Letter from the Coordinator

ICOM-CC 16th Triennial Conference
The ICOM-CC 16th Triennial Conference in Lisbon, Portugal is fast approaching -- it will take place September 19 to 23, 2011 at the Lisbon Congress Center, mark your calendars! The theme is Cultural Heritage/Cultural Identity - The Role of Conservation. The Early Bird registration rate is now open, valid until March 31. We have been busy editing, assessing and ranking the various paper and poster submissions received. Although the exact number of papers in our session is not yet determined, based on the quality of the submissions to date we are sure that the session will be stimulating. The program and list of papers should be known and communicated to you by the end of April. We are considering the possibility of doing a joint Textiles-Ethnographic Collections session should there be sufficient papers of merging interest. With Lisbon as a spectacular backdrop, 24 different institutions lined up for the Wednesday afternoon technical visits, and a vibrant cultural show on the Thursday afternoon, the conference promises to be quite an event! For more information see http://www.icom-cc2011.org/default.aspx.

Preprints
For the first time ICOM-CC Preprints will not be distributed in the heavy, 2 Volume paperbound form to participants of the triennial conference, but rather electronic and digital (CD) publications will be made available. This not only will save on costs, but also will allow for more papers to be published and presented. The Lisbon conference organizers are also looking into the possibility of offering print-on-demand.

Call for Nominations
This is my 2nd term in office; therefore there will be elections for a new Coordinator. We are currently accepting nominations for this position. If you know of someone in good standing interested and willing to stand for office, please let me know. Only members of
ICOM in good standing who have chosen the Committee for Conservation as the Committee in which to vote are eligible for election as Coordinator.

Name Change
With the assistance of the Name Change Committee, I have prepared a Discussion Paper based on the views received up to now on this issue. This document is now posted on the ICOM-CC website, please have a look! (Or, contact me for a copy.) It provides background information, various pros and cons of changing the Working Group’s Name, a list of possible alternative names with their pros and cons, and the next steps planned. The idea was to condense the information gathered up to now to a manageable size to help inform members and interested parties, and move the discussion forward. We would now like to hear further views from the membership on these issues and would welcome having these discussions posted on the ICOM-CC Forum, at [http://www.icom-cc.org/forums/viewforum.php?f=7&sid=]. The Forum is not restricted to ICOM-CC members; it is open to all. You must first register (at no charge) on the website to have access; please contact me if you have any trouble. Please do contribute, your views are important! Following this new input, the Discussion Paper will be updated and a membership consultation will take place, leading to, eventually, a report and recommendation. Please note: new members are welcome on the Name Change Committee, for those who wish to further participate in this manner and assist in the work involved.

Wishing you the best for 2011!
• Carole Dignard
  Coordinator
  carole.dignard@pch.gc.ca

Loss Compensation in Damaged Feathers
Damaged feathers on ethnographic objects and articles of Western costume may be visually improved by filling losses with compensating material. In support of the Canadian Association for Conservation of Cultural Property’s 2010 pre-conference workshop, The Conservation of Feathers, held in Ottawa, Canada, post-graduate interns from the Canadian Conservation Institute’s (CCI) objects and textiles laboratories explored techniques for in-filling losses in damaged feathers. The project addressed the following questions:
• What are the optimal substrates for executing visual compensation in damaged feathers?
• What techniques are suitable for color and/or pattern matching in-fill material?
• How can in-fill material be safely affixed to damaged feathers?

Japanese Paper, woven and non-woven textiles and new white goose feather barbs were tested as in-fill materials. Immersion dyeing, localized dye application and digital printing were investigated as replication techniques. In addition various adhesive techniques were evaluated.

The following treatment scenarios were considered:
• Loss compensation for feather artifacts such as millinery or costume decoration.
• Loss compensation for artifacts containing unaltered feathers, where the use of new feathers from the same species may be unethical.
• Loss compensation for artifacts containing legally controlled feathers, such as eagle feathers.

Substrates and Coloring Techniques
Selecting a substrate
Weight, texture and appearance of the compensating material were taken into consideration when selecting a substrate. Lightweight, slightly translucent materials with a texture similar to feather barbs or minimal texture were considered desirable. The following four materials were selected:
• Silk Habutae, a lightweight, slightly translucent fabric with a balanced, plain weave and little texture. In addition silk responds well to conservation dyes (Irgalan® and Telana®).
• Translucent Reemay® polyester, non-woven. (Past treatments at CCI indicate that the surface can be printed with a digital printer.)
• Japanese paper MU-2 USU Mino, (Japanese Paper Place); Soda Ash Pure Kozo, (Japanese Paper Place); and AIKO 227 KOZO Natural. All three papers are white, but differ in weight.
• New white goose feathers. They are readily available in plumose and contour structures.

Immersion dyeing
Telana® 1:2 premetallized/fibre reactive dyes were used to test the feather dyeing procedure. They are colorfast and appropriate for dyeing protein fibers. The manufacturers instructions and the dyeing procedure used in the CCI Textile Conservation Laboratory were followed. The feathers were washed using Orvus WA Paste® anionic detergent to remove any oils and residues that could inhibit dye uptake.

A Launder-Ometer® instrument was used to test the feather dyeing procedure; canisters containing the dye solution and the feathers can be agitated in the instrument’s temperature and time controlled water tank. Stove-top dyeing could also be used.

According to the manufacturer a 40:1 liquor ratio is appropriate for Telana® dyes and a 100mL dye bath is sufficient to cover 2.5 g of feathers. Water, acetic acid (3% weight of feather/fiber), sodium acetate (1-2g/L), Telana Set® leveling agent (1% weight of feather/fiber), and the 2.5 g of feather were added to each canister and loaded in the Launder-Ometer® at 50º C for ten minutes. The feathers were removed and each canister was then filled with 20mL of a 0.5g/100mL stock solution of Yellow, Scarlett and Navy Blue dye, respectively. Canisters were then returned to the Launder-Ometer® for 10 more minutes at 50º C, then the temperature was raised over a 45 minute period to 85-90º C and held there for 30 minutes. This method produced a 4% depth of shade.

The feathers were removed and rinsed in cold water, blotted with cotton terry towels to remove excess moisture and dried with warm blown air. The dye leveled well and the feathers were not significantly damaged during agitation in the Launder-Ometer®. Immersion dyeing produced feather substrates that work well for single colored barb loss compensation (Figure 1).

Direct application of thickened dye
Telana® dye, thickened with sodium alginate was applied directly to new white goose feathers and silk Habutae to create matching in-fills for damaged brown and white polka-dotted guinea fowl feathers. Previous experimentation demonstrated that dye colors on wool samples closely match the same colors dyed on feather samples; therefore, a brown dye color was chosen from previously prepared, wool color samples.

Directions for direct application of Telana® dyes were found in Maiwa Handprints Ltd. (2009). The brown dye bath was prepared using four parts Yellow, four parts Navy Blue and two parts Scarlett. A 4% dye stock solution was prepared (10g dye in 250mL water); the dye powder was mixed into a paste with a small amount of boiling water and then the remaining water was added. A 56% acetic acid (2mL) and sodium acetate (1g) solution was added to produce a pH of between 4 and 5. Sodium alginate (3% w/v) was sprinkled into the dye solution (7.5 g in 250mL dye stock) and stirred vigorously. The dye was thick enough for application at the end of ten minutes stirring, but continued to thicken for 30 minutes while resting.

A 1:1 photographic print of the guinea fowl feather was used as a guide to replicate the pattern on the silk Habutae and white goose feathers. The feather pattern was placed underneath a sheet of thick Mylar®, weighted in

![Figure 1: White goose feathers coloured by immersion dyeing.](image-url)
place and the substrate was placed on top (Figure 2).

Three different resists were tested: Presist®, a commercially prepared water-soluble resist, Lascaux 360, and Lascaux 498. Presist® was applied with a fine paintbrush and allowed to dry. The dye was carefully painted up to the edge of the Presist® on both substrates. Lascaux 360 and 498 acrylic emulsions were applied with the pointed tip of a bamboo skewer and left to dry overnight; the dye was then painted over the acrylic. With all resists the dye was applied with a fine paintbrush and left to dry for 1.5 hours.

Directly applied dyes must be heat set with steam to fix the dye. Steamers can be assembled in various ways so long as the steam is trapped and condensation is not allowed to drip onto the substrate (Vuori, 1995). Two methods of heat setting were tested, a stovetop method and a microwave method. For the stovetop method the silk fabric was affixed to a corrugated polypropylene frame, which was attached with clothespins to the rim of a stainless steel pan filled halfway with simmering water. Kitchen towels were laid on top to trap the steam. The dyed silk was steamed for one hour.

Feathers were steamed above a pan of boiling water, on a ‘clothesline’ built with lab stands. The apparatus was covered with a tent of kitchen towels to trap the steam. Stovetop steaming worked well for the silk, but was not as effective for heat-setting the feathers as too much steam escaped.

Microwave heat setting was explored as an alternate way of fixing the dye-painted feathers. Feathers were tied to twill-tape and suspended over a rectangular glass dish that was filled with 1cm of water. Glass beakers supported damp towels so they did not touch the feathers (Figure 3). The apparatus was heated in a microwave for 5 minutes on a high setting. The microwave was hot and steamy after three minutes. The feathers were left in the steam filled microwave for 30 minutes. The greater amount of steam and longer length of time resulted in better fixing of the dye.

After heat setting, the painted feathers and silk fabric were rinsed in cool water until the water ran clear, then washed in Synthrapol® detergent solution. Feathers were blotted dry and gently brushed against terry towels to fluff the plumose and straighten the contour barbs.

On the silk substrate the dye-uptake was good with an even appearance; however, the fine detail of the feather pattern was difficult to reproduce. In contrast the dye applied to the feather substrate was mottled in appearance. Applying the gelled dye in a thick layer marginally improved the appearance. Uneven dye uptake is likely due to the three dimensional nature of feather barbs and the less effective steam fixing compared to high temperature, high agitation immersion dyeing.

Persist® water-soluble resist hindered the formation of crisp color edges; pale brown halos
were visible around white areas where the dye penetrated the resist. The adhesive resists were more effective in blocking dye penetration. The Lascaux 498 was considered the better choice as it was easily removed under magnification using a scalpel and a flicking action, while the Lascaux 360 was soft and removal damaged the feather barbs.

Overall, painting with thickened dyes did not produce good matching in-fills for feathers with complicated patterns. However, with some refinement in the application procedure this technique may prove effective for creating simple two-tone feather patterns on substrates.

Digital printing
Digitally printing an image of the feather pattern onto different substrates was explored as a method for creating fills for complex feather patterns. Digital printing on silk, Reemay®, Japanese paper and white goose feather was carried out at a local commercial printing company using an Ocê Arizona 250 GT UV Curable flatbed printer. The CYMK UV curable pigment ink is propelled onto the substrate from a boom while the substrate remains stationary on the flatbed; the ink is cured simultaneously using UV light.

A high-resolution 1:1 image of the patterned feather was taken. A rectangular portion of the image of the pattern that would best camouflage the area of loss in the damaged feather was identified and ‘tiled’ using Photoshop® so that the desired pattern would fill the print area on each of the substrates. The resulting image was saved as a .jpeg file (figure 4). Tiling helped with the difficult issue of pattern registration.

Before printing, the silk Habutae and white goose feathers were washed with anionic detergent. The fabrics and Japanese papers were masked directly to the printer flatbed. To ensure that 3-dimensional feathers lay as flat as possible on the printer bed, rachises were removed and chunks of barbs were adhered temporarily, in the shape of the feather, to a sheet of Reemay® using dots of Lascaux 498, so that the feather pattern would register as well as possible with the angle of the barbs.

The image file, the prepared substrates and the patterned feather used for the 1:1 image were brought to the printer, color adjustments were made to the image file and the substrates were printed with the pattern.

Digital printing produced mixed results. Some substrates were more suitable for UV curable ink than others. The ink did not cure immediately on the silk and the strong capillary force of the fabric resulted in a blurred image (Figure 5a). The same result was visible on the lightest weight of Japanese paper and ink penetrated through to the reverse of the substrate. In contrast, a sharper image was reproduced on the two heavier papers (Soda Ash Pure Kozo and AIKO 227 KOZO Natural), on the Reemay® and, surprisingly, on the feather barbs (Figure 5b, 5c and Figure 6).

Figure 5: (a) Feather with printed silk Habutae in-fill; (b) Feather with printed KOZO Japanese paper in-fill (top), barbs in-fill (middle) and Reemay in-fill (bottom); (c) Back of the same in-filled feather.

Overall, digital printing proved an effective method for reproducing complicated feather patterns on suitable substrates. The cost of digital printing totalled CAD $60.00 per hour for the printer, plus CAD $11.00 per square foot of substrate.
Techniques for Affixing In-fills

When selecting loss compensation materials and techniques for adding in-fills, several factors that might damage the physical structure or the chemical properties of feathers were considered; keratin can be damaged by heat, biochromes, particularly carotenoids may fade with heat and become soluble in solvents. Moreover, barbs can separate if pressure is applied (Drummond 1994). Ease of application, adequate adhesion and use of less toxic solvents were all considered. With these guiding principles, two techniques were developed and tested: an unsupported and a supported adhesive method.

To test application methods a scalpel was used to remove barbs from sample goose and guinea fowl feathers to simulate areas of damage.

Making a pattern of the feather loss.
Mylar® was placed over the feather and the area of loss was traced onto the sheet to create a template for the compensating material. A few dots of Lascaux 360 applied to the Mylar® and allowed to dry stabilized the sheet on the feather so a precise tracing could be obtained with a minimum of handling.

Unsupported adhesive method
Using the Mylar® template and a scalpel, feather barbs that resembled the size and angle of the barbs on the damaged feather were excised from a sacrificial goose feather and positioned in the area of loss. Under magnification, adhesive droplets were deposited between the barbs of the in-fill and the damaged feather using a fine needle held in a pin vice. The adhesive droplets formed bridges between the barbs holding the in-fill in place. The existing barbules reinforce the join between the in-fill barbs and the damaged feather (Figure 7). Lascaux 498 and Jade 403 PVA emulsion adhesives were tested with this method and found to have similar adhesion and ease of application.

In some cases narrow gaps formed between the new and original barb ends, which were visually
Supported adhesive method

In the supported adhesive method, Japanese paper or textile in-fills were attached with an adhesive-coated underlay of Tetex®, a lightweight, open-weave polyester fabric. The underlay, cut slightly larger than the loss, was placed on the reversed side of the damaged feather. The adhesive was reactivated with a heated spatula or with solvent applied by syringe, adhering the Tetex® to the back of the barbs on the damaged feather, around the area of loss. When the adhesive dried the in-fill was positioned in the area of loss and secured in place by reactivating the adhesive coated Tetex® underlay.

Beva film and Lascaux 360 and 498 were tested as coatings for the Tetex® underlay. At 60°C Beva film became tacky and created a good bond between the Tetex® support fabric and the feather barbs. The film, however, became noticeably shiny after heat reactivation and gentle pressure from the heated spatula caused barb movement. Solvent reactivation of Beva film was not tested, as it required slower evaporation and more toxic solvents.

A mixture of Lascaux 498 and 360 (3:1) was brushed onto Tetex®. Five coats of a 25% solution of the mixture in deionized water provided the best consistency for brush application and adhesion when reactivated with ethanol. In addition, the Lascaux-coated Tetex® did not have the plastic appearance of the Beva film. However, heat reactivation was unsuccessful at fully adhering the Lascaux mixture. An undiluted Lascaux mixture had better adhesion qualities although it had a shiny appearance.

In-filling with barbs from sacrificial feathers, using the unsupported adhesive method produces an unobtrusive fill both front and back. This method is preferred when the damaged feather will be viewed in 360 degrees. It involves less preparation and no solvent is required. On the other hand, using Japanese paper or textile in-fills with the supported adhesive method produces an in-fill that blends well with the damaged feather, while making it easier to distinguish the repair from the original. Supported in-fills are more easily removed using ethanol.

Conclusion

Damaged feathers can be visually improved by in-filling losses with textiles, Japanese paper or barbs from sacrificial feathers. These substrates can be coloured to match the pattern of damaged feather by immersion dyeing, hand painting with thickened dye, or digital printing. Immersion dyeing of new white goose feather produced in-fills appropriate for damaged single-coloured feathers. Silk Habutae was also found to be a suitable substrate for in-filling losses in single coloured feathers. Painting and digital printing did not produce adequate results for patterned feathers in-fills. Reemay®, Japanese paper and barbs from sacrificial feathers are all good in-fill substrates; a sharp image can be reproduced using digital printing on all but the lightest weight Japanese paper. Two different adhesive methods provide flexibility of application depending of the in-fill material. With practice, sympathetic in-fills were created using both techniques. The various substrates and in-fill techniques allowed in-fills to be tailored to the unique requirements of particular treatments.

References

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  clarelewarne@gmail.com
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  emily.lin@civilisations.ca
Skin Tight

Introduction
In 2009 an unusual and complex treatment was carried out at the National Gallery of Australia on a skin covered Janiform (two faced) mask from Nigeria. Now an important part of the National Gallery’s small African collection, the Janiform mask was already in poor condition when it was acquired in 1974. As suggested by the name, it has two faces back to back, thought to be male and female, with raised designs imitating local scarification practices. It is constructed from what is believed to be antelope skin, stretched over a two part hard wood structure, and a loss to one side of the wood had caused movement and subsequent tears and losses to the skin. Testing was carried out to determine the most effective methods and materials for the necessary repairs, based on a literature search for treatments on similar materials. A brief mention in one paper of natural skin condoms caught the conservators’ attention and these eventually turned out to be the most useful material tested and key to the success of the treatment that followed.

Conservation
There were a number of aspects to consider in stabilizing and improving the appearance of the mask. The complexity of the object and potential damage to the aged skin meant overall humidification and re-alignment of the object was considered too risky. Support was required for the underlying wooden structure to prevent further movement of the wood and damage to the skin. Measures to improve to the visual properties of the object could then be undertaken, minimizing the appearance of damage to the skin covering. A number of losses had occurred to the skin, as well as gaps, which had opened as the skin moved, tore and cockled in places. This exposed the bare wood of the underlying structure and was extremely distracting from the original intended aesthetics of the mask.

Humidification
Before a structural repair to the wood and application of fills for the skin were possible, a small amount of uncurling of the skin covering was necessary. Local humidification with water and with 1:1 water and ethanol using ultrasonic humidifier and blotter methods were tested on small pieces of un-tanned deerskin, which were shaved to remove the hair, oiled with palm oil and allowed to dry. The results suggested that the most effective method for humidifying the skin would be with 1:1 ethanol and water applied using an ultrasonic humidifier.

Humidification of the actual object proceeded
very cautiously as it was understood that the deer skin substitute could not entirely replicate the skin of the mask due to the unpredictable effects of ageing. In this instance it was found that the testing bore very little relation to what was effective in treating the object itself as moisture did not penetrate through the compacted, oiled upper surface of the skin and there was limited access to the under side of the skin. It was found that a combination of the above techniques was therefore required.

Structural Repair to Wood
Paper pulp was identified as a suitable material to form a removable, structural fill for the loss to the wood, supporting this side of the mask and preventing further movement and damage. Paper pulp was chosen for its capacity to be molded and its hygroscopic properties, but it lacked the strength for the necessary structural repair. Three binders were tested (CM Bond M3, Plextol B500, and 2% w/v methyl cellulose) to find the most effective in improving the strength of the paper pulp without over binding and negating the other desired qualities. In line with the results of the testing, the final fill was strengthened with 2% w/v methylcellulose.

The pulp fill was molded directly into the area of loss using a Mylar backing to support the wet material, and cling wrap as a barrier layer to protect the object. After drying there was significant shrinkage of the paper pulp and additional fill material was added. The dried fill was inpainted with water colors to match the wood, then adhered into place on the inside of the wooden support with CM bond M3 PVAC adhesive. The mask could now be stood upright without additional supports and the skin repairs could begin.

Skin Repairs
A number of fill materials cited in conservation literature for the repair of leather and parchment were tested for ease of use, compatibility with the skin of the mask and aesthetic qualities. These included Japanese tissue, Reemay® and cast acrylic resin, as well as an assortment of skin materials including goldbeaters skin and skin from natural skin condoms. Skin used in this type of condom is from a naturally occurring pouch at the beginning of the large intestine of sheep. It is therefore essentially the same material as goldbeaters skin, except that where goldbeaters skin is split to form a thinner material, condom skin retains its full thickness. All of the materials were already available in the conservation department with the exception of the condoms. These had to be obtained over the Internet after requesting special permission from the IT department. Several adhesives, also mentioned in the literature for use on skins in various forms, were tested at the same time to find the most effective for adhering to oiled, dried skin and with the best working properties for achieving the neatest result. These included PVAC, gelatin, Klucel G and Beva 371. Testing was carried out by adhering sections of the skin fill materials to the deerskin sections, as used previously to test humidification methods.

Interestingly it was found that the skin from natural skin condoms was actually the most effective and easy to use material. The greater thickness of the skin resulted in a better visual match to the mask than other skin materials tested and its stiffness made it more practical to apply. Beva 371 was chosen as the adhesive, primarily because it had the added advantage of heat reactivation at low enough temperatures to avoid damage to the skin.

The skin condoms presented a novel material with unique preparation requirements. As with other condoms, they arrived rolled and coated with water based lubricant. To prepare them for use they were unrolled, cut open so they lay flat, washed in non-ionic detergent in water and rinsed thoroughly. They were then hung on a line and allowed to air dry. This left the skin wrinkled and those required for the treatment were later flattened prior to use. A heated spatula was first tested for this but was found to be less effective than re-wetting and drying them stretched across a Corflute® (twinwall polypropylene plastic sheets, known as Corflute® in Australia), similar to the way parchments are dried. The condoms were painted with water-soluble leather dyes to match the colors of the mask, while they were stretched on their drying frames. The dyes produced a glossy appearance and therefore the back, undyed surface of the condom skin was used as the uppermost surface of the repair. Two layers of condom skin were eventually used to give sufficient opacity and depth of color to the repair. The orientation of the bottom
condom layer was reversed so that the dyed side was not in direct contact with the wooden structure of the mask.

Over the course of the treatment, two methods evolved for the application of the fills to the skin of the mask, one method for losses to the faces and another for losses to surrounding areas. The areas around the sides of the faces displayed the greatest cockling of the skin, particularly an area above where the loss in the wood was located and where the greatest movement between the two halves of the wooden structure had therefore occurred. The visual impact of these areas was minimized by cutting the two layers of colored skin fill material to slightly larger than the area of loss and positioning them so they sat underneath the original skin at the edges and covered the visible areas of the underlying wooden form. The tension of the original skin of the mask was sufficient to hold these fills in place without the use of adhesive.

As the losses to the faces are more integral to how the mask is visually interpreted, the fill application technique was designed differently to make the repair less visible. An initial, single layer of skin fill was placed under the edges of the mask skin around the loss in the same manner as the fills described above. The second layer of skin fill was then cut to slightly larger than the losses and adhered around the edges to the top surface of the original skin, using the diluted Beva 371 gel. The Beva 371 was used as 40% w/v gel in petroleum spirit, and then diluted with petroleum spirit 40°-60°C BP to achieve the right consistency before application onto the skin. Used in this way it tacked and dried quickly, effectively holding the fills in position. In some areas the Beva 371 did not give a complete adhesion of the very edges of the patch, possibly due to the adhesive drying before the patch was placed, so the adhesive was heat activated using a heated spatula on a minimal heat setting, thus adhering the patch completely to the skin. This technique stuck down the very edges of the loss, significantly minimizing the visual impact of the fill.

In one area of the female face losses of the original skin had occurred over some of the scarification design. The design in the area of loss had been created by inserting two wooden pegs into the wooden form before the skin was stretched over the top. The underlying wooden pegs were still present and therefore the skin fill needed to be shaped to fit over them. A mold to shape these fills was constructed by tying knots in string to produce a similar size to
the wooden pegs and inserting this through a piece of Corplast® so that the knot sat proud. The skin for the fills was then wetted and stretched over the form of the knots and allowed to dry. This gave a satisfactory shape and fitted neatly over the pegs to create the fill.

Some variation in the color was seen in the condom skins due to variation in thickness and opacity created along fold lines. Areas where this was visually distracting were inpainted with pigment in Paraloid B-67 with white spirit as the solvent. Dry pigments were also applied to the edges of some fills to blend them further with the original skin.

Conclusion
Through use of an unorthodox material, a dramatic improvement was realized for this important cultural object. Experimenting with a range of materials for repairing the skin was extremely valuable and key to the success of the treatment with the fortuitous testing of natural skin condoms. Together with the structural repairs, the resulting treatment meant the Janiform mask was effectively stabilized and the damages visually integrated with the rest of the object to allow for a fuller visual appreciation of the original work. In the future further damage to the Janiform mask will be prevented by cautious display in a controlled gallery environment. The work will not be recommended for travel in order to avoid exposure to fluctuating conditions, which may cause movement of the skin.

- Sarah McHugh
  National Gallery of Australia
  Canberra, Australia
  sarah.mchugh@nga.gov.au

Tree Sculpture
Conservation and Exhibition Preparation of a Contemporary Indigenous Australian Artwork

In 2006 the Queensland Art Gallery/Gallery of Modern Art (QAG/GoMA) acquired a contemporary Australian Indigenous sculpture by Aboriginal artist Lena Yarinkura, titled Tree Sculpture, created in 2002. This sculpture required a novel solution to allow it to be handled, displayed and stored efficiently and safely. This paper will detail the technical aspects of the conservation work undertaken to prepare the sculpture for exhibition, and discuss the ethical issues involved in the treatment of this Australian Indigenous sculpture. Traditional ethnographic and paper conservation practices were reinterpreted and used in conjunction with conventional contemporary sculpture and installation conservation approaches to resolve of the display of this artwork.

Figure 1: Lena Yarinkura, Tree Sculpture, after treatment.
Yarinkura made *Tree Sculpture* in Maningrida, a remote but artistically prolific community in the Northern Territory of Australia. The artwork consists of a tall, painted tree with feathers attached to the ends of the branches. There are woven and painted plant fiber animals attached to the branches and trunk with balls of wax. It is a fragile construction with an ephemeral nature. “When she was making it, Yarinkura thought about a time she was hunting at Kordeme Hill in Arnhem Land” (Moon 2009, pp134).

The tree is a stringy bark tree, called the *manburluddak kordow* in Yarinkura’s native Kune / Rembarrnga language. At the top is a white-bellied sea eagle (*mibbarr*) and on the lower branches are bandicoot (*yok*), quoll (*yulukyyuluk*), possum (*durrih*) and seven bush mice (*djirrkinj*) (Moon 2009: 23). The animals are made from twined pandanus palm leaf, tightly stuffed with paper bark and painted with natural ochre. The animals are arranged on the tree in irregular vertical and diagonal orientations and are held in position with balls of a dark “bush wax” that adheres there feet to the tree’s surface. The bush wax is collected by the artist and originates from native Australian bees.

This artwork combines a large number of materials in a complex way. Components of the work are extremely fragile and ephemeral. The relationship between materials and artistic intentions are extremely important for this artist’s work. “What makes Australian fibre art unique is its connectedness to the Australian continent. This is achieved through the use of natural materials collected in Australian bushlands and the themes represented” (Keller pp2). Yarinkura still lives a largely traditional life, living in the bush for long periods and hunting and gathering local food and materials from which she creates her art.

*Tree Sculpture* was made as an artwork for the commercial market however the method of assembly of the artwork was not robust enough for a public cultural institution where the work will be moved repeatedly. Outside the Gallery, the trees’ height requires that it be transported in a truck on its side and the painted animals are too fragile to be transported while attached to the tree. Upon arrival at QAG/GoMA the animals had already been removed from the tree by the dealer for transport.

The wax was considered an unsatisfactory long term attachment system for the following reasons; it pulls the paint off the tree when the animals are removed and the wax is hard and not very tacky and has to be kneaded to become softened and sticky, obliterating the hand of the artist. A system was required that would allow the animals to be easily and securely attached to and removed from the tree repeatedly for display and transport without causing damage to the artwork.

After numerous discussions with the Curator of Australian Indigenous Fiber Art the elements of this artwork that were important to preserve for the future were determined. The most important factor was that the method of attaching the animals to the tree needed to be invisible and the animals had to appear as though they were sitting on the tree as the artist had intended.

Ethnographic conservation approaches generally involve minimal intervention to uphold the historic, material and chemical integrity of objects, sometimes with the object’s appearance being a secondary priority. Hummelen succinctly states that “for modern and contemporary art it [is] ever more difficult to arrive at a compromise between the conservation of the material object as a historical document on the one hand, and the maintenance of its original (vital) function and physical appearance on the other” (Hummelen, pp23) and this comment is certainly relevant to the conservation of *Tree Sculpture*.

After a number of different approaches were trialed using mockups of the figures that were made in the Conservation lab for testing, a system using magnets was chosen to secure the animals to the tree. Neodymium rare earth magnets were used. Rare earth magnets are the strongest relative to their size and are highly resistant to losing their magnetic charge (p1 Spicer).

Each of the animals needed to be made into a single, stable unit to be safely attached to and removed from the tree. Their ears and legs easily fell out of the holes in the body and
needed to be secured into the body and flaking paint needed consolidation. After discussions with the Paper Conservators in our Department, a number of paper conservation techniques and materials were used to secure the legs and ears inside the bodies and to wrap the magnets in paper. The holes in the bodies where the legs and ears are inserted were lined with starch paste and a heavyweight Japanese tissue (Paper Nao RK-38) to consolidate and cover the flaking powdery surface of the paper bark stuffing and to create a stable layer for the legs and ears to be attached to. The areas of the ears and legs that would sit inside the body were also lined with Japanese tissue and starch paste. The lined interior of the holes and the lined surface of the appendages were coated with Evasol (Ethylene vinyl acetate co-polymer (VAE*)) and then the ears and legs were adhered into the holes in the body. Care had to be taken that the legs were adhered in the correct orientation so that the wax on the ends of their feet was aligned correctly with the surface of the tree where it would be attached later in the treatment.

The flaking ochre paint was consolidated using a 10% v/v solution of Plextol B-500 in water. A number of applications were made to prevent the flaking of the paint. Plextol B-500 is commonly used to consolidate paint on Indigenous Australian bark paintings. After these treatments were applied to the individual animals, the system to attach the animals to the tree was applied.

A system using magnets and steel washers wrapped in paper and then painted to match the color of the tree was used to attach the animals to the tree. A breakthrough find that made the attachment system possible was a reversible adhesive that adheres to wax without damaging it. Steel washers wrapped in Japanese paper and painted the same color as the wax, were adhered to the wax on the base of the feet. Magnets wrapped in Japanese paper and painted the same color as the tree, were adhered to the tree in the original locations of the animals. The adhesive used to adhere the wrapped magnets to the tree and to the wax was an ethylene vinyl acetate co-polymer (VAE) called Evasol that was developed for the cultural preservation industry, and is sold in Australia. “The characteristic of this EVA co-polymer molecule is that it is less susceptible to acid hydrolysis than the traditional PVA adhesives. It includes significantly less of the acid-forming polyvinyl acetate, which is present in greater quantities in PVAs, and more of polyethylene, the component in Evasol, which does not form acid in either of its wet or dry states. The EVA molecule is made flexible by the presence of the long polyethylene co-polymer molecule. No plasticisers have been added to this formulation” (Book Restorations).

Figure 2: During treatment, animal attached to tree using magnets wrapped in paper adhered onto the tree and steel washers wrapped in paper adhered onto the feet, before inpainting.
Larger magnets were used for the larger figures and fine grade sandpaper was adhered to the top of the washers and magnets to assist in grip and to prevent them from slipping. The magnets were attached to the tree instead of to the animal’s feet eliminating the possibility that the magnets might interacting with each other if two or more animals are stored together in one box.

An interdisciplinary approach was taken to achieve a successful outcome for Tree sculpture. The treatment applied has been successful with the work being displayed on a number of occasions for up to 3 months at a time. The magnet system has proven to be both practical in terms of efficiency and the work appears as the artist intended. Feedback from the artist on the system has been very positive.

References:

- Liz Wild Queensland Art Gallery/Gallery of Modern Art Brisbane, Australia liz.wild@qag.qld.gov.au

ICOM General Conference
Shanghai, China
6-12 November 2010

The ICOM General Conference theme “Museums and Social Harmony” highlighted the position of museums as mediators in a transforming global economy, creating environments where preservation of cultural diversity and promotion of environmental, social and economic sustainability are essential. Three thousand six hundred international delegates attended the General Conference, which was held at the site of the International Expo in Shanghai, China, one of the most dynamic and populous cities in the world. The logistics for this level of attendance were evident from the start as buses from hotels around the city arrived with military precision and attendees were quickly channelled through airport-like security checks before entering the China Pavilion - a floating red pagoda (see Figure 1). The sheer scale of Shanghai, and the surreal and astounding Expo site set the scene for the week of the conference.

The impressive opening ceremony held in the massive pavilion hall, featured keynote speeches by international cultural personalities; simultaneous translations were available. The moderators, Professors Amareswar Galla and Kidong Bae, reminded the audience that the United Nations has identified the importance of mutual tolerance, harmony, cultural diversity, and the power of culture, in dealing with global development. Museums are uniquely placed to
facilitate intercultural encounters and inclusion. These topics were well illustrated by Professor Lourdes Arizpe (Mexico), whose work as an ethnologist and folklorist situates museums as intangible cultural centres and institutionalised “agoras” of cultural identity. Professor Arizpe sees museums and communities as partners for sustainable practice based on scientific knowledge, memories, and reverence for collective commons.

Mrs Gabriella Battaini-Dragoni (Council of Europe) advocated for intercultural exchange as a replacement for multicultural archiving, defining museums as places ‘where we gather and learn’ rather than facilities for ‘what we own and buy’.

Professor Alpha Konare, former president of Mali, noted that Africa is the youngest continent and will be have the highest population by 2050. He emphasized the crucial work that lies ahead for museums; to embrace a broader definition, accept minorities and differences and promote inclusion against a backdrop of mutual recognition.

The theme for the ICOM-CC session was “Conservation in a Changing World”. Attention was primarily focused on the role that conservators play in the transformation of museums, particularly regarding access, intangible heritage, conservation training and conservation in the context of developing nations. The session was held on the afternoon of the first day of the conference, and the President, Marie Claude Corbeil, opened with a brief overview of ICOM-CC’s activities. Unfortunately several of the twelve speakers listed in the program were absent. Those speakers who were present addressed a broad range of issues associated with the conservation of cultural materials paying particular attention to the intangible aspects of cultural heritage, the changing art practice and the need to innovate ‘traditional’ conservation practice.

Catherine Smith (New Zealand), discussed biculturalism in New Zealand, which was established by the Treaty of Waitangi (1840) and the consequent rights held by Māori over their cultural material, both tangible and intangible. Discussing conservation of Māori cultural materials within this framework, she showed examples of conservation treatment in partnership with Māori people that underlined the dynamic character of this culture. She stressed that it is a conservator’s responsibility to engage with the community in question in order to facilitate the preservation of cultural heritage.

Anne Marie Deisser (Belgium), Dinah Eastop (UK) and Lolan Sipan’s (Irak) presentation covered the creation of the Kurdish Textile Museum in the historic city of Erbil in Kurdistan, a not-for-profit organization that aims to preserve and share local knowledge. The museum is seen as a centre of transmission and creation and a place for memory. As such, it plays an essential role in social integrity, following the economic, social and political disruption caused by war.

Sabine Cotte (Australia) presented the particularities of preserving living religious heritage in the Himalayas, and stressed the importance of recognizing the use-value of this heritage, which determines the purpose of conservation. She insisted on the necessity of sharing decision-making with the communities using the heritage, local artists and religious authorities as a way of encouraging sustainable, cross-cultural conservation projects that can reinforce social cohesion.

Eve Graves (UK) gave a moving account of the projects undertaken by students from the Camberwell College of Arts. To enhance the central place of people in conservation projects students are asked to create and conserve reminiscence boxes for the elderly. In the process they develop not only their skills but also a genuine empathy for the people who benefit from the projects. The students are mindful that access to cultural material

Figure 2: Pavilion hall.
stimulates memories and conversation, which is integral to the conservation of meaning.

Maniatis Nikolaos (Greece) and Hanneke van der Beek (Netherlands) discussed the role that video recording and virtual access to collections plays in the preservation of intangible aspects of cultural heritage.

Lawrence Chin (Singapore) talked of the public/private partnership model employed at the University of Singapore; a fully equipped conservation lab is leased to a private conservator and the funds generated are reinvested in the preservation of the collection. Some artifact treatments are outsourced.

Finally Wu Laiming, Head of Conservation at Shanghai Museum, presented the results of scientific research, such as modification of chitosan to make adsorbents.

Overall the ICOM-CC session provided insight into the diverse concerns and activities of conservators working in an ever-changing museum environment. Unfortunately due to time constraints question time was extremely brief, severely limiting the opportunity to exchange ideas and provide feedback. In addition greater interaction and discussion among delegates would have been possible if the program accurately reflected the presentations being given, including an introduction to each speaker.

A visit to the conservation department at Shanghai Museum provided participants with an opportunity to view the incredible dexterity of paper conservators working on the structural consolidation and lining of Chinese scrolls. The scrolls were restored on stunning, large, red-lacquer tables and then dried on the studio wall.

A visit to the National Silk Museum in Zhejiang highlighted the dynamic character of this institution. The museum is actively engaged in developing ancient textile preservation techniques and a database of commonly used fibres for identification purposes. They also promote traditional methods of textile production and produce their own silk crepeline as a cheaper and more sustainable resource. In addition the museum participates in archaeological excavations.

A visit was also arranged to a water village, called Wuzhen, where indigo-dyed textiles were traditionally produced. Now a highly frequented tourist attraction, Wuzhen is a reminder of the economic potential of preservation of cultural heritage and traditional techniques of production.

All of these activities took place against the neon-lit backdrop of high-rise buildings, adjacent small streets of traditional houses with their common courtyards, in the buzzing city of Shanghai where every night was a festival. The ICOM General Conference was a great experience on all levels, emphasizing the diversity and dynamism of the international museum community and providing the space for many interesting encounters.
The Conservation of Feathers:  
An Introductory Workshop  
Canadian Conservation Institute, Ottawa  
7-9 June 2010

Many materials of “ethnographic” value encountered by conservators lack foundational investigation of their properties, and well-researched approaches to their care and treatment. For feathers this situation is changing, due largely to the valuable contributions made by the publication Fur Trade Legacy in 2005 (Margot Brunn and Jim Burns, eds., Canadian Association for Conservation of Cultural Property) and to the workshops about feathers and their treatments taught by Allyson Rae. Formerly Head of Organic Artifacts Conservation at the British Museum, Allyson taught her third and longest workshop on feathers at the Canadian Conservation Institute (CCI) on June 7-9, 2010. This workshop was ideally timed to encourage participation by those attending meetings of both the Society for the Preservation of Natural History Collections and the Canadian Association for Conservation, which bracketed the feather workshop in Ottawa. The length of the workshop allowed Allyson to arrange for participation of other lecturers (Gretchen Andersen of the Carnegie Museum reporting on taxidermy, myself about fading behavior of colorants, Carole Dignard of CCI about laser cleaning, Jan Vuori of CCI on dyeing feathers, and Emily Lin and Clare Lewarne of CCI about loss compensation for feathers.)

‘The Conservation of Feathers’ workshop benefitted from attendance by fine arts, costume, ethnographic, and natural science conservators as well as taxidermy specialists. Considering this diverse audience, Allyson began with a discussion of the nature of feathers to acquaint participants with precise language used to describe feather structures. The growth of feathers, colorant systems, and the importance of preen oil were outlined, and the excellent course handouts summarize this information and include valuable citations. Allyson illustrated a vast array of cultural and natural objects on which feathers are found, and described methods used to alter and attach feathers for use in artifacts. The environmental, biological and mechanical causes of deterioration of feathers were reviewed. I presented my ongoing collaborative research on measuring the fading behavior of un-dyed feathers used within native cultural regalia, a partnership between UCLA and the Getty Conservation Institute. I valued the opportunity to exchange observations and measurements of fading with the focused participants of this workshop.

The second and third days of the workshop were devoted respectively to cleaning, and repair and loss compensation. Allyson outlined the issues and ethics surrounding treatment of featherwork, including pesticide residues, cultural preferences, regulated status of feathers, treatment limitations resulting from the composite nature of most feather artifacts, and the time and budget restrictions connected with the inclusion of countless feathers in a single item. Cleaning methods described in the conservation literature such as aqueous mixtures, solvents, and detergents were reviewed, along with methods borrowed from other fields, such as the application of eraser crumbs.

Practical sessions had participants testing vacuuming, dry cleaning and solvent and aqueous applications, allowing course participants to make their own evaluations.
Gretchen Andersen demonstrated a gentle micro-vacuum cleaner made with an aquarium pump, adapted from one described in the 1989 CCI Notes 18/2; the apparatus was available for trials over a period of 2 days. Dry cleaning agents such as Groomstick©, Chemical sponges, and Webril© wipes were evaluated during lab work. Allyson demonstrated the efficacy of cleaning by immersion in a water bath, which relaxed and straightened deformed feathers, and emphasized drying feathers in a cool breeze with manual manipulation to recover the complex structure. Many course participants were impressed by the results obtained when feathers are carefully groomed following any liquid treatment.

Carole Dignard presented the comprehensive work by CCI to investigate laser cleaning of soot damaged white pelican feathers, a method appreciated by participants experiencing firsthand the challenge of feather cleaning.

Repair of feathers most often refers to work done to correct bends and breaks in the shaft. Allyson has mastered a technique of trimming a section of shaft from another feather of comparable size and color, and applying it either mechanically as a “cuff”, or with Mowolith© resin as a splint over the damaged section. As we practiced this application, participants discussed the pros and cons of this approach, which introduces a compatible natural keratin repair material and a segment of another bird species onto the feather. Excellent visual and strength results are achieved after the repair section is thinned, and I found that the execution of this technique engenders a real respect for the strength and flexibility of feather keratin, which creates a “fingernail like” splint. Other repair methods using synthetic resin adhesives in combination with different splint materials were also demonstrated.

Class participants likely have different needs in terms of replacing feathers or compensating for losses within original feathers. The lecture by CCI’s Jan Vuori on dyeing feathers provided specific instructions and recipes for the application of stable textile dyes to white feathers. Hearing from a textile conservator with experience in dyeing was valuable for this diverse group of participants, as there are cases within costume and fine arts collections when dyed feathers will need to be replaced. Jan introduced the class to lightfast stable dyes, and pointed out the stability of lab-dyed feathers for conservation applications when compared with commercially available dyed feathers.

Compensating for losses in feather barbs, which occurs in cases of severe insect and/or mechanical damage, presents a complex and exciting challenge for conservators. Emily Lin and Clare Lewarne, interns at CCI working with conservator Janet Mason, provided lectures and demonstrations about their research into creating fills made by producing one-to-one digital photo-reproductions of feather patterns on different substrates, and then testing different methods to attach these fills to feathers within loss areas. (See article by E. Lin and C. Lewarne on pages 2 to 7 in this newsletter).

Course participants were given the opportunity to not only evaluate examples of compensated feathers, but to adapt some of the methods demonstrated in order to stabilize and fill losses in sample feathers. Executing such techniques demonstrated to me how the complex textures of feathers create compensation challenges, where texture is more important than color and pattern. It is important to note that the backing methods tested can be adapted to provide stabilization without providing compensation, which expands the application beyond aesthetic goals and increases the application to artifacts with multiple feathers with losses.

Overall, “The Conservation of Feathers” workshop provided an excellent combination of lecture, practical exercises and discussion, affording participants exposure to the different challenges feathers present within conservation. Allyson Rae and CCI conservation staff are to be commended for their hard work to assure a highly successful course. Allyson expertly presented a workshop well balanced between theory and practical demonstrations, and she graciously encouraged input and discussion from all participants. The excellent course handouts serve as an annotated review of the state of feather conservation, and the ample bibliography is an excellent resource. CCI library staff had available many references from the
bibliography and permitted participants to freely photocopy articles. Outstanding areas for future research include evaluating the relationship between residual preening oils and feather preservation, quantifying oil removal as a result of cleaning methods, and evaluating whether oiling feathers should be part of a conservation strategy.

- Ellen Pearlstein, Associate Professor UCLA/Getty Master's Program in Archaeological and Ethnographic Conservation, and Information Studies Los Angeles, California, USA epearl@ucla.edu

The Anchorage Loan Conservation Project

The website for the Anchorage Loan Conservation Project recently went live. The website provides an overview of the conservation process for the Living Our Cultures, Sharing our Heritage exhibit that opened in May of 2010 in the Smithsonian’s Arctic Studies Center, which is housed in a new wing of the Anchorage Museum. The loan includes almost 400 objects from the Natural History Museum and approximately 200 objects from the National Museum of the American Indian. Conservators at both Smithsonian Museums worked collaboratively to balance an unprecedented level of access to the objects for Alaska Native peoples while ensuring the long-term preservation of some of the oldest and most extraordinary Arctic collections extant.

Newly designed and built floor-to-ceiling glass display cases house objects from 10 major Alaskan Native culture groups, many of which have not been back to Alaska since they were collected over 125 years ago. All are on exhibition for the public, and at the same time are available for hands-on examination and discussion by Alaska Native elders, artists, and scholars.

The website for the Anchorage Conservation Project, which comprises the nearly three-year conservation phase of this initiative, highlights a comprehensive and integrated approach to the conservation of objects of Alaskan Native heritage. The text and imagery in the website detail the scope of work undertaken in the conservation labs at the National Museum of Natural History and the National Museum of the American Indian in preparing one of the largest object loans ever made by the Smithsonian.

To access the website and learn more about the Anchorage Loan Conservation Project go to http://anthropology.si.edu/accessinganthropology/alaska/index.html.

- Landis Smith
  Conservator in private practice
  Washington, DC, USA
  smithl@si.edu

- Michele Austin-Dennehy
  Conservator in private practice
  Washington, DC, USA
  maustin-conservation@comcast.net

- Kelly McHugh
  Object Conservator
  National Museum of the American Indian
  Washington, DC, USA
  mchughK@si.edu

- Kim Cullen Cobb
  Conservator in private practice
  Washington, DC
  kimcc@mac.com
Adhesive Research for Gut Skin

During preparations for the exhibit Living Our Cultures: Sharing our Heritage project, Elaine Kingeekuk, an Alaskan Native skin sewer, voiced concerns regarding the mending of a gut skin parka with an adhesive patch. She felt an adhesive might stiffen the gut and ultimately fail as a mend. Ms. Kingeekuk’s concerns prompted a two-track study of how adhesives interact and age when applied to gut skin garments. This research is underway at the National Museum of the American Indian (NMAI) and National Museum of Natural History (NMNH) by Lauren Anne Horelick and Kelly McHugh.

The first part of the study involved surveying parkas at NMNH treated with adhesive mends between the 1970’s and 2005. Ten parkas at NMNH with adhesive mends from the late 1970s, made with PVA emulsions, resins, and methylcellulose appeared stable and showed no signs of stiffening or discoloration, with no new tears emerging from mended areas. Surveys of past treatments are planned at other cultural institutions.

An on-line survey targeted for conservators working with gut skin materials seeks to collect information on current trends in adhesive choices. Early responses show a range in preferred materials. Commonly mentioned adhesives are PVA emulsions and resins, BEVA 371 film, Acryloid F10, Acryloid B-72, Klucel G, and wheat starch paste and other natural adhesives.

Survey responses are still being sought. The online survey can be found at the following address: http://gutskin.wordpress.com/ or by contacting the author.

The results from the survey will help narrow down a selection of materials for testing on samples of seal gut.

Thank you for your participation.

• Lauren Anne Horelick
  Mellon Fellow in objects conservation
  National Museum of the American Indian, Smithsonian Institution.
  horelickl@si.edu

CALL FOR PAPERS

IIC 2010 Vienna Congress 2012
The Decorative: Conservation and the Applied Arts

The twenty-fourth IIC Congress will be held in Vienna in conjunction with the Universität fur angewandte Kunst (the University of Applied Arts) from 10 to 14 September 2012 and will focus on a topic that is uniquely well-suited to Vienna’s wealth and scope of decorative and applied arts heritage. Ornamentation and the decorative have been evident in human endeavor since the beginning of recorded history, ranging from the bold clarity of Ancient Egypt to the clean-lined, discreet styles of the 1930s and the exuberant revivals of today. Whether civilizations have grown in Europe, Asia, the Americas or Australasia, many of their forms of cultural expression can be considered ‘decorative’ or ‘applied’ arts. The conservation of this heritage, tangible or intangible, is thus the conservation of much of human endeavor and as such is central to our cultural life.

The range of work that this IIC congress will cover is very broad: architectural decoration and styling; ceramics from pottery to porcelain; glassware, including painted and stained glass and studio glass; furniture; hardstone carving, including pietra dura work and engraved gems; metalwork in all its forms; jewellery; ivory and bone carving; textiles including tapestries, embroideries and costume; mosaics; painted decoration; wallpapers and wall coverings; work in terracotta; plaster work; bookbinding and leatherwork. This is by no means an exclusive list.

Call for Papers
We now invite the submission of proposals for a paper at this event. A requirement of submission is that one of the authors of each selected paper must attend the congress to present that paper to the audience. Papers presented at an IIC Congress and published in the preprints undergo a rigorous peer review process. To this end, IIC Council appoints a Technical Committee of international experts who will make selections from the proposals.
received and will then invite draft papers. The drafts will be reviewed and the content of the program will be determined by the Technical Committee. Final contributions will be edited for publication by the IIC Editorial Committee.

Please remember that submissions should not have been presented and/or published elsewhere before the date of the Congress.

IIC encourages you to submit your proposal for a paper early via the web; go to www.iiconservation.org/conferences/Vienna2012/send_abstract.php.

Further details may be found at the home page of the IIC web site - www.iiconservation.org - just follow the link to Congress.

A call for posters will be made later in 2011.

Deadline for receipt of summaries: 30 April 2011.
You will receive a response from the Technical Committee by the end of June 2011. Draft manuscripts will be required by 30 September 2011 and the Technical Committee will make their selection by the end of November. Final manuscripts will be due on 15th January 2012.

Contact Details:
Graham Voce, Executive Secretary
International Institute for Conservation of Historic and Artistic Works (IIC)
6 Buckingham Street, London WC2N 6BA, UK.
Phone: +44 (0)20 7839 5975
Email: iic@iiconservation.org
Website: www.iiconservation.org

We look forward to seeing you in Vienna.

UPCOMING: Conferences and Courses

ICOM-CC 16th Triennial Conference, Lisbon, Portugal, 19-23, September 2011

Please refer to the ICOM-CC conference website http://www.icom-cc2011.org/ for detailed information.

Adhesives and Consolidants for Conservation: Research and Applications 17 to 22 October 2011 CCI, Ottawa, Canada.

Please refer to the CCI website www.cciicc.gc.ca for more information.

THE NEWSLETTER TEAM

Thank you to all who submitted articles, and reviews for this issue of our Newsletter. I encourage all our readers to consider sending in articles, projects, reviews, announcements or any information relevant to this readership for our next issue. Submissions should be between 1000 and 1500 words although longer or shorter pieces are definitely welcome. Please send your submission to kimcc@mac.com, or to the reporter in your region.

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