery of Museum of the Highwood Artifacts After Major Flooding

GAIL NIINIMAA*, NIINIMAA ENTERPRISES INC., CALGARY, ALBERTA; AND IRENE KARSTEN*, CANADIAN CONSERVATION INSTITUTE, OTTAWA, ONTARIO

On July 4th, 2013, the water was pumped out of the Museum of the Highwood basement collection storage room in the Highwood Memorial Centre in High River, Alberta. The collection had been flooded since June 20th, when several communities in southern Alberta were affected by catastrophic river flooding.

Irene Karsten, CCI Preservation Development Advisor, flew from Ottawa to High River to assist Irene Kerr and crews from Belfor (a restoration company contracted to assist with the restoration of the museum facilities) in organizing collection salvage activities at the off-site storage facility. Conservators from Edmonton and Calgary and, later, CCI conservator Greg Hill, collaborated to help museum staff assess which of the several thousand artifacts could be salvaged and which were damaged beyond repair. Conservators also worked with volunteers and the Belfor crew to clean mud from artifacts that could be saved. Organization of the salvage process took into account relative access to objects, the location of the most valuable items, and the risk of further damage if salvage was delayed. Objects were sorted and cleaned on the street beside the building, and either dried in situ or transferred by Belfor to a freezer truck for further treatment later. This initial salvage process was completed on July 12th. Artifacts were then transported to temporary storage at the King Edward School and to a leased freezer trailer in Calgary.

At the end of November 2013, Gail Niinimaa was contacted by Irene Kerr to entertain the idea of emptying the freezer truck. A small lab space was found and materials gathered to make this lab functional enough to tackle the boxes of frozen textiles that were sitting in the freezer truck a 5-minute drive away. In January 2014 the project began and the boxes were brought to the lab and thawed out one by one.

Dealing with the frozen boxes presented numerous challenges. There was no inventory of the truck contents. Organizing the boxes in situ proved impossible in the cold, dark trailer. Although the boxes had numbers on them, the contents were not clearly labelled. Some of the pieces had been individually wrapped in Reemay and frozen in individual freezer bags – these pieces fared much better than the boxes that contained a lot of 30 items frozen together in a solid, dirty block. The scope of the materials that emerged was quite large, from Boy Scout uniforms to 1880s silk outfits, quilts, World War I uniforms and kits, as well as a variety of clothing. It quickly became apparent that the best first step was to get the collection from frozen to clean and dry, with the expectation that further conservation treatment might be required once the collection could be properly assessed.

This paper will look at the practical problems that occur with disaster recovery from the initial salvage to the treatments that follow. It will show why best practices are needed, not only as a way to organize the salvage operation, but to facilitate the work of conservators responsible for later recovery treatments.

Worst Case Scenario: Preparing Alberta's Archives for Future Disasters

EMILY TURGEON-BRUNET* AND AMANDA OLIVER*, ARCHIVES SOCIETY OF ALBERTA, EDMONTON, ALBERTA

This case study investigates the long-term planning involved in disaster preparedness and recovery, and how the Archives Society of Alberta (ASA) is providing flood assistance for their institutional members across Alberta. In June 2013, Alberta, Canada experienced severe overland flooding. The Minister of Alberta Culture provided the ASA with funding to assist archival institutions affected by the flooding. This grant is meant to assist the archives in conducting conservation treatment on their collections and in supporting contextual recovery of damaged records. The Lead Archivist and Lead Conservator are travelling throughout Alberta to ASA's 48 institutional members to provide flood relief by way of collection survey, building profile, access to holdings, collection care, level of disaster preparedness, and conservation treatment. Priority is given to institutions that were significantly impacted by the floods, including the amount of flood water present, the duration of water in the facility, the damage to the facility, and the damage to the collection. After site assessments have been completed, the Lead Team prepares a report and work proposal to address the needs of the institutions. These needs range from recovery assistance from the flood, such as conservation treatment and contextual recovery, to preventive care, disaster plans, and disaster kit supplies, among others.

This project also includes preparing archival institutions for future disasters by providing resources and expertise on disaster preparedness and recovery. Resources include mobile apps, online articles, and electronic environmental monitoring tools. The Lead Team has also created how-to guides on basic preventive care and disaster recovery, such as packing wet records, mould removal, and freezing records. These resources, in combination with the custom work plans, provide ASA institutional members with expertise on disaster preparedness and recovery and ensure that Alberta's archival community is prepared for any future disasters. Embracing modern approaches to conservation and preventive care, the Lead Team is helping to protect Alberta's heritage.

Poster - Friday, May 29, 2015**Rehousing Best Practices with Emphasis on Storage and Display of Paleobiology Unique Mixed Collections**BOUDICCA BUTEAU-DUITSCHAEVER, FERGUS, ONTARIO

Best practices for rehousing are vital to maintaining a collection in ways that benefit scientific utility, access, and preservation. The paleobiology collection at the Smithsonian's National Museum of Natural History contains a vast array of unique and irreplaceable specimens, including rare samples of mammoth tissues and giant sloth feces. Although used weekly in behind-the-scenes tours and considered to be "wow" items in piquing public interest in these collections, the specimens had received little conservation attention and were in need of rehousing.

The nature of the specimens and the current storage cabinets posed challenges in designing new storage. Some of the mammoth tissue was initially preserved with a highly toxic fixative (osmic acid) and had been stored in late 19th-century arsenic or uranium glass containers that are known to become extremely fragile as they age. The fluid had to be neutralized and these specimens staged into 75% ethanol and borosilicate glass containers. Other samples were loosely stored in a variety of boxes and frames that did not foster viewing or preservation. All the specimens are in a single storage unit, and space constraints dictated that even after individual rehousing of the specimens, the group would remain in the same cabinet. The nature of the collection, the importance of preserving the integrity of the objects and of increasing their stability, the limited storage capacity, and the maintenance of the "wow" factor were the determining factors for the rehousing.

Poster - Friday, May 29, 2015**Cowboy Conservation: The Treatment of a Taxidermy Leatherback Turtle in Cordova, Alaska**FRAN RITCHIE, NEW YORK, N.Y.

An emerging conservator on a grant from the Museums Alaska Collections Management Fund traveled to a small town in Alaska to treat "Prince Willy," the Cordova Historical Museum's taxidermy leatherback turtle. Since its mounting in 1963, this turtle has become a beloved town mascot, but after over 50 years on display, it was in need of serious rehabilitation. Conservation treatment of the largest species of sea turtle included the cleaning of rancid oil, removal of flaking and unnatural taxidermist paint, repair of splits and gaps in the dried skin, and stabilization of limbs. Although a standard course of treatment was proposed, the limits of the small-town hardware store and the effects of a wet climate required constant rethinking of the original plan and called upon the invaluable help of museum staff and community members to meet a four-week deadline. After ethical dilemmas were discussed with the museum curator and director, future display and treatment protocols were designed. For an emerging conservator on a first solo contract, the compromises and innovations with materials at hand created an atmosphere of wild conservation when compared to classroom theory, and thus "cowboy conservation" saved Prince Willy for generations to come.

Poster – Saturday, May 30, 2015

Exploring the Role of the Substrate in the Fading and Reversion Behaviour of Prussian Blue Dye

SOPHIA ZWEIFEL, KINGSTON, ONTARIO

The pigment Prussian blue (ferric ferrocyanide) is known to exhibit phototropic behaviour due to its isotropic structure. Under prolonged exposure to light or in the absence of oxygen, Prussian blue will fade to Prussian white as its ferric iron is reduced to the lower oxidation state of ferrous iron. The compound will revert back to Prussian blue when re-exposed to dark ambient conditions. While the fading and reversion mechanism of Prussian blue is largely understood, these behaviours are complicated by environmental conditions, by the presence of production additives, as well as by the substrate upon which it is suffused. For example, it remains undetermined if a proteinaceous substrate might influence the reduction-oxidation reaction of Prussian blue differently than would a cellulosic substrate. This is particularly important in the case of Prussian blue dye, which was of common use during the 19th century. This study will attempt to analyze the role of the substrate in the fading and reversion of Prussian blue dye by measuring the degree and rate of Prussian blue fading and reversion across samples of different substrates (particularly cotton and silk). The samples will be exposed to light under ambient conditions, as well as under anoxia. Colour change and rate will be measured using a portable microfade tester. A second set of samples will be exposed under regular and anoxic conditions in an LED light chamber at 100 lux over a period of two weeks. The colour change of these samples will be measured by a portable spectrophotometer. Additionally, the samples will be analyzed qualitatively by Fourier transform infrared spectroscopy in order to identify the chemical change responsible for the fading and reversion of Prussian blue dye. Determining the degree and rate of colour change of Prussian blue dye on different substrates will yield significant information that could help to refine more specific display guidelines for artifacts, as well as quantify the risks involved in the anoxic treatment of Prussian blue textiles.

Poster – Saturday, May 30, 2015**Investigation of Sodium Dodecyl Sulfate and Hostacor IT as Flash Rust Inhibitors for Rinsing Archaeological Iron**MEGAN DOXSEY-WHITFIELD, KINGSTON, ONTARIO

Flash rusting is a common problem for conservators treating wet archaeological iron. After a desalination treatment, the iron object must be rinsed, which typically results in flash rusting. Corrosion inhibitors are not commonly used to prevent this, but could be an effective addition to the treatment procedure. Sodium dodecyl sulfate (SDS) is the active component in Orvus WA paste, an anionic surfactant cleaner commonly found in conservation laboratories. SDS has been found to be an effective anodic corrosion inhibitor for copper and nickel in acidic solutions. This study is investigating whether SDS is a good corrosion inhibitor for iron by comparison with Hostacor IT, a product known to be effective. SDS is being tested as an alternative to Hostacor IT because Orvus WA paste is more cost-effective, more readily available, and less hazardous to the environment. Hostacor IT has a history of use in industrial practices. Additionally, it has been tested and used as a corrosion inhibitor in conservation for composite iron and wood objects being treated in polyethylene glycol. This experiment is evaluating the effectiveness of three concentrations of SDS in water at preventing flash rusting on coupons made from cold-rolled steel. The results are being compared with coupons in a 1% (v/v) solution of Hostacor IT in water and a control solution of water with no corrosion inhibitor. The metal coupons are being evaluated visually to determine the presence of flash rusting. The flash rust on the control will be analyzed using X-ray diffraction. This work will reveal whether Hostacor IT and SDS will both prevent the metal coupons from flash rusting. If SDS proves as effective as Hostacor IT, it may be a suitable additive to the rinse stage of cleaning archaeological iron.

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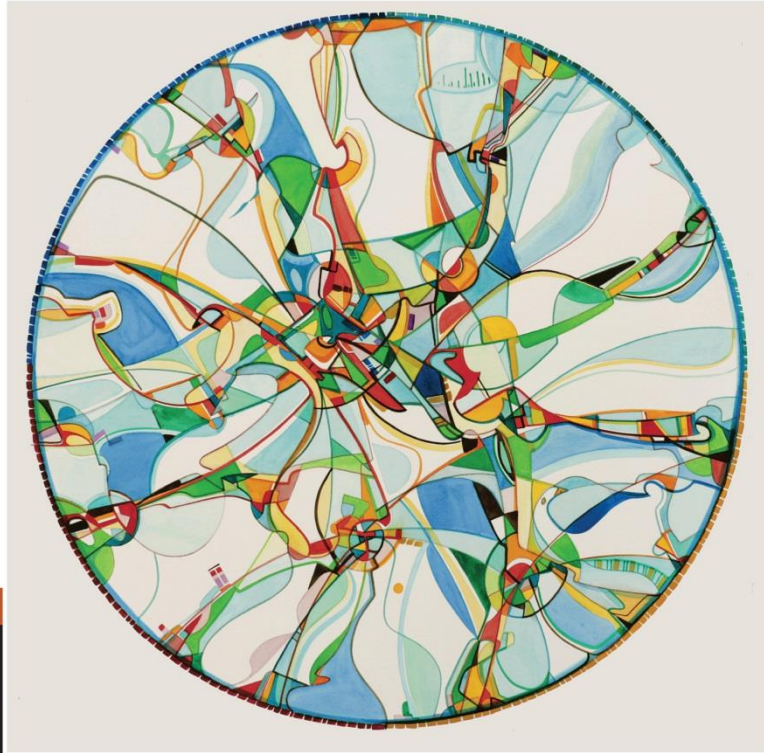
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The Edmonton Arts Council and the City of Edmonton
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Alex Janvier's Tsą tsą ke k'e

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Tsą tsą ke k'e - "Iron Foot Place"

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Alex Janvier

Alex Janvier was born in 1935 and is of Dene Suline and Saulteaux descent. He is a Residential School Survivor (Blue Quills Indian Residential School near St. Paul, Alberta). As a founding member of the Professional Native Indian Artists Incorporated (PNIAI) – the so-called "Indian Group of Seven" he was key in challenging perceptions of Aboriginal art. His distinctive style employs an eloquent blend of abstract and representational images with bright, often symbolic colours.

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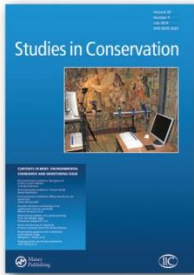


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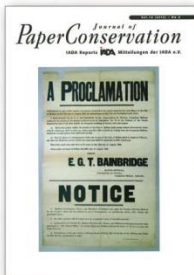
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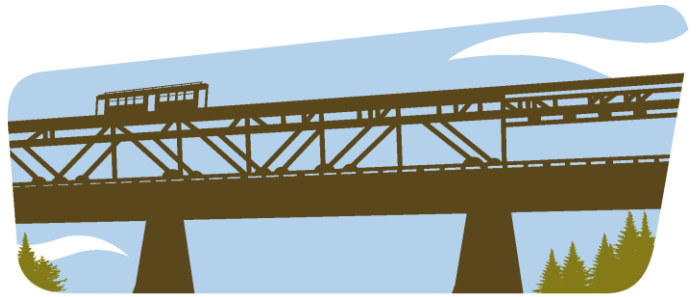
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