CANADIAN ASSOCIATION FOR CONSERVATION

OF

CULTURAL PROPERTY

33rd Annual Conference and Workshops
St. John's, Newfoundland/Labrador
2007

ABSTRACTS

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Welcome!

The 2007 CAC Conference Committee warmly welcomes you to the 33rd annual Conference and Workshops in St. John's, Newfoundland and Labrador. We are pleased to host conservators and allied professionals from Canada and abroad. We hope to make this professional development opportunity a rich, rewarding and memorable one.

Sample some of the cultural activity that St. John's has to offer on your own or through the tours, receptions and banquet that have been organized by the committee.

Enjoy your stay in St. John's.

Dr. Cathy Mathias
Rose Smart

CAC Conference Chairs 2007

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Special Events

Wednesday, May 16

6:00 – 8:30 p.m.
Tour of lab and storage space;
Registration for Archaeological Workshop
Memorial University of Newfoundland, Queen's College, Anthropology and Archaeology Dept., Conservation Lab

Thursday, May 17

7:00 – 11:00 p.m.
Kitchen Party
Quidi Vidi Brewery

Friday, May 18

12:00 – 1:00 p.m.
CAC Regional Representatives Meeting
The ROOMS Boardroom

5:30 – finish
CAPC Board Examinations
The ROOMS Boardroom

6:30 – 9:00 p.m.
Conference Registration and Reception
City Hall, Foran Room
Pub Crawl afterwards

Saturday, May 19

12:40 – 2:00 p.m.
CAC Annual General Meeting
The ROOMS, Level 3 Multipurpose Space

6:00 – 9:00 p.m.
Cash Bar 6:00 p.m.
Banquet with Canadian Archaeological Association 7:00 p.m.
Fairmont Hotel, Salons A and B

Sunday, May 20

12:00 – 5:00 p.m.
Field trip to Ferryland
Leaves from The ROOMS front lobby

1:30 – 2:30 p.m.
CAPC Annual General Meeting
The Colony of Avalon Foundation's Boardroom, Ferryland

Conservation Workshops

Workshop 1: Archaeological Field Conservation

Thursday, May 17
9:00 a.m. to 5:00 p.m. (registration on site at 8:30 a.m.)
Memorial University of Newfoundland, Queen's College, Archaeological Conservation Laboratory

Instructors:

Judith A. Logan, Archaeological Conservator
Dr. Catherine Mathias, Archaeological Conservator, Memorial University of Newfoundland
Charlotte Newton, Senior Conservator, Canadian Conservation Institute

Outline:

This workshop will take a hands-on, problem-solving approach to situations facing conservators and archaeologists working on-site. Topics that will be covered include:

- artifact recovery in difficult conditions
- dealing with quantity: preserving order/controlling chaos
- packing and supporting fragile artifacts
- what is it?: material identification
- after excavation: treatments for large quantities of unstable material (iron and wood).

The objective is to provide conservators, archaeologists and students an opportunity to apply the principles of archaeological conservation to real situations, using as examples case studies provided by the instructors. The format will be informal presentations, followed by group discussions and hands-on sessions.

Participants are encouraged to bring questions about current problems or examples of difficulties that they have encountered.

Archaeological Field Conservation Workshop Program

Morning Session, Thursday, May 17

8:30 – 9:00	Registration on site
9:00 – 9:15	Welcome and participant introductions
9:15 – 10:00	**Field kit – materials, supplies and tools**
10:00 – 10:30	BREAK
10:30 – 12:00	**Case studies and problem solving**

Afternoon Session, Thursday, May 17

12:00 – 1:00	LUNCH catered on site
1:00 – 2:30	**What Is It? Material identification in the field lab. Radiography and other types of analysis**
2:30 – 3:00	BREAK
3:00 – 4:00	**Bulk treatments for iron and wood. Tour of storage and treatment areas.**
4:00 – 4:30	Discussion
7:00 – 11:00	*Kitchen Party* Quidi Vidi Brewery

Workshop 2: Care and Preservation of Paintings

Friday, May 18
9:00 a.m. to 5:00 p.m. (registration on site at 8:30 a.m.)
Basilica Museum

Instructor:

Michelle Gallinger, Fine Arts Conservator, Bridgetown, Nova Scotia

Outline:

Most institutions, whether large or small, archival or natural history, art-related or not, have some paintings in their collection. This one-day workshop on the Care and Preservation of Paintings is designed for the non-paintings conservator, and for museum personnel who may deal with paintings in their collection.

The course will cover the following topics: Construction of Paintings, Agents of Deterioration, Examination and Condition Reporting, Care and Handling, Packing and Shipping, and Preventive Treatments.

There will be 6 lectures (½ hr each) on the topics listed above with two hands-on sessions dealing with Examination and Condition Reporting in the morning and a Preventive Treatments practical in the afternoon.

Objectives: The participant will benefit by being able to identify the types of paintings in their collection, to protect these works against environmental damage whether on display or in storage, and to handle and transport their paintings properly. In addition, they will also be able to assess the condition of paintings, and know when a paintings specialist is called for. Lastly, they will be able to perform some basic preventive techniques that will increase the longevity of the paintings in their trust.

Participants can bring photos of paintings in their collection to discuss.

Care and Preservation of Paintings Workshop Program

Morning Session, Friday, May 18

8:30 – 9:00	Registration on site
9:00 – 9:30	**Introduction - Construction of Paintings: composition/methods of construction, natural defects**
9:30 – 10:00	**Agents of Deterioration: light, temperature, humidity, pests and environmental effects; bloom, mold, cracks**
10:00 – 10:30	**Examination and Condition Reporting: non-invasive techniques, UV, IR and Instability *vs.* disfigurement**
10:30 – 10:45	BREAK
10:45 – 12:00	**Examination and Condition Reporting – Practical**

Afternoon Session, Friday, May 18

12:00 – 1:00	LUNCH *CAC Regional Representatives Meeting*
1:00 – 1:30	**Condition Reporting: discussion and review**
1:30 – 2:00	**Care and Handling: dry cleaning, storage and display**
2:00 – 2:30	**Packing and Shipping: crating, transport and padding**
2:30 – 3:00	**Preventive Treatments: backing boards, dry cleaning, removal of debris, hanging hardware and keying out**
3:00 – 3:15	BREAK
3:15 – 4:30	**Preventive Treatments – Practical**
4:30	**Review and Discussion**
5:30 – finish	*CAPC Board Examinations*
6:30 – 9:00	*Conference Registration and Reception*

Conference Program

The Rooms Provincial Museum, Archives, and Art Gallery
Bonaventure Avenue
St. John's, NL

Morning Session 1, Saturday, May 19	***Chair: Cathy Mathias***

9:00 – 9:30 **Welcome and Introduction**

9:30 – 10:30 **Judy Logan:** ***The Per Guldbeck Lecture***

10:30 – 11:00 **BREAK**

Morning Session 2, Saturday, May 19	***Chair: Miki Lee***

11:00 – 11:20 **Colleen Day**
"Bogged Down": Getting waterlogged wood treated

11:20 – 12:00 **Jennifer Poulin and Catherine Mathias**
The Identification of Natural Dyes on Basque Textiles from the Red Bay, Labrador Archaeological Site by Gas Chromatography-Mass Spectrometry

12:00 – 12:20 **Kate Helwig, Jennifer Poulin and Valery Monahan**
The Identification of Hafting Adhesive Residues on Artifacts from the Southern Yukon Ice Patch Collection

12:20 – 12:40 **Elizabeth Moffatt, Maire-Claude Corbeil and Sandra Webster-Cook**
The Materials and Techniques of Cornelius Krieghoff

12:40 – 2:00 **LUNCH**
CAC Annual General Meeting

Afternoon Session 1, Saturday, May19 ***Chair: Danielle Rundquist***

2:00 – 2:20 **Nicole Christie and Carla Pike**
Salvage of Flood-damaged Photographic Materials – Part II

2:20 – 2:40 **Wendy McPhee and Lindsay Haynes**
Preservation of the William Thomson Freeland Panoramas: A Project of Epic Proportions

2:40 – 3:00 **David Grattan**
Isoperms – Revisited

3:00 – 3:20 **Beatrice Leroux**
Treatment of an Album: Vol. I of the Captain Cook's Voyages *Collection*

3:20 – 3:50 **BREAK**

Afternoon Session 2, Saturday, May 19 ***Chair: Rose Smart***

3:50 – 4:10 **Joanne Alfonsi**
The Archives of Ontario's Preventive Preservation Strategy: A New Approach to Preservation Planning

4:10 – 4: 30 **Irene Karsten**
Managing Condition and Treatment Report Information with the Collections Management Software, MIMSY XG

4:30 – 4: 50 **Gayle McIntyre**
Internships in Conservation: Multifaceted Relationships and Vital Links to the Future

4:50 – 5:10 **Eve Graves**
Looking after Collections in the Real World: A Mutually Beneficial Cooperation between the Cuming Museum and Camberwell Conservation Department

5:10 – 5:30 **Closing remarks and announcements**

6:00 – 9:00 Banquet

Morning Session 1, Sunday, May 20 ***Chair: Karin Kierstead***

8:30 – 9:00 **Nancy Binnie**
Lost, but not a Total Loss: Collection and Documentation of Construction Materials from Heritage Aircraft Wrecks in Fresh Water

9:00 – 9:30 **Don Butler**
Modelling in situ Archaeological Conservation in Northern Labrador

9:30 – 10:00 **BREAK**

Morning Session 2, Sunday, May 20 ***Chair: Bev Lambert***

10:00 – 10:30 **Cathy Mathias, Colleen Day and Liz Croome**
Novel Techniques for Training Non-Conservators

10:30 – 11:00 **Jeanne Inch and Charlie Costain**
CCI – Updates to Better Serve Canada's Heritage Community

11:00 – 11:30 **Robert Barclay and Paul Bloskie**
Saving the Ferryland Cross

11:30 –11:40 **Closing Remarks and Announcements**

12:00 – 6:30 Field Trip to the Ferryland Archaeological Site

1:30 – 2:30 CAPC Annual General Meeting

The 2007 Per Guldbeck Lecturer: Judy Logan

Judy Logan earned a B.A. in Archaeology and English from the University of Calgary in 1971 and graduated in 1978 from the Master of Art Conservation program at Queen's University in Kingston. Her career in conservation began with Parks Canada in 1972, where she apprenticed in the conservation of ceramics, glass and metal objects. Judy joined the Archaeology Laboratory of the Canadian Conservation Institute (CCI) in 1981. Over the years, she served in several capacities, including Chief of the Archaeology and Textiles Section, and Senior Conservator, Archaeology.

Throughout her career, Judy has worked on site, developing conservation procedures that complement archaeological research. Judy's field experience includes work in Canada, Italy, Jordan, and Mexico. During the 1980s, Judy coordinated the conservation for Memorial University's excavations of the sixteenth century whaling station at Red Bay, Labrador. This project provided a unique opportunity in Canada for conservators, conservation scientists and archaeologists to work together, developing methods to retrieve and conserve organic and inorganic materials. Many conservation interns also benefited from the project, working both in the field and at CCI in Ottawa, under the supervision of Judy and her colleagues.

Judy retired from CCI in 2006. She has stayed active in conservation by serving on committees for various archaeological associations, doing field work, and presenting lectures and workshops.

The Archives of Ontario's Preventive Preservation Strategy: A New Approach to Preservation Planning

Joanne Alfonsi

With almost 2 million photographs, more than 35,000 maps of Ontario, 200,000 architectural drawings and over 40,000 audio, video and film records, the Archives of Ontario is Canada's second largest public archive and the largest in the province. Its collections are valued at over $400 million. In 2005, an external review estimated that the collections were deteriorating at the rate of $36,000 a day. With the strong support of the Minister of Government Services, the Archives launched a three-year Improved Preventive Preservation Strategy to reduce onsite harm to its collections. A discrete budget was put in place to carry out the work, including the creation of four new conservation positions.

The strategy involves a survey that assesses every container in the Archives' collection – describing the records' materials, the type of damage and then, proposing treatment. What is unique to this approach is the immediate use of survey results to undertake simultaneous conservation treatments on records that are judged to be at high risk, and to schedule longer-term conservation activities.

Prioritizing treatments during the survey is fundamental to success. This is a two-step process. At **step one**, conservators designate treatment levels. These are adapted from the North East Document Centre's Preservation Planning: Level 1 – responsible custody actions that are high priority and easy to implement; Level 2 – conservation treatments that will make dramatic or significant improvements to the collection; and, Level 3 – detailed treatments for individual records that will have minimal impact on the entire collection and/or that due to time and cost are not feasible to apply to large numbers of records. The team prepares a report, organizing the treatment projects into one of three category levels. This is the basis for **step two**: assessing, within each treatment level, the impact of treatment on the entire collection, and specifically, the time and money for treatment in relation to the loss to the collection if it is not completed. The results help to decide which projects to undertake first.

In carrying out this strategy, Archives of Ontario conservators are learning and adapting the Improved Preventive Preservation Strategy process, further strengthening it as a tool for managing and planning ongoing conservation activities. It provides an excellent foundation for the move of the Archives of Ontario to a new, state-of-the-art facility at York University in 2009. The lessons learned provide a best practice for others who are planning to improve their seemingly unmanageable large collections.

Saving the Ferryland Cross

Robert L. Barclay and Paul Bloskie

This paper describes the examination, treatment and replication of an archaeological cross, composed of iron, brass and gold, which was recovered from the 17th century English colony of Avalon, located in Ferryland, Newfoundland. The cross was analysed to determine details of structure, and to identify metals and corrosion. It was cleaned mechanically and chloride ion removal was attempted by washing in a soxhlet extraction apparatus under nitrogen. Subsequent active corrosion was dealt with by consolidation with epoxy resin, followed by storage in a desiccator with dry silica gel. Further corrosion while the cross was on display indicated that silica gel in the display environment was not adequate to protect the cross. Decisions taken throughout the conservation process respected the need for the cross to be available for both public display and scholarly study. There was also an urgent need to document the condition of the cross in order to be able to assess any future deterioration. The cross was 3D laser-scanned and a plaster reproduction printed from the data. An easily maintained container for dry, anoxic storage and display was constructed.

Lost, but not a Total Loss: Collection and Documentation of Construction Materials from Heritage Aircraft Wrecks in Fresh Water

Nancy E. Binnie

Staff at the Canadian Conservation Institute (CCI) have been consulted by various groups for assistance in the search and recovery of historic aircraft wrecks from underwater sites. These include the Avro Arrow CF-105 test models, Harvard trainers, and a Fokker Standard Universal bush plane. Because of the age of the aircraft and their ownership, these projects have been treated as salvage rather than archaeological projects, under provincial heritage regulations. Museums are faced with the dilemma of wanting a safe "site-to-shelf" recovery, while not directly supervising the field work. Fundraising, search activities and recovery operations have been carried out by avocational groups interested in aerospace heritage, but their primary involvement ends with handing over the recovered aircraft or artifacts to the museum. CCI has helped to bridge the gap between "site" and "shelf" by preparing specific conservation plans for projects. These plans lead the museum staff and volunteers through the issues and requirements for the survey, recovery, condition assessment, documentation, safeguarding for transport, and laboratory stabilization, and are all prepared from the "best practices" perspective of an archaeological project. Because an understanding of the condition of the wreckage is useful prior to recovery, these plans have also included information on the aircraft construction materials and their anticipated condition after decades underwater. In 2005, a research project to study the condition of heritage aircraft wrecks began at CCI. This project has captured the details and condition of materials encountered in order to formulate better advice for clients.

This presentation will focus on the condition of the wreckage from a Fokker Standard Universal plane that was partially recovered in July 2006 from the bottom of Charron Lake in northern Manitoba. The plane was located in 2005 by the Fokker Aircraft Recovery Team, nearly 75 years after it had landed on the lake during a winter storm. CCI was approached in February, 2006 by the Western Canada Aviation Museum which wanted the plane for its collection, and by the team who were planning the recovery operation, to assist with the recovery and conservation. Site work was carried out in July and October, 2006, with fragments of the plane and certain artifacts being recovered from a depth of almost 130' (40 m). Composite artifacts recovered included: wooden spar fragments with plywood, yellow paint, brass tacks and wood screws; and a section of aluminum conduit with electrical wires, copper connectors, insulation, a brass pot-type landing lamp with light bulb and wing light, brass screws, iron washers, and other materials. These composite artifacts will be discussed in relation to the stability of the structure *in situ* and their condition compared with the predictions made in the conservation plan.

Modelling *In Situ* Archaeological Conservation in Northern Labrador

Don Butler

Conducting archaeological research in northern Labrador presents a myriad of conservation issues. Limited supplies, personnel, and time make *in situ* conservation unpredictable and difficult. Perhaps field and transit storage are among the most important concerns for conservation in northern contexts. Often, archaeological materials excavated in the north do not arrive at the Memorial University conservation laboratory for up to two months after they are excavated. In this time, iron and bone may undergo accelerated deterioration. This discussion focusses on *in situ* archaeological conservation at the site of Nachvak Village (IgCx-3) in northern Labrador. In addition, precautions recommended for field and transit storage are discussed.

Salvage of Flood-damaged Photographic Materials: Part II

Nicole Christie and Carla Pike

On July 15, 2004, the City of Peterborough was deluged with approximately 200 mm of rain over the course of a few hours, resulting in flash flooding throughout the city. Contaminated floodwaters entered the Peterborough Centennial Museum and Archives' (PCMA) off-site storage area and submerged 30,000 photographic negatives, including black and white silver gelatin glass plate negatives; and acetate, nitrate and polyester film negatives.

It was clear from the start that outside help would be needed. Local resources were stretched to the limit, as the entire city was in a state of emergency. The decision was made to call the ROSCO Group, experts in disaster response and document recovery. Air-drying the photographic material was not an option as the quantity was too large, the window of opportunity too short and the hands available too few. The photographic collections had to be stabilized immediately to minimize damage and prevent the onset of mould. The only feasible solution was to freeze all of the submerged material – *including 10,500 glass plate negatives.*

Much has been accomplished since this fateful day. All of the glass plate negatives have been freeze-dried, cleaned and returned to the PCMA. However, work continues on the film-based negatives at ROSCO and conservation treatments continue at the PCMA.

This paper will be divided into two sections. The first section will continue where the paper "The Salvage of Flood-damaged Photographic Materials" left off at the 2005 conference. It will discuss the results of the treatment used to salvage and stabilize the photographic negatives submerged the day of the flood. Highlights will be the results of freezing, freeze-drying and washing silver gelatin glass plate negatives.

The second section of the paper will focus on conservation treatments carried out on the flood-affected glass plate negatives. Of the 10,500 glass plate negatives affected, approximately 9% required further conservation treatment. At the PCMA, work has continued on the development and implementation of conservation procedures for the repair of broken glass plate negatives and those with damaged emulsion. Repair techniques and challenges encountered throughout the treatment process will be discussed.

"Bogged Down": Getting Waterlogged Wood Treated

Colleen Day

Waterlogged wooden artifacts are ideally treated in a well-equipped lab by a team of professionals. In the real world, pragmatic issues and competing interests and jurisdictions make this difficult. The objects themselves tend to be large, heavy and fragile, and therefore difficult to transport. Treatment must begin, at least to the extent of keeping them wet, before they can be studied and analyzed. There can be long delays in finding a treatment space, finding funding, and getting approval from all the parties involved. Once started, treatments take many years to complete.

Over the last ten years, the conservators of the Parks Canada Atlantic Service Centre have overseen the treatment of six very large waterlogged wooden objects: three *aboiteaux* (a sluice used by Acadians to control water flowing through a dyke), a flutter wheel and a crown wheel from a sawmill, and a dugout canoe. Only two of these were treated in the lab. The others were treated by volunteers, workers at the sites, or museum staff, with materials, equipment and expertise supplied by Parks Canada.

Getting treatments started involves dealing with more than one level of government with local, provincial and federal jurisdictions concerned about ownership, responsibility, authority, and funding issues. Professional interests may include archaeologists, dendrochronologists, museum directors, field unit superintendents, historical societies and other excited interest groups. Everybody has seen examples of waterlogged wooden artifacts that have been allowed to dry out without intervention, and the results are not usually displayable. Everybody wants something to be done.

Coordination of the various interest groups, to ensure effective collaboration of the disparate parties, often falls to the conservators. While being aware of the ideal treatment protocols, conservators must successfully advocate for the artifact by negotiating pragmatic solutions in the real world, which result in compromises in the treatments. Maintaining professional standards in treatment and documentation, without being "bogged down," is the ongoing challenge.

Isoperms – Revisited

David Grattan

Paper can be considered as a model for the decay behaviour of many natural materials of organic origin. Its rate of decay is influenced by relative humidity and temperature. There are hydrolytic and oxidative components which are present – so that while paper certainly ages most rapidly in damp conditions, it still continues to deteriorate in the totally dry state. Paper can thus be used as a guide to evaluate museum conditions and can help in deciding where compromises can be made that will allow maximum accessibility with maximum preservation.

The concept of isoperms was developed many years ago by Donald Sebera for paper permanence calculations. An isoperm is a line of equal permanence drawn on a graph of temperature versus humidity. (Both relative humidity and absolute humidity have been used by different authors.) They have proven to be very useful as a teaching concept and also in practice. They have been employed to make better decisions about RH and temperature control of collections. Sebera's work was based on very comprehensive paper aging data developed by Graminski, Parks and Toth at the National Bureau of Standards in the 1970s. Unfortunately, it also relied on an incorrect assumption that the moisture content of paper was directly proportional to relative humidity. Since that time, a much better understanding of the kinetics of the aging of paper has been developed, and the problem of having to assume that moisture content is proportional to relative humidity has been overcome.

The object of this paper is to discuss and present the revised isoperms and discuss how the revision might affect their interpretation. In addition, there is a discussion as to how this work relates to the Canadian Conservation Institute's current interest in risk assessment of collections.

Looking after Collections in the Real World: A Mutually Beneficial Cooperation between the Cuming Museum and the Camberwell Conservation Department

Eve Graves

Many small museums in the UK have great ideas, dedicated staff and fascinating collections but these are not matched by the resources available. Aspiring conservators are faced with an uncertain future – how to get that first job without the required "professional experience." This paper describes an ongoing informal relationship between a conservation department in an educational institution and a small museum in the charge of local government. This may provide a model for institutions in similar circumstances.

The Cuming Museum in southeast London houses the rich and intriguing collections of the Cuming family and also tells the story of the locality and its people. The Conservation Department of Camberwell College of Arts, not far away, educates students at the undergraduate and postgraduate level for careers in conservation.

For many years, the Cuming Museum has been for students an excellent source of artifacts in need of conservation and has worked with Camberwell to identify suitable projects for final year undergraduates and postgraduates. The Cuming staff have carried out excellent research on their artifacts but, as with many other museums having limited resources, the wide range of areas for which they are responsible curtails their time for this activity. Because understanding the values embedded in an object is fundamental to ethical decision-making, Camberwell students are expected to research objects in as much detail as possible. All research results are returned with the artifacts to the museum, resulting in enrichment of the collection's documentation and educational possibilities. The students have opportunities to speak with staff about the intended future of the material on which they are working and therefore also learn first-hand the value of communication and cooperation.

Currently the Cuming Museum is in the process of moving part of its collection into more suitable storage and Camberwell is assisting with pest monitoring and packing, so students gain experience of the real world of collections management.

Of course, volunteers need instruction and supervision, so these arrangements are never as simple as they may appear and there are still demands on museum staff time. However, with good planning and good will, as has always been the case with the Cuming Museum, such relationships can work to everyone's advantage.

The Identification of Hafting Adhesive Residues on Artifacts from the Southern Yukon Ice Patch Collection

Kate Helwig, Jennifer Poulin and Valery Monahan

Since their chance discovery in 1997, Yukon ice patches have been the focus of multidisciplinary research into Yukon's human and environmental past. The patches are ancient snow preserved in remote alpine areas of the Coast Mountains, Ruby Range and Southwestern Yukon Plateau. A pattern of hot summer weather over the past decade has caused rapid melting of the patches, exposing frozen small animal remains, diverse biological materials and archaeological artifacts. Cooperative fieldwork by government, academic and Yukon First Nations researchers has yielded important collections of human and natural history materials.

Approximately 180 archaeological artifacts have been recovered and are curated by the Yukon Government Archaeology Program. The artifacts relate principally to pre-Contact projectile technologies and document the weapons used by Yukon's First Nations to hunt large game (specifically caribou) during the last 9000 years. The artifacts appear to have been frozen quickly and remained frozen until the recent melting of the ice. This has resulted in a remarkable preservation of their organic components.

A hafting adhesive was found on an antler point, in slots made for microblade insertion. Radiocarbon dated to 7310 ± 40 BP (uncalibrated), the point is one of the oldest artifacts recovered from the ice patches. Analysis of the hafting residue by Fourier transform infrared spectroscopy (FTIR) and gas chromatography-mass spectrometry (GC-MS) showed that a conifer resin adhesive was used, with a chemical profile closest to that of the spruce species Picea. There were no chemical markers to indicate that the resin had been strongly heated to produce tar or pitch.

A similar conifer resin adhesive was identified on the distal end of three stone points that would have been hafted to throwing dart shafts. Of particular interest is the fact that this hafting adhesive contains a significant amount of red pigment. The pigment was identified as finely divided red iron oxide (red ochre) with associated quartz and silicates. Cross-sections showed that the red iron oxide is intimately mixed with the resin. The pigment may have been added for decorative or symbolic reasons, or perhaps for practical purposes (for example: as a thickener or filler for the resin; to allow the resin mixture to dry more quickly; or to make it more visible during application).

The identification of these hafting adhesives adds significantly to the understanding of early hunting technology in Yukon. Further analysis of adhesive residues on artifacts of various ages from the ice patch collection is planned, to determine if there are changes in the type of adhesive used over time.

CCI – Updates to better serve Canada's Heritage Community

Jeanne Inch and Charlie Costain

While CCI has been undergoing renovations to its main facility, the CCI management team has been working to improve operations. This presentation will describe the recent measures that have been taken to increase the transparency of decision-making, improve service delivery and enhance communications with clients and partners in the Canadian conservation community.

The new research framework helps guide decision-making on research projects, and includes factors that influence the choice of research activities. For years, CCI has consulted the conservation community on research directions, and it will continue to do so. Research is most effective when carried out in collaboration with others, and input is welcomed from conservators and others who would benefit from, and could contribute to these projects. All research projects are posted on the web and updated annually, so that the community can see the projects being worked on with our partners.

Several changes have been made to clarify the services available and their delivery. These changes include a clarification of clients who are eligible for conservation treatments, scientific and advisory services. New criteria have been established for assessing service requests and a policy for referring requests to the private sector. As well, the fee schedule has been clarified and a new revenue generation policy generated. All of this information will be posted on the CCI web site. These policies go into effect April 1, 2007.

In the coming year, all training activities will be reviewed to ensure they meet the needs of the conservation community. Paid internship positions have already been created at CCI, which will start in the fall of 2007. Another goal is to explore with the conservation community the establishment of an ongoing series of professional development workshops for conservators.

Finally, improvements have been initiated to CCI's communication with clients, including an e-services portal to allow clients to apply for services on-line and to allow free access to *CCI Notes* on-line for Canadians. An e-mail announcement system is being launched that will provide up-to-date information about CCI to the heritage and conservation communities so that clients are aware of, and can take advantage of CCI research, services, publications and training.

Managing Condition and Treatment Report Information with the Collections Management Software *Mimsy XG*

Irene F. Karsten

Numerous versions of collections management software have been developed to track objects and associated information in museum collections. Although conservation records – condition reports and treatment reports – are important documents related to individual objects, these records generally exist outside of collections management systems. Conservators have developed traditions of detailed recordkeeping that generally do not fit well with field-based database information management systems. Most conservators still work with paper condition and treatment report forms, which sometimes remain as hand-written documents due to lack of time for digitization. Collections databases, if used by conservators, facilitate conservation project management rather than treatment reporting.

This paper will review attempts at the University of Alberta to link the content of previous and current conservation reports to collections database entries in *Mimsy XG* (Willoughby), the software used by the University of Alberta Museums. *Mimsy XG* contains fields for recording summary condition and treatment reports along with the purpose of the reports, persons authorizing and completing them, dates, duration of treatment, processes, and so on.

Recent projects that involved processing condition data and multiple freezing treatments for large numbers of artifacts have spurred attempts to streamline data entry into *Mimsy XG*. Checklist condition reports coupled with standardized summary phrases for copy-and-paste entry permitted relatively detailed, searchable condition summaries for a recent acquisition of 677 quilts. Meaningful statistics were drawn from these records for a summary condition report. To keep extraction of such data simple and accurate, strict adherence to standard terminology was necessary. In response to a moth infestation in the quilt collection, information on freezing and cleaning treatments on groups of objects was quickly recorded.

Success in using summary conservation data in *Mimsy XG* for conservation management has encouraged further testing of faster ways to record information, from in-depth condition and treatment reports to database records. Experiments with report form design and digital voice recording will be described. In addition, electronic files of complete condition and treatment reports, along with digital images, were connected to object records in *Mimsy XG*, making conservation information even more accessible to collection staff.

Treatment of an Album: Volume 1 of the *Captain Cook's Voyages* Collection

Béatrice Leroux

Caring for works such as the three valuable albums which make up *Captain Cook's Voyages* has been a privilege. However, the poor condition of the albums called for immediate treatment in order to avoid further degradation and to continue to allow access. This presentation will describe the final treatment performed on Volume 1 and the methodology developed for the conservation of the remaining volumes.

Cook's voyages were intended to observe the transit of Venus, explore new territory, discover *Terra Australis* or the Southern continent, and finally, to seek the Northwest passage to the East. He was accompanied by a number of botanists, scientists and artists. James Cook was killed in Hawaii in 1779 during his third voyage. It is due to his three expeditions that James Cook became famous.

The *Captain Cook's Voyages* Collection consists of three large bound volumes containing original drawings, engravings and charts relating to his three voyages of discovery. The albums are identified as the "Cook albums" not because he created them, but rather because they contain sets of early proofs of engravings assembled to illustrate published accounts of his travels. More significantly, they also contain several important original drawings by the artists who accompanied Cook on his voyages.

Each volume contains between 70 and 90 prints and proofs representing plants, animals, tools, villages and native people met and observed during Cook's voyages. Most of the prints were glued in an inappropriate way on the pages, causing severe creases. The three albums are bound in very thick and heavy boards and covered in decorated paper with black leather on the spine and corners. The two boards were separated from the book. The leather exhibited red rot and the marbled paper covers were torn and abraded. The bindings are clearly not original.

In our field, each item to be treated is different and unique, and often they present new challenges which help broaden our knowledge and skills – the treatment of this album is no exception.

Novel Techniques for Training Non-Conservators

Cathy Mathias, Colleen Day and Liz Croome

How do you teach non-conservators conservation-related topics? Do you put them to sleep with yet another lecture or do you use alternative training techniques to grab their attention and drive home the message? This collaborative paper describes some varied approaches to this aspect of conservation education.

Over the past 20 years, students of archaeology at Memorial University of Newfoundland have had the opportunity to complete course work in archaeological conservation. A third level course was developed based on the bulk treatments ongoing at Memorial's Archaeological Conservation Laboratory. The course was designed so that half of the class time brings students into the laboratory, where they perform basic bulk treatments for both inorganic and organic materials. Objects used for teaching are those excavated by the archaeology faculty at Memorial. Each year, an estimated 100,000 objects are returned to the laboratory for treatment as required by the Provincial Permit application. The course not only provides valuable training for our future archaeologists and conservators, but also helps the one staff conservator fulfill this mandate.

In the Atlantic, Western and Northern regions of Parks Canada, conservators have been experimenting with various activities or games to teach conservation concepts. Most of the audiences are Gen-X extroverts. Most of the instructors are Baby Boomer introverts. Solutions have been found outside of normal teaching styles in order to communicate, using pop culture and television as sources of inspiration. Adaptations of "Survivor" and "Wheel of Fortune" have been successful – perhaps "Deal or No Deal" and "La Fureur" will be the next teaching tools.

Internships in Conservation: Multifaceted Relationships and Vital Links to the Future

Gayle McIntyre

Graduates of the broad-based Collections Conservation and Management Program offered through Fleming College possess the core conservation competencies to monitor, maintain and conserve artifacts and have essential employability skills.

The first three semesters of the two-year program offer a combination of academic studies and practical training at the facilities of Fleming College. In addition, students participate in many applied conservation-based projects in the local heritage community. The fourth semester of the program is a curriculum-based full-time block internship in a conservation laboratory or museum setting, working under the guidance of a qualified professional, such as a conservator, preservation officer or conservation co-ordinator. The success of the internship is a reflection of positive relationships between the interns, the host sites and the program.

The internship is a critical component of the Collections Conservation and Management Program and provides students with vital, practical experience in their transition to paid postgraduate internships and employment. Internships offer students an opportunity to integrate theory and practice. The internship can be developed as a specialized and focussed learning opportunity or a more general placement in preventive conservation practices and museum applications. Satisfactory completion of the internship is a pre-requisite for graduation from the program. Faculty assist the students in negotiating and securing their internships and the interns are tracked, monitored and supervised during this part of the program. The internships are assessed based on a variety of evaluation criteria, including the expectations of the conservation profession as outlined in the joint CAC/CAPC *Code of Ethics* and *Guidance and Practice*.

Conservation interns make valuable contributions to the conservation profession. Some of the interns' experiences will be celebrated in this paper. In addition, a variety of internship themes, conservation research projects and host agencies will serve as supporting examples.

Ideas and feedback are welcome! Perhaps your site will consider hosting an intern?

Preservation of the William Thomson Freeland Panoramas: A Project of Epic Proportions

Wendy McPhee and Lindsay Haynes

During renovations in 2003 at Queen's Park, Ontario's provincial Parliament Building in Toronto, workers discovered two 20-foot-long framed panorama photographs of Niagara Falls. The silver gelatin photographs were mounted onto sheets of galvanized steel, supported by wooden strainers. William Thomson Freeland created these captivating images in November, 1912 and June, 1913. They are the largest known photographs of Niagara Falls, providing a 180-degree view of this natural wonder. The Legislature donated the Panoramas to the Archives of Ontario, and the staff was faced with moving the Panoramas from a small fourth floor storage room at Queen's Park to the off-site archival storage facility, Archives ONE.

Planning the relocation of the Panoramas was an evolution of ideas, trial runs and returns to the drawing board. An initial plan to lift the prints off their steel backings, stabilize them and roll them onto tubes for storage went off course when the first friable photograph could not be satisfactorily detached from its metal substrate. The only option was to crate and move the Panoramas on their rigid supports. Recent structural damages served as evidence that the photographs had been poorly handled during a previous relocation from the attic. However, in December 2006, these huge, heavy and fragile objects were successfully packaged and transported to their destination, with some ingenuity and much shifting and angling.

Accomplishing this confirmed the value of a multi-disciplinary, collaborative approach. Significantly, support from management allowed us to bring in outside help, which included a contract conservator dedicated solely to the project, and a professional art moving company. Throughout the project, the Archives' team worked in partnership with the art movers, staff at Queen's Park, and the Archives' storage facility. Teamwork, the knowledge and skills of a diverse group of experts, and detailed preparation were the keys to ensuring the Panoramas' safe move. The project established a new precedent for the treatment and transport of large composite artifacts.

Archives ONE, the Panoramas' new home, has environmental controls and security equal to any in the world, ensuring that this priceless documentary record of Ontario's past will be preserved and protected. When the Archives of Ontario moves into new premises in 2009, these photographs may once again be on display as a permanent record of Ontario's history and the professionalism of the conservation team which rescued them.

The Materials and Techniques of Cornelius Krieghoff

Elizabeth Moffatt, Marie-Claude Corbeil and Sandra Webster-Cook

Cornelius Krieghoff was a prolific painter whose well-known subjects include autumn and winter landscapes, portrayals of native people and Québec country scenes. Krieghoff was born in Amsterdam in 1815 and moved to the United States in 1837. He began his career as an artist in 1841. His career can be divided into several periods based primarily on where he was residing: 1841-1844 (several locations in the United States and Canada), 1846-1853 (Montréal), 1853-1863 (Québec City), 1864-1870 (Europe) and 1870-1872 (Québec). Krieghoff died in Chicago in 1872.

The assembly of many Krieghoff works by the Art Gallery of Ontario in 2000 for the exhibition *Krieghoff: Images of Canada*, organized by curator Dennis Reid, provided an ideal opportunity to initiate a technical study. Preparation for the exhibition involved a systematic examination of Krieghoff works in public and private collections by Dennis Reid and Sandra Webster-Cook. This process helped to establish the framework for the technical study.

Twelve of the lenders to the exhibition, including both public institutions and corporate collections, agreed to participate in the study. Fifty-five oil on canvas paintings that spanned Krieghoff's career and were representative of his major subject areas were selected for inclusion. Inherent problems such as faded colour, wrinkled paint surfaces and drying cracks were also investigated. The paintings were carefully examined using a stereomicroscope to ascertain which areas were original, and over 300 minute paint samples were taken. While the study focussed on pigment analysis, the composition of ground layers and the stratigraphy were documented where possible.

Paint samples were analyzed by a combination of x-ray microanalysis, Fourier transform infrared spectroscopy (FTIR), polarized light microscopy (PLM) and, to a limited extent due to sample size restrictions, x-ray diffraction (XRD). Paint layers were, in general, thinly applied. Pigment mixtures were present in many paint samples. Pigments identified include lead white, vermilion, red lakes, iron oxides, Prussian blue, ultramarine blue, cobalt blue, bone black, cadmium yellow, chrome yellow, Naples yellow, barium yellow and zinc yellow. Some pigments were used throughout his career; others appeared to be used in specific time periods. Several types of ground layer were identified; however, the use of a particular ground was not restricted to a specific period.

The results of this project will assist curators, conservators and scientists in evaluation of the conservation requirements of Krieghoff's works. The project also provides important information that can be used in attribution or authenticity studies since Krieghoff is a much imitated or copied artist.

Identification of Natural Dyes on Basque Textiles from the Red Bay, Labrador Archaeological Site by Gas Chromatography–Mass Spectrometry

Jennifer Poulin and Catherine Mathias

During the 16th century, Red Bay, Labrador, became the world's whaling capital. The whaling life was a perilous one, and at least sixty graves were discovered containing human remains and personal objects, including fragments of clothing. Two such items, found preserved in a shallow peat grave, were a woollen jerkin and a pair of woollen *plunderhose* made from alternating bands of different fabrics. Seven samples from the jerkin and seven samples from the *plunderhose* were analysed by gas chromatography–mass spectrometry (GC–MS) to identify any natural dyes remaining.

An indigotin-containing dye was found on eight of the textile samples, five from the jerkin and three from the *plunderhose*. Each of the indigotin-containing textile samples had fibres with varying degrees of dark blue tones. The absence of indigotin on some of the samples may indicate that the jerkin and *plunderhose* were not a solid colour, but were constructed from at least two differently coloured pieces of cloth.

Each of the samples also contained 3,4-dihydroxybenzoic acid, a major photodegradation product of quercetin, a flavonoid dye. Quercetin is found in a variety of dyestuffs used to produce yellow colours on cloth, and is also found in some tannin-containing dyestuffs used to darken textiles. The presence of gallic acid in consistent proportion to the 3,4-dihydroxybenzoic acid in each sample was a strong indication that the two were related and may originate from the same quercetin and tannin-containing dyestuff, such as alder bark (*Alnus glutinus*), or sumac (*Rhus* genus). This likely indicates that the gallic acid does not originate from the burial environment.

Diterpenoid resins were also detected on each of the textile samples. Under magnification, the fibres from both jerkin and *plunderhose* were irregularly coated with a brittle amber layer. The aged and oxidized resin was identified as belonging to the *pinaceae* family, possibly pine. There was no indication of retene and its related products, which are produced through the extreme heating of pine resin to form pitch or tar. The many uses of pine resin in historic shipbuilding and seafaring are well documented. The presence of pine resin on the fibres may indicate that the clothing of these whalers was treated with pine resin to help repel the cold and water.

This method of dye analysis by GC–MS provides a viable alternative to the traditional analysis of dyes on textiles by high-performance liquid chromatography (HPLC). It combines an easy sample preparation and extraction procedure with the ability to detect and identify a large percentage of dye compounds in a short span of time, with the added bonus of identifying a wide range of other organic substances.

Posters

The ROOMS
2nd Floor, Museum Activity Room

Textiles

Amanda Harding
Pressure Mounting for Small Textile Fragments

Nicole Charley
The Use of the Regenerated Cellulose Membrane as a Barrier in Textile Poultices

Spreadsheets

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Creating Enclosures Using Microsoft Excel

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"Oh, the Places They Have Gone"

Archaeology

Liz Croome and Lorrie Storr
"Conservation Says I Have to do What?*" Packing Archaeological Surface Finds in the High Arctic*

Danielle Rundquist
The Treatment of Bone and Iron Composite Artifacts with an Aqueous Solution of 5% Hostacor IT and 20% Rhoplex AC 33

The Use of Regenerated Cellulose Membranes as a Barrier in Textile Poultices

Nicole Charley

A recurring drawback in the application of poultices within the context of textile conservation is residue. Several barrier interfaces have been explored, such as blotting paper, lens tissue or filter paper, but in many cases these barriers have either not been successful in preventing migration of poultice particles into the textile, or they have limited the effectiveness of the poultice itself. This poster will demonstrate the use of a new material, comprised of regenerated cellulose membranes, as a barrier. These tubular membranes come in various sizes and have many applications, in fields ranging from science (in dialysis) to food processing (as sausage casings). The size of the membrane pores is under 100 Angströms (1 Å = 10^{-10} m), large enough to permit the circulation of solvents and dissolved soiling products, but small enough to prevent the migration of the poultice particles (clay or cellulose products), whose size ranges from a few to thousands of microns (1 µm = 10^{-6} m). The membranes will not dissolve or disintegrate and are compatible with all clays, solvents and some acids as well as weak bases. This material was explored as part of the research component of a thesis dissertation at the Institut National du Patrimoine in Paris, France.

"Conservation Says I Have to do *What*?" Packing Archaeological Surface Finds in the High Arctic

Liz Croome and Lorrie Storr

Conservators make lovely shipping containers for artifacts using all the right materials, but what happens when the conservator is 1500 km to the south and you only have the contents of your backpack for packing materials? At Quttinirpaaq National Park of Canada, on Northern Ellesmere Island, the park wardens have been issued with Cultural Resource Management Protocols containing the answers to this and other field-related questions. The "Field Collection of Artifacts" section is just two pages in length. How does a conservator take mountains of information on the packing and shipping of all types of artifacts and reduce it to fit? There is not adequate space to describe scenarios for each type of material found in the Arctic. In the end, it all comes down to whether or not the artifact is wet or dry, and how to keep it that way with the materials at hand. Our solution is a warden-friendly flow chart where preservation is reduced to its most basic elements.

Pressure Mounting for Small Textile Fragments

Amanda Harding

There are various methods and systems for storing and displaying small fragile textile artifacts and each situation has different requirements. Pressure mounting can be useful for flat fragile textiles where the textile would not be able to withstand stitching to a mount and the use of adhesives is not ideal. The choice of materials and method of construction for mounts can be adapted to suit individual textiles. Pressure mounting is a minimal intervention approach and is reversible.

Fragments of a 7th to 8th Century Egyptian *clavus* from the textile collection at the Royal Ontario Museum were at one time mounted on a cotton fabric-covered acid-free board and held in place by silk crepeline that was laid on top and adhered to the back edges of the board. A window mat was placed on top, followed by acrylic sheet glazing, and all layers were held together with plastic spinelock binding. The mount was examined in 2006, at which time the textile fragments were found scattered over the surface of the mount with some pieces in positions that were causing distortion. Loose threads of the textile were also on the surface of the mount indicating the textile's fragile and susceptible condition. It was decided that the fragments should be re-mounted more securely. Pressure mounting was the method selected for the new mount.

Materials were chosen to make a relatively flat, lightweight mount that was simple to assemble. Eight-ply acid-free mat board was used as a rigid support for the back of the mount. A padded board was prepared. Needle-punched polyester felt with the shape of the perimeter of the arranged fragments cut out of the centre was placed on top of four-ply mat board. The cut out area of the felt was filled in with a thin layer of polyester fibre-fill. Cotton sateen fabric was placed over the padding and adhered to the back edges of the mat board with heat-set Beva 371 film. The padded board was placed on top of the rigid support. The textile fragment was transferred to the padded surface and Acrylite acrylic sheet glazing was placed directly on top. All mount parts had holes pre-drilled at regular intervals around the edges to allow aluminum Chicago screw posts to be inserted and screwed together to secure all the mount layers.

The new mount provides improved storage for the *clavus* fragments by preventing them from moving and giving stability. The clear view of the fragments is excellent for study or display purposes. The mount can also be framed.

Creating Enclosures Using Microsoft *Excel*

Shelagh Linklater

A tool was developed in Microsoft *Excel* to help create custom-made enclosures for artifacts and records. The program streamlines and clarifies the process of making boxes and folders. Measurements input by the user produce a diagram with specific dimensions, cutting and fold lines. Instructions, tools and materials are included with hyperlinks to supplier websites. Although originally developed as a teaching tool for non-conservators, it is very flexible and can be augmented to suit particular needs. It can be used to produce containers for individual records or as a planning tool for larger rehousing projects.

"Oh, the Places They Have Gone!"

Gayle McIntyre and Cindy Colford

> You have brains in your head.
> You have feet in your shoes.
> You can steer yourself
> any direction you choose.
>
> *Dr. Seuss*

Since 1974, Fleming College has been training arts and heritage professionals – first in the Art Conservation Techniques program (1974 to 1996), and currently in the Collections Conservation and Management program (1996 to present). Students are immersed in a fast-paced intensive training environment that presents real-life examples, community-based projects and a curriculum-based internship. Upon completion of the program, a Fleming graduate offers a combination of theoretical and practical knowledge, core conservation competencies, transferable skills, and a positive attitude that employers from across the globe recognize as essential for success. Where have Fleming graduates gone? An accompanying poster maps the positions and locations of some Fleming conservation alumni around the world.

The Treatment of Waterlogged Bone and Iron Composite Artifacts with an Aqueous Solution of 5% Hostacor IT and 20% Rhoplex AC 33

Danielle Rundquist

The wide variety of materials that may compose an archaeological collection can include organic material such as bone and wood, and inorganic material such as iron, stone, or copper. Archaeological conservators are still trying to find an effective method to treat composite artifacts containing iron and bone. This project was undertaken to determine if these could be effectively treated without dismantling, using a solution of 5% Hostacor IT and 20% Rhoplex AC 33.

The artifacts that were being tested came from two archaeological sites: Ferryland, Newfoundland and Nachvak Fjord, Labrador. Artifacts from both of these areas are often contaminated with chlorides and are waterlogged. The procedure for the experiment began with mechanical surface-cleaning with a soft bristle brush to remove visible dirt and debris. Some of the less stable objects were prepared for immersion by wrapping them in stretchy gauze bandage, or they were placed in polyethylene mesh bags. The objects were kept in a group in a 400 mL container for five weeks, which over time had approximately 1500 mL of solution added to it. Twice a week, the solution was changed. The containers were thoroughly cleaned with tap water, sterilized with ethanol, and dried before the new solution was placed into the container.

Hostacor IT is an inhibitor of iron corrosion. In all of the artifacts but one, the exposed iron portions of the objects remained stable throughout immersion in the solution, and afterward. In all of the artifacts, the bone remained stable throughout immersion, and remained stable once they were removed. In fact, some of the artifacts showed small signs of improvements in their condition. Four showed decreased flaking, and were more resistant to pressure damage.

The results of these experiments were not conclusive, but seem to indicate that this solution may be effective on iron/bone composite artifacts. Quantitative testing and long-term observation of objects tested should be performed before any mass treatments are undertaken using this solution.

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