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The cover shows
Netscape viewing of a web page featuring Carl Taylor,
Systems Developer

Silvia always kept a strong interest in art and music. She made the decision to develop this interest after attending conferences on the subject of "Art and Science". She managed to get a scholarship from the University of Trieste to spend a year in the Laboratory of Thermal Analysis and Conservation Science at Birkbeck College, University of London.

As a research assistant under the supervision of Ms Marianne Odlyha, Silvia was involved in projects aimed at a physical-chemical characterisation of painting materials and monitoring environmental parameters.

Silvia feels that the RCA/V&A Conservation Course offers her a great opportunity to learn more about scientific conservation technologies in a stimulating and fascinating environment and to use chemistry for conservation of works of art. She has a strong interest in textiles and intends to concentrate her research in this area.

Silvia's supervisor will be Brenda Keneghan, Polymer Scientist in the Science Group, V&A.



Lyndsey Morgan
Aged 32, British

Identification and documentation of modern bronze patinas

(2 year MPhil by Thesis)

HNC Applied Biology, University of Hertfordshire (1988)

BSc(Hons) Archaeological Conservation, Cardiff University (1991)

Lyndsey worked for several years as a technician for a pharmaceutical company whilst taking a part time HNC in Applied Biology. Her constant interest in art and archaeology led her to a course in Archaeological Conservation at Cardiff University as the best means to combine her scientific and artistic interests.

After graduation she undertook an internship at the Museum of London. Here she gained experience working on exhibitions as well as assisting with surveys and collection storage. Lyndsey was also able to organise a study tour of museums and galleries in America to investigate 'state

of the art' storage methods and conservation techniques for modern materials.

Following this, during an internship at the Tate Gallery she became interested in the varied finishing and colouring techniques found on metal sculpture. The RCA/V&A Conservation Course offers the chance for Lyndsey to continue her investigation into the secretive world of art foundry patination in an attempt to find a practical means of analysis, identification and documentation which can be used by conservators working with sculpture.

Lyndsey's supervisor will be Jonathan Ashley-Smith, Head of Conservation, with support from: Derek Pullen (Head of Sculpture Conservation, Tate Gallery), Richard Rome (Head of the MA Sculpture (Foundry) Course, RCA) and Diana Heath, Head of Metals Conservation, V&A.



Metaxia Venticou
Aged 27, Greek

Sculpture Conservation

(2 year MA)

Ptychion (degree) in Conservation of Antiquities, Technological Educational Institution of Athens (1996)

During the five-year course at Athens, Metaxia studied the conservation of stone, ceramics, glass, metals, mosaics and organic materials. She gained practical experience through several projects and placements on archaeological sites, in museums and in historical buildings.

Metaxia has participated in the conservation of wall paintings and sculpture, while the range of excavated material she has worked on includes fossilised bones of dwarf elephants and ceramics from shipwrecks.

By joining the RCA/V&A Conservation Course, Metaxia hopes to broaden and enrich her theoretical background and enhance her career prospects. She looks forward to applying the skills she learns to the abundance of antiquities in Greece.

Metaxia will be supervised by Charlotte Hubbard, Senior Sculpture Conservator at the V&A.



Magdalena Kozera
Aged 35, Polish

The technology of mounts and frames used with photographs in the nineteenth and early twentieth centuries

(2 year PhD)

HND in Paper Conservation (Library & Archives - Photographs), Camberwell College of Art (1989)

MPhil in Conservation - Historic Photograph Frames, Royal College of Art (1997)

Magda successfully completed her MPhil research into the contemporary framing of historic photographs on the RCA/V&A Conservation Course this year. She will continue to develop this theme in the next two years, leading to a PhD Degree. She intends to concentrate on a more detailed technical study of photograph enclosures, including the materials, technology and manufacture of frames and mounts.

The thesis will extend knowledge and understanding of framed photographs as problematic, multi-component museum objects. She hopes to establish links between the deterioration processes of photographic images and specific types of enclosure, a complex issue due to the sensitive nature of the photographic medium.

As a practising conservator of photographic materials herself, Magda is also keen that her work may contribute to the development of conservation procedures and effective storage systems for collections of framed photographs.



Susan Earle-Mitchell
Aged 42, British

Conservation Management

(2 year MA)

Registered General Nurse

BSc (Hons) Restoration and Conservation

Susan trained in Edinburgh to be a Registered General Nurse. Following registration, her employment in the National Health Service involved working as a staff nurse in a ward environment. The special relationship between patient and carer, combined with the organisational demands of the ward environment gave her considerable job satisfaction at the time.

Following the closure of the Bridge of Earn hospital in 1993, Susan decided to make a career change and at the same time update and improve her formal education. Renovation as opposed to restoration had always been her particular interest, and wanting to combine this with a study of the visual arts she was drawn to conservation.

Susan completed a one year access course at a local college, moved to London and spent three years at Guildhall University studying for a BSc in Restoration and Conservation. She feels that the course provided a broadly based professional qualification for those wishing to become conservators or commercial restorers but her previous work experience has led to a greater interest in management. She feels that the MA in Conservation Management would give detail and body to an area which she is keen to pursue as a career.

Helen Jones, RCA/V&A Conservation Course Tutor will be Susan's primary supervisor, with substantial input from Jonathan Ashley-Smith, Head of Conservation and other V&A staff.



Kirstie Reid
Aged 29, British

Metal Patination Research

(4 year part-time MPhil by Project)

BA(Hons) Fine Art Sculpture, Wimbledon School of Art (1991)

Kirstie became aware of her interest in materials and their properties through working in foundries and through teaching and making sculpture. She was aware of conservation courses but initially decided to pursue her studies in sculpture.

Kirstie has worked with a wide variety of materials including steel, clay, rubber, perspex and even snow! She runs the foundry at Wimbledon School of Art, which allows her to explore new methods of working through practical day to day experience and problem solving.

She has already had a taste of conservation working at the Wallace Collection for six months, in their Metal Conservation Department. Her main interest is in metal and its surface finish, colouration and decoration. Kirstie's objectives in studying patination remain broad, but her main aim is to explore techniques both new and old.

Kirstie's supervisor will be Jonathan Ashley-Smith, V&A Head of Conservation, with support from: Derek Pullen (Head of Sculpture Conservation, Tate Gallery), Richard Rome (Head of the MA Sculpture (Foundry) Course, RCA) and Diana Heath, Head of Metals Conservation, V&A.



Deborah Morey
Aged 30, British

(2 year MA)

Sculpture and Architectural

Conservation (collaboration with Holden Conservation Services)

Diploma in Conservation and Restoration Studies, City & Guilds of London Art School (1997)

Prior to the diploma course Deborah completed an access course in art and design. She had previously been a registered general nurse.

The diploma course concentrated on the conservation and restoration of objects made of wood, stone and related materials, with gilded and polychrome surfaces. Throughout the course she worked on a variety of objects from the public and private sectors, including a picture frame, plaster casts and stone sculpture. This gave Deborah a broad background to all aspects of the subject.

Her interest in stone conservation developed and during vacations she found employment working on sculpture and architectural projects. During the course Deborah was accepted as an intern at the British Museum where she spent two months in the stone conservation department working on several objects that were to go on loan for exhibition.

In the Summer of 1997 Deborah found work as a freelance conservator. She looks forward to the Course as a means of providing specialised trained and focussing her interests.

Deborah's supervisor will be Martin Holden of Holden Conservation Services.



Silvia Valussi
Aged 28, Italian

Twentieth Century Materials in Art, Craft and Design

(2 year MPhil by Thesis)

BSc Chemistry, University of Trieste (1995)

Silvia studied Chemistry in Trieste, where she attained the Italian "Laurea" (BSc in Chemistry). During her academic studies she had the opportunity to spend a year in Germany (University of Regensburg) and improve her knowledge of polymer science. To obtain her degree she worked on a "German" biopolymer made by a yellow amoeba.

Editorial

Jonathan Ashley-Smith
Head of Conservation Department

Despite the best efforts of the production team this edition of the Journal will be issued behind schedule because of delays in producing the editorial. The most recent excuse for not writing it was my attendance at the conference "Fabric of an Exhibition: An Interdisciplinary Approach" organised jointly by the Canadian Conservation Institute and the North American Textile Conservation Conference. The conference was notable for two things: the realism expressed in the presentations and the deceptive politeness of the open debate.

Textiles have a relatively short life expectancy compared to other object types. This life expectancy is further shortened if the objects must be on continuous display in a historic house because they are the only examples that have relevance in that context. At this conference there was consistent realistic and unemotional discussion about objects coming to the end of their lives, being used up and having to be replaced. Judging by the questions following the presentations there was total agreement in the audience about everything that was said. Yet within huddled whispering groups at coffee and later in the bar

there was violent disagreement with at least two of the talks. In one instance a locally important object had not been allowed to die in dignity but was condemned to spend eternity in what many dubbed the "iron lung". In another, objects that were quite capable of being revived were left in a sorry state because of the potential importance of the dirt and creases. My criticism is not about either of these two approaches but about the lack of open discussion of them. If we feel so strongly about something why are we so afraid to criticise?

In this issue of the Journal we have encouraged criticism of our own work by commissioning two non-conservators to review the conservation students' degree show exhibition. Other articles stress the importance of communication with people in other institutions and other disciplines. Many of the authors are not from the Conservation Department but their contributions indicate the value of collaboration and of sharing ideas. If the Internet is to achieve its potential then we must be willing to be open and to share all available information. It is not a medium for secrecy or control.

This will require a difficult change in attitude for many who are obsessive about controlling information and are afraid of the criticism implicit in someone else interpreting their data in new or different ways.

Finally, a few words about Anna Plowden, private sector conservator and trustee of this Museum, who died recently. During the 1980s she and I worked together to try to reduce the gulf that divided conservators in institutions from those in the private sector. We shared information about materials and techniques and also about management and organisation. Students from our diploma course were given work experience in her studios and members of her staff received specialist training in the Museum. However, at the time, this relationship was viewed in both sectors with immense mistrust. When she was selected to be on our Board of Trustees, this was not hailed as recognition of the status of the conservation profession but received with total incomprehension and suspicion. Now, some years later on, I hope that the greater integration of the public and private sectors is a sign that attitudes have changed.

Preparations for 'Carl and Karin Larsson: Creators of the Swedish Style'

Tina Manoli, Exhibition's Officer, Larsson Exhibition

Nicola Costaras, Senior Paintings Conservator & Conservation Liaison for the Larsson Exhibition

"Should I die which, surprisingly enough, could happen, I believe that the home will carry on just as well, although not just in the same way. But then it wasn't the same yesterday as today. A home is not dead but living, and like all living things must obey the laws of nature by constantly changing..."¹

The first major exhibition ever held outside Sweden on the work of Carl and Karin Larsson opens at the V&A on 23 October 1997. It focuses on the famous house they created at Sundborn in Sweden and its extraordinary impact on interior design world-wide over the last century. The highlights of the exhibition include a specially commissioned wooden model of Sundborn and five room-sets containing the original furniture and fittings lent from the Larsson home for the first time. Almost all the exhibits are from public and private collections in Sweden. The show is co-curated by Michael Snodin, Head of Designs, in the Prints, Drawings and Paintings Collection and Dr Elisabet Stavenow Hidemark of the Nordic Museum, Stockholm with the design historian, Denise Hagströmer, as the guest curator of the section on the Larssons' legacy.

The Exhibitions Department arranged a one week trip to Sweden in December 1996 for the V&A's exhibition designer, Sharon Beard, and ourselves. A two day visit to the house at Sundborn, now a museum called Carl Larsson-gården, was included to increase our familiarity with the 150 loan objects, to establish the current condition of the objects and the environmental conditions in the house, to check aspects of the room-set designs, and to discuss the packing and transportation of the loan. The rest of the week was spent in Stockholm where meetings were arranged with the Nordic Museum, the Nationalmuseum and an art transport company.



Figure 1. View of Carl Larsson-gården.

courtesy of Carl Larsson-gården, Sundborn.

Carl Larsson (1853-1919) is Sweden's most beloved artist. In 1889, Carl and his wife Karin (1859-1928) were given a rural cottage in the village of Sundborn (Figure 1). When the holiday cottage became the permanent home for their large family, it was enlarged and transformed. In total contrast to the prevailing style of dark heavy furnishings, its bright interiors incorporated an innovative blend of Swedish folk design and *fin de siècle* influences, including Japonisme and Arts and Crafts ideas from Britain. The Larssons created a style of interior decoration recognised as quintessentially Swedish with colourfully painted furniture and woven textiles. Karin designed and produced the textiles and her loom is one of the objects in the exhibition. Through Carl's watercolours of his house and family^{1,2,3} the couples' ideas on interior design reached a large audience (Figure 2).

After Carl and Karin Larsson's death their descendants formed a trust, the Larsson Family Association. It was a founding principle that the house should continue to be used and not be just a museum. Consequently, the family regularly holds celebrations at the house, enjoying and using its contents. Not surprisingly, this causes some conflict between those whose priority is



Victoria Doran
Aged 29,
American

An investigation into composition and the ways in which it was used on picture frames

(2 year MPhil by Thesis)

BA(Hons) Furniture Restoration and Craftsmanship, Buckinghamshire College of Brunel University (1997)

Having initially studied at Kingston Polytechnic, Victoria spent some time as a freelance designer with a special interest in trompe l'oeil decoration. A long standing, wide ranging interest in the decorative arts and in particular, antique furniture, led her to the degree in furniture restoration as she felt that this would combine her desire for practical skills with historical and theoretical knowledge.

Restoration/conservation work involving carving, modelling and gilding had been the subject of specific interest before the course and this was fuelled by vacation work for a number of commercial London restorers. These areas were furthered by a final year devoted to the study of picture frames, the restoration of an early eighteenth century frame forming the major part.

The wider appeal of picture frames led to her interest in composition, particularly the manufacturing techniques and the vocabulary of ornament used and she found that this was an area for which there was considerable scope for research. Victoria's supervisor will be Christine Powell, Senior Gilding Conservator at the V&A. Jacob Simon at the National Portrait Gallery has expressed willingness to provide advice and information.



Angela Geary
Aged 29, British

Computer visualisation of the original appearance of works of Art

(4 year part-time MPhil by Project)

BA (Hons) Fine Art, Glasgow School of Art (1989)

MA Conservation, University of Northumbria (1993)

During her first degree course in fine art at Glasgow School of Art Angela developed an awareness of historical painting techniques. This interest led her to undertake an MA in paintings conservation.

Shortly after completing her MA Angela took up an internship position at the Tate Gallery, followed by an 18 month contract working in connection with the Dynasties exhibition and the British collection. Last year Angela set up her own private practice in London; she also lectures part-time at the City & Guilds of London Art School, on the Diploma course in Conservation and Restoration.

The application of computer imaging in conservation has been a strong interest for her in recent times. Angela is looking forward to exploring computer image manipulation technology in greater depth and applying it to her research. Her project will focus on the reconstruction of the original appearance of aged and damaged paint films on selected three-dimensional objects. The investigation will draw on historical knowledge of techniques and pigments, existing scientific analysis and cross-referencing to related objects.

Angela's supervisor will be the RCA/V&A Conservation Course Director, Alan Cummings.



Cecilia Rönnerstam
Aged 27,
Swedish

Conservation of Portrait Miniatures
(2 year MA)

Painting Conservation, Royal Danish Academy of Fine Arts, Copenhagen

Art History and Preventive Conservation, short undergraduate courses, University of Gothenburg (1994)

Cecilia worked for three and a half years as a trainee in paintings conservation at two Swedish museums, Jönköpings Museum and Nationalmuseum in Stockholm. During this period she worked mainly with easel paintings on different materials. She has always had a special interest in portrait miniatures and at the Nationalmuseum she had the opportunity to work on and study their fine collection more closely. Throughout her conservation studies she has made portrait miniatures her focus, always intending to specialise in this field.

Cecilia has completed two of the three years of a BA Course in Conservation of Pictorial Art and was awarded a scholarship to enable her to examine further the possibilities of getting training in the field of portrait miniature conservation. Thus, she will be on leave from the Royal Academy of Fine Art, School of Conservation to take up this studentship and will return to complete her BA. This is an unusual arrangement but allows Cecilia to take advantage of the unique opportunity offered by the RCA/V&A Conservation Course.

Cecilia's supervisor will be Alan Derbyshire, Senior Paper Conservator at the V&A who has particular expertise in the conservation of portrait miniatures.

New Students for the Academic Year 1997/98

Helen Jones
 Course Tutor, RCA/V&A Conservation Course

A record number of potential student places was offered for the 1997 intake. If all had been taken up, we could have started with twenty new students in our target options plus a couple who approached us with their own proposals! While it is exciting to be able to offer a wide range of opportunities in both traditional and innovative areas, it is hardly practical. It was never the intention that every place offered would be filled. As expected, some options attracted no applicants and others were not filled for a variety of reasons.

Given the hard work which goes into negotiating and arranging studentships, it is gratifying to be able to introduce 12 students who will join the Course at the end of September 1997. We are very pleased to continue our collaborative relationship with the Horniman Museum who will accept their second MA student, this time in the Conservation of Ethnographic Materials. Our existing informal links with the Tate Gallery will also be consolidated by the involvement with two students researching metal patination. For the first time we have established a full studentship in collaboration with a commercial conservation practice, Holden Conservation Services, which we expect to be fruitful.



Victoria Hobbs
 Aged 26,
 British

Conservation of Ethnographic Material (Collaboration with the Horniman Museum)

(2 year MA)

BTEC National Diploma Conservation and Restoration Studies, Lincolnshire College of Art and Design (1992)

BA(Hons) Conservation and Restoration, De Montfort University, Lincoln (1995)

Together the courses in Lincoln offered a broad foundation in all aspects of conservation with modules in the conservation of a wide range of materials and objects. Victoria chose to specialise in the conservation of ethnographic artefacts and ceramics during the third year.

Victoria undertook an eight week placement during her course at Stroud District Museum, working on documentation and storage projects. This was later supplemented with a six month contract as an Assistant Conservator, where she assisted with a range of collections management issues and the relocation of the entire collection into improved stores.

Following a placement with the Cheshire Museum Service she was accepted as an intern in the Conservation of Archaeological and Ethnographic Artefacts by Historic Scotland/Scottish Conservation Bureau. The one year programme involved the treatment of a diverse group of objects, ranging from an Inuit Seal Gut Parka to a Sudanese Chain Armour Helmet, which displayed many interesting and challenging problems. It was Victoria's opportunity to work with Ethnographic Artefacts as an Intern that brought her to the RCA/V&A Conservation Course and she looks forward to developing and extending practical skills and expertise within this particular specialism under the supervision of Louise Bacon, Keeper of Conservation at the Horniman Museum.



Rowan Carter
 Aged 29,
 British

Furniture Conservation

(3 year MA)

BA (Hons) Politics and English, York University (1990)

City & Guilds Carpentry & Joinery, York (1992)

City & Guilds (Advanced) Furniture Restoration, York (1995)

Cert. of HE in Furniture Restoration, Buckinghamshire College (1996)

BADA Diploma in Furniture Restoration, West Dean College (1997)

Post Grad. Diploma in Furniture Restoration, West Dean College (1997)

After completing a theoretical degree, Rowan was interested in a practical vocation to pursue artistic and creative ambitions. Focusing on wood, she began training in cabinetmaking and carpentry. She developed these skills further to include theatre set and prop building, musical instruments, and ecclesiastical and architectural restoration.

Being drawn more to the restoration of furniture, she decided to return to college to study the subject in depth. Three years later she completed the Post Graduate Diploma at West Dean College. Throughout this time, Rowan pursued conservation issues with increasing interest. At West Dean College amongst other procedures, she conserved an early tridarn for the Museum of Welsh Life, removing an unstable varnish layer to reveal a wax finish. A placement at Temple Newsam House conservation department allowed exploration of painted surfaces in the form of unstable heraldic shields on part of a set of early hall chairs.

Rowan's supervisor at the V&A will be Nick Umney, Assistant Head of Conservation, assisted by Albert Neher and Tim Hayes of Furniture Conservation.

the preservation of the spirit of the place and its continued use and those who are responsible for the preservation of the objects and the fabric of the building as an important part of the national heritage - with 60,000 visitors a year. Museum or home? It is a paradox; the fact that it is still lived-in undoubtedly contributes to its special atmosphere and charm but it inevitably causes wear and tear. Throughout our stay at Carl Larsson-gården, we had, as museum professionals, a somewhat surreal feeling, as we sat on the chairs, slept in the beds and used the table which we will next see carefully installed as museum objects in our exhibition.

The known vulnerability of large painted wooden objects to changes in environmental conditions, meant that the painted furniture coming from Carl Larsson-gården was the focus of concern from the Conservation Department. Problems have arisen when there has been a large difference between the environmental conditions that an object is used to, such as an unheated church, and those in the Museum. The former might have a typical relative humidity of 70%RH whereas the relative humidity in the exhibition space would be set at 50%RH⁴. At our request the climate in several rooms at Carl Larsson-gården was monitored with electronic loggers⁵ from July 1996. Shortly after our visit, we were provided with graphs that showed considerable and quite rapid fluctuations in both temperature and relative humidity⁶. There were few signs of flaking on the painted furniture so it seems the pieces are able to withstand these sudden changes in relative humidity with minimal damage. Since it is anticipated that the conditions

during the exhibition will not fluctuate as widely (between 45-55%RH and 18-22°C) the painted furniture should not be at risk from its temporary change of environment.

Assisted by the curator, Marianne Nilsson and Lennart Persson, a freelance conservator who has worked on the collection for several years, we moved through the house considering each loan object from our different viewpoints: conservation, design, transport and packing (Figure 3). We checked the object dimensions, took photographs, discussed display proposals and hanging fittings. We agreed what conservation work would be carried out on the painted furniture before it travelled. Lennart's knowledge of the conservation history of many of the objects was extremely useful. We also considered the packing requirements of the various objects. The designer discussed the room-sets with Anders Eriksson from the Nordic Museum, whose Technical Production Department would build them.

Our meetings at the Nordic Museum and Nationalmuseum involved a brief look at the loan objects, agreeing who would carry out the packing and transport. The Registrar at the Nationalmuseum arranged a meeting of everyone involved with the loan including the freelance paper conservator who will condition check the loans from private lenders, representatives from the transport company and an officer from the Swedish Royal Air Force.

As part of the Swedish government's sponsorship of the exhibition the Swedish Royal Air Force offered to fly the room-sets and objects to

London and return them to Sweden at no cost to the V&A. First Lieutenant Malmgren briefed us at this meeting on the facilities and loading procedures of a TP 84 Hercules aircraft⁷. The Swedish Air Force has had previous experience of handling fine art shipments⁸.

In addition to the Sundborn loan, the packing and transportation of all the other loans within Sweden were discussed with the fine art transport company. As well as the Nationalmuseum and the Nordic Museum in Stockholm the lenders include four major Swedish museums, nine organisations and 14 private lenders.



courtesy of the Nationalmuseum, Stockholm.

Figure 2. The Dining Room depicted in *For a Little Card Party*, Carl Larsson, oil on canvas, 68x92 cm, 1901.

The visit to Sweden was felt to be extremely useful by both the Conservation and the Exhibition Departments. The Conservation Department welcomed the opportunity to build on the positive experience of similar reconnaissance for the William Morris exhibition in 1996. In the past, loan objects have often been seen for the first time by a conservator on arrival in the Museum just prior to the exhibition. Having the opportunity to examine the condition of the objects well in advance meant that any objects that needed conservation could be identified and treated in good time before transportation. Preparations could be made in advance for particular display and packing requirements. Anders Clason, the Swedish Cultural Attaché in London, worked tirelessly to raise sponsorship and persuaded six Swedish Ministries, including the Ministry of Defence, to support the exhibition. Project team members benefitted enormously from early visits to Sweden, generously financed by the Swedish Embassy. Without the visits we would not have the same appreciation of how truly cherished and important the Larssons are to all Swedes.

Notes

1. Larsson, C., *Åt Solsidan* [On the Sunny Side], Bonniers, Stockholm, 1910.
2. Larsson, C., *Ett Hem* [A Home], Bonniers, Stockholm, 1899.
3. Larsson, C., *Larssons*, Bonniers, Stockholm, 1902.
4. Martin, G., Policy into practice, *Museums Practice*, 4, pp.46-51, 1997.
5. The loggers used were Tinytalk II (Orion Components Ltd) and were placed in the Kitchen, the Dining Room, the Studio, the Old Room and the Miner's Cottage.
6. In the Dining Room over this period the temperature range was 15.5° - 25.5° C and the relative humidity range was 14 - 74%RH. The objects were packed in September 1997 and the equivalent period in 1996 had an overall range (in the Studio) of 35 - 52%RH but in a given 24hours the range did not exceed 6%.
7. Maximum dimensions of cargo 12 x 2.7 x 2.5m (lxwxh); pallets measure 2.23 x 2.68m (shorter in the direction of flight); maximum load per pallet 2,400 kg including netting; temperature in the cargo hold averages 15-20°C with relative humidity averaging 7-15%.
8. *The Swedish Royal Treasures* exhibition for the Royal Academy of Art, London.



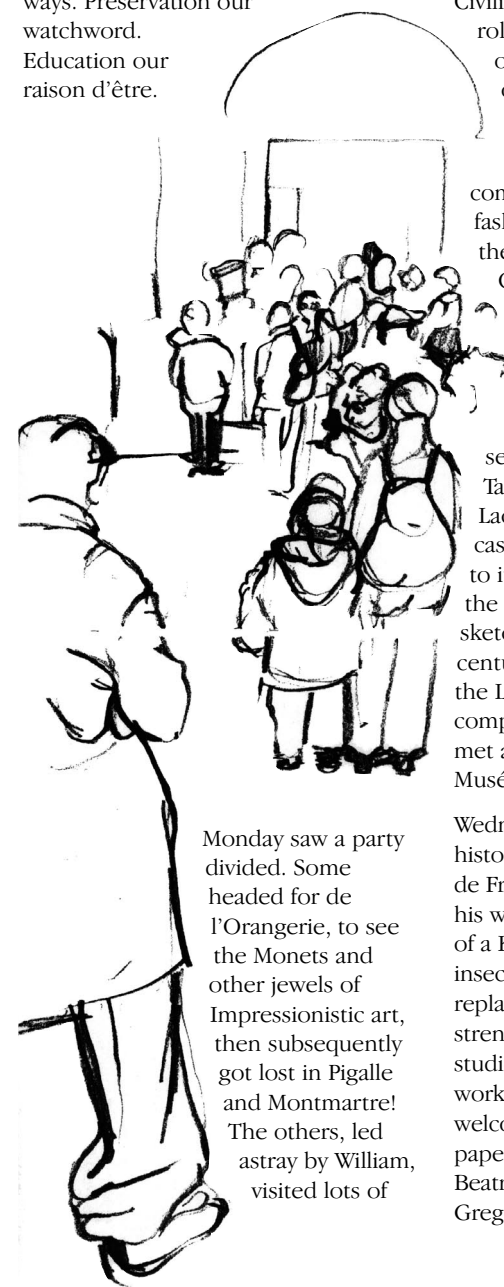
Photography by Nicola Costantini

Figure 3. View of the Studio, showing furniture, tablecloth and wall sconce that will be in the exhibition

Postcards from Paris

Anna Hillcoat-Imanishi, Elizabeth-Anne Haldane, Laura Bennett and William Lindsay
RCA/V&A Conservation Course Students

Paris! Ah, the city of romance and art, Gene Kelly and Cyd Cherise, good food and good wines, - but not for us. We were in search of conservation, students eager to learn, to broaden our horizons, to understand foreign ways. Preservation our watchword. Education our raison d'être.



Monday saw a party divided. Some headed for de l'Orangerie, to see the Monets and other jewels of Impressionistic art, then subsequently got lost in Pigalle and Montmartre! The others, led astray by William, visited lots of

skeletons in the cupboards (the anthropological collections), at the Musée de l'Homme, which is under threat from Presidential plans to take the science out of Ethnology and replace it with a Museum of Civilisations and Fine Arts. Heads were rolling, some from guillotine victims, others from Napoleonic soldiers, others from a need for careful cushioning.

No trip to Paris would be complete without a look at the fashions, so on Tuesday we went to the Musée de la Mode et du Costume. Mme Antoinette Villa gave us a tour of the conservation studios and the impressive 4000 sqm of modern textile storage space, the largest in Europe. Later, we separated for visits to the Gobelins Tapestry Workshops and Père Lachaise cemetery. Montmartre had cast its spell over Nick, drawing him to its artistic heart as he worked on the practical art of his research with sketchbook and palette. Sixteenth century François Clouet miniatures at the Louvre, also kept him busy as he compared them with Hilliards. We all met at the end of the day at the Musée D'Orsay.

Wednesday was a day for paper and history. At the Bibliothèque Nationale de France, M. Thierry Aubry presented his work on a sixteenth century edition of a Koran, attacked by verdigris and insects. Damaged bindings had been replaced allowing flexibility and giving strength. Following this we toured the studios, science lab and gilding workshops. In the afternoon were welcomed at the Musée Carnavalet paper conservation studio by Mme Beatrice Liebard and Mme Christiane Gregorie. We were particularly

interested in the extensive use of light bleaching, for which a special cupboard had been constructed. We also studied fan conservation before collapsing, exhausted, in a nearby cafe.

Thursday (Anna's Birthday!) The treasures of the Ancient East were brought close to us at the Musée Guimet. Mme Feugere and her colleagues showed us tenth century scrolls and seventh century temple banners in amazing condition and we discussed their conservation treatment in depth. M. Cailleteau, the paper conservator, enlightened us further about the most appropriate methods of conserving ancient Chinese texts. We were interested to note that Japanese methods of conservation such as wet lining are not favoured here. After lunch at the Foreign Office canteen with our hosts, we dispersed. Some went shopping, others went to see even more culture at the Grand Palais and the Musée du Moyen Age. If, on our final evening we had hoped to listen to some modern jazz in one of the hip bars around the Bastille, we were disappointed: we were not allowed in, supposedly because of overcrowding...

Friday, we had a few hours to spare before catching the train back to London, so we dashed out to the studios of the Service de Restauration des Musées de France. There was a moment of panic when a train strike threatened to keep us in Paris but we persevered and made it back to the V&A!

The Conservation students would like to thank Sarah Dodman of the RCA for dealing with logistics, all the people within the Parisian institutions for their time and expertise and Helen Jones and Alan Cummings for their organisation and company.

Conservation is one of those subjects that is notoriously difficult to communicate to museum visitors. Almost by definition most of the results of conservation work are hidden from view. Yet it is something that holds a fascination for many people. They just enjoy the sense of mystery and the feeling of discovered secrets.

RCA/V&A Conservation 1997 is a helpful display that aims to explain to V&A visitors some of the behind-the-scenes work that is necessary to maintain museum collections. Though the display is small, it touches on a number of issues central to understanding the subject; the amount of research that must be undertaken, the range of processes needed for analysis and work on objects, and the issues that face conservators and curators. The seven main case studies also cover a variety of different objects, showing that conservation extends far beyond paintings, and is just as applicable to twentieth-century objects.

The display works best when it draws us into the *process* of conservation work. The interactive display on the corrosion of early medieval stained glass seemed popular with visitors as it enables them to see for themselves what the problems were, and what needed to be done. A click of the mouse then shows the same object after conservation. A different menu selection gives some background history, including past use that makes clear why corrosion occurred in the first place. This kind of supporting interpretation is easy to use and understand, and helps by directing attention back to the real objects for a more informed look.

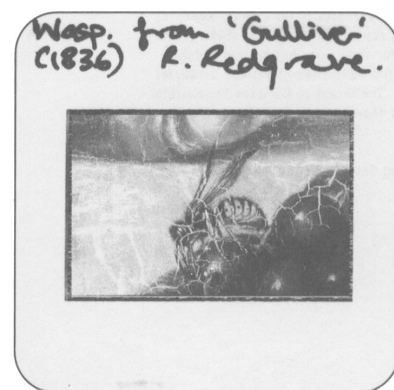
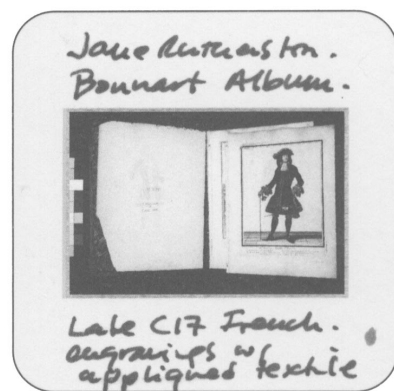
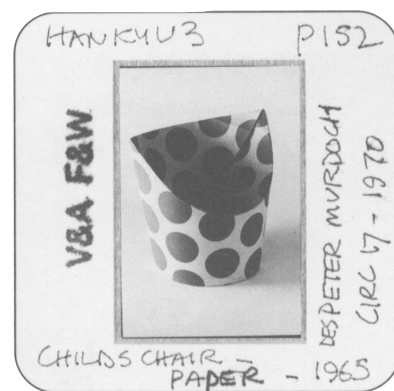
It is not just the high-tech methods that help to get the point across. The display on decorative papers for Japanese screens looks like the paper is being freshly pulled from the woodcut relief block, and makes the printing process clear. The equipment and tools utilised throughout the display also shed some light on physical processes, but would be more useful if they were next to sample pieces of worked material showing what happens when they are used.

The display also scores highly when it tackles issues that are linked to visitors' experience. Most people want to touch museum objects even though it is not allowed, and the case study on the steel 'Paris' chair shows the corrosion that can occur when this rule is ignored. It is certainly not common knowledge that the human touch causes the most damage to museum objects.

The display based on the 1950s television receiver also introduces some difficult issues around what is worth preserving, which could have been expanded.

Overall, *RCA/V&A Conservation 1997* is a useful contribution to public understanding of what museums do, and how much time and effort goes into the apparently simple task of protecting and displaying our collections. Who knows, with more displays like this the need for 'DO NOT TOUCH' signs might disappear...

Colin Mulberg, Education Department,



Reproduced from the Exhibition leaflet.

Showcases - An External Perspective

Audrey Matthews

Clephan Scholar, De Montfort University

We are all well aware of the value of a secure museum showcase and the protection that it can provide against physical damage to the objects displayed within it. This was recently demonstrated by an unhappy visitor to the V&A who threw a fire extinguisher at one. Fortunately, in this case the safety glass saved the day. The use of showcases for protection from adverse environmental factors is a relatively new consideration, but one that has received a lot of attention within the museum profession. The aggressive factors that must be guarded against include gaseous pollutants, insects, dust and dirt, as well as extreme fluctuations in environmental conditions such as temperature and relative humidity. Scientific reports that investigate methods to prevent, or at least minimise the degradative effects of these factors are commonplace. Research work has focussed on the examination of the construction materials and the design of the showcases, for example whether or not they should be sealed. The results of relevant studies have been brought together to produce several sets of guidelines, which aim to assist in making the most appropriate decisions, for the creation of a buffered and relatively inert environment within a showcase. The most recent guide by May Cassar¹ is a checklist, which can be of great value when choosing a new showcase.

I, an academic and a scientist on a brief placement at the V&A, was interested to find out how much of an impact this information was having in practice within museums. This was of particular interest as academic researchers are often associated with theoretical ideals with little consideration for the practical logistics and costs involved. With this in mind, I devised a questionnaire which not only requested information about the current range of showcases in use, but also attempted to survey the views and policies of museum professionals.

The first difficulty was to decide whom to survey, as the duties of museum staff are not always clearly defined. Members of "The U.K. Conservation Scientists' Group", who had access to collections, seemed most appropriate and seventeen were invited to complete the questionnaire. A handful of replies were returned, of which five were completed in full.

All the individuals who replied recognised the standard considerations which minimise environmental degradation within showcases, such as

the need to use inert materials in construction and dressing. In reality, however, potentially damaging environments still exist with the more traditional showcases and some more modern acquisitions. For example, wood and wood-based composites, like medium density fibreboard, were commonly quoted as being in use. Many museums had attempted to minimise the effects of such environments by using barrier methods, such as varnishes and surface treatments. In-house testing of the potential for materials to cause corrosion also appeared to be quite common.

Other specifications involved the use of sealed units with separate compartments for easy access to lights and the display envelope. In general the internal showcase environment was controlled only with adsorbent materials, such as silica gel. Externally, most galleries have relative humidity, temperature and light levels controlled to Thomson's² specifications with some seasonal variation. It is in this area of technical compliance that purchases are steered by manufacturers.

It is clear that most members of the group who replied were well informed of the current guidelines with respect to museum showcases. However, the dearth of valid replies, and the difficulty in some cases of gaining key information, seem to suggest the responsibility for showcases is ill-defined. That is, the matter might not be perceived to be of high enough priority for one person to be in sole charge of them. If true this is unfortunate. It could well be more cost-effective to control the internal micro-climates within showcases than the whole gallery.

Reliance on manufacturers to produce showcases with such a high specification can also be a risk, particularly if full details of the conditions and objects to be displayed are not known at the time of briefing. As the law has it *caveat emptor* or buyer beware!

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Acknowledgements

I am grateful to De Montfort University and The Conservation Unit of the Museums and Galleries Commission for financial support. I would also like to thank staff of the V&A Science Group for making my stay an enjoyable one.

Note

The author is currently a lecturer and the MSc Conservation Science Course Leader in the Department of Chemistry and Physics at De Montfort University, Leicester.

Pollution monitoring within the Historic Royal Palaces

David Howell, Conservation Scientist, Textile Conservation Studios, Hampton Court Palace
Paula Mills, Conservation Scientist, Conservation Research

The success of the Assessment and Monitoring of the Environment of Cultural Property (AMECP) project has been widely reported¹. One of the most significant and interesting aspects of this project was establishing and implementing various monitoring regimes for pollutants, including volatile organic compounds (VOCs), sulphur dioxide (SO₂) and nitrogen dioxide (NO₂).

Obviously it takes a long time to set up such methodologies and such an exercise would never have come within the remit of the Historic Royal Palaces Group (HRPG). The HRPG had followed the progress of the monitoring with interest and thought that it would be beneficial to carry out a similar survey within our organisation. We were not aware of any major pollution problems but this was not an aspect of conservation that had been actively investigated to any extent in the past. At the end of the AMECP project there was a period where all of the regimes were in place and therefore it was suggested that a joint project with the V&A be established. They had the necessary expertise and contacts whilst we had the funding.

The aim was to highlight any specific problems of which we were not yet aware, whilst at the same time enable a comparison of the environment at three main sites, the Tower of London, Hampton Court Palace and Kensington Palace. The survey was to measure hydrogen sulphide (H₂S), chloride (Cl⁻), SO₂, NO₂ and VOCs at these quite different locations during spring 1996. In order to achieve this sampling tubes were placed at each

of the three palaces, in display and storage areas as well as externally (Figure 1).

The samplers were *in situ* for four to



Figure 1. Sampling tubes (approx. 6cm long).

Photography by V&A Photographic Studio.

six weeks and on collection it was noted that a number of incidents had occurred. Some of the tubes had gone missing, one of them (at Hampton Court Palace) had been relocated to the Ladies Public Toilets, and one of the metal VOC samplers had been mysteriously bent in a Uri Geller style transformation.

The analysis for H₂S, SO₂, NO₂ and Cl⁻ gave the very encouraging result that with these pollutants there was no particular cause for concern (Table 1). The results were very much in line with the results found at other institutions². For instance, showcases had lower SO₂ levels than the rooms they were in, and the rooms had lower levels than outside. The levels of NO₂ were similar regardless of locale. The air-conditioned areas did not appear to give any additional protection from

pollutants, and in one air-conditioned room only the levels of H₂S were lower than the external values. Also there was

	Kensington Palace		Tower of London		Hampton Court Palace	
	Max	Mean	Max	Mean	Max	Mean
H ₂ S	0.086	0.081	0.166	0.12	0.116	0.07
SO ₂	125	42.8	7.2	1.9	5.1	1.75
NO ₂	22.8	19.7	40.6	22.9	37.1	13.9
Cl ⁻	5.3	1.7	39	4.8	2.1	0.57

Table 1. Summary of the pollutant measurements for each location (units are µg m⁻³).

Conservation under the Microscope: Two reviews of RCA/V&A Conservation 1997

Alan Borg, Director of the V&A
Colin Mulberg, Education Officer, Education Department

“I wish I could say that I came all the way just to see this - if I could, it would have been worth the journey alone. Nevertheless, I’m thankful for my great timing.”

These words were written in the Conservation Course Exhibition comments book by a visitor from South Africa and one could certainly not wish for a more ringing endorsement. It has to be admitted that the lady in question revealed that she was a conservator and therefore could be regarded as biased, but nonetheless it is the sort of enthusiastic reaction which any exhibition organiser would cherish.

The Conservation Course was established in 1989 and has established an enviable reputation worldwide for its quality and for the achievements of its students. So we can take for granted the fact that this year’s graduating class was both skilled and well trained, each one ready for a career in his or her chosen field. However, this would not necessarily have meant that what they did during the course would make an interesting public exhibit or that the students themselves would be capable of putting on an exhibition which is up to the standards expected of a display in the V&A. I therefore tried to judge the exhibition as an exhibition, making no allowances for the somewhat accidental nature of its contents or the relatively inexperienced nature of the exhibitors.

The display was well laid out, given the cramped conditions imposed by the restaurant lobby. The cases consisted of simple and clear displays of objects, both before and after conservation, and the main explanatory texts were attached to screens and walls. These text panels were professionally produced, easy to read, and informative. Modern museum interpretation was provided by an interactive video dealing with the stained glass conservation project displayed alongside. This interactive was easy to operate, worked efficiently and provided good and varied information. In all these ways, the exhibition could be considered as a professional

production, albeit working on a very limited budget (a factor sadly common to all museum displays today).

But an exhibition is only as good as its content and here there can be no doubt that a fascinating range of works and problems was presented. Contemporary furniture and appliances, medieval glass, Victorian painting, Japanese screens and paper conservation were all on show and the various treatments illustrated. Some questions were posed (should we be trying to conserve the whole of a 1952 television set, when the electronic components, which are often unstable, are not integral to its design?), but not answered - we were left wondering how the debate would be taken forward. It is no bad thing to leave the visitor with questions in his mind and the exhibition eloquently revealed the range of problems which any conservator faces.

So I am happy to agree with our South African visitor that this was a show well worth visiting the V&A for, wherever you came from. My one criticism was the accompanying leaflet - elegantly designed, but difficult to read and illustrating some conservation projects by the students which were not in the show. Only a minor quibble!

Alan Borg, Director of the V&A



Reproduced from the Exhibition leaflet.

that conservation is not so special that conservators cannot learn from other fields.

“So, what is the rôle of these (conservation) scientists?” Definitions abounded and there was some debate about whether technical and archaeometrical studies per se actually constitute conservation science, or should the term be reserved for activities directly concerned with preservation and treatment? It was not resolved. Can scientists and conservators work together? Yes, note the value of asking the right question. The problem, however, is not really what the conservation scientist may do, but ensuring that what is done is effective. Currently, this is not always the case, mainly because there are too few of them. Conservation science is being done by scientists and conservators who are not specifically conservation scientists, leading to continual re-invention of wheels. The conservation scientists who do exist are too thinly spread, metaphorically and geographically.

New specialist rôles were also suggested at the conference - “clinical consultant” analogues by Ashley-Smith and “conservation technologists” by Tennent and Podany & Scott quoting Torraca. These rôles would be to interpret between conservators and scientists and facilitate the translation of research findings into practical processes. Such individuals would need to have highly developed sensibilities in both conservation and science. Of course these people exist; but they have not generally adopted the specific function of ensuring that conservators and scientists are not only on the same wavelength, but in phase.

And what does it all mean for the conservation teacher? As Oddy said, education is fundamental to the breaching of barricades. Brooks and Fairbrass emphasised the teaching of science not only as a list of facts but as a paradigm for conservation practice, an admirable aim for any conservation course. It is important that conservators should not be encouraged simply to leave science to conservation scientists, but must be interested and involved themselves. Indeed, if there are to be more conservation scientists, the need for scientifically literate conservators becomes more pressing, not less, in order to maintain a meaningful dialogue.

Is **the** answer, then, only to seek conservation course candidates with a scientific background? It is tempting to say yes, especially in the afterglow of this conference. Science is important and set to remain so. And yet, and yet ... conservation is more than science and to stress that aspect above all else could cut off many skilled and dedicated people from entry to the profession. No conservator can afford to ignore science, but there is room for those whose chief strengths lie elsewhere. The next conference might be on the interface between art history and conservation, and that wouldn't provide **the** answer either.

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1. Bradley, S. (ed.), *The Interface between Science and Conservation*, British Museum Occasional Paper Number 116, London, 1997, ISBN 0-86159-116-X

little palace-to-palace differential with only slightly higher levels of pollutants at The Tower of London. Despite Hampton Court's semi-rural environment it was not significantly less polluted than the two city centre locations.

There were two outliers. The external SO₂ level at Kensington Palace appeared to be at least an order of magnitude greater than at any other location. However, the sampling tube had fallen from its mount during the monitoring period and could easily have become contaminated. The second outlier was an unexpectedly high level of chloride in one location at The Tower of London. The only suggestion that has been made to explain this is that a local air-conditioning cooler is periodically sterilized with a chlorine-containing chemical.

The analysis for the VOCs was limited to the ten most prevalent compounds and acetic acid was not measurable with the selected technique. The results showed a variable qualitative and quantitative make up (Table 2). The VOC tubes were placed at the sites, in pairs but, the results were difficult to interpret due to a variable the level of agreement. Also propanetriol triacetate was identified in 20% of the locations and as yet there is no explanation for this.

It is always less dramatic to get 'ordinary' results from any monitoring exercise. However, in this

case the lack of significant problems was particularly welcome as it would undoubtedly be both difficult and expensive to reduce any large scale pollution problem at these sites. The results may have significant future use if for any reason we feel that a particular location has a new pollution problem. Then we will be able to use these data as a baseline from which any future deviation will be apparent.

Acknowledgements

The authors would like to thank the following for their input to the project Dr. N. Blades (now at University of East Anglia), G. Martin (Head of Conservation Research, V&A) and C. Allington (Housekeeper of Historic Royal Palaces).

Also we acknowledge the work carried out by Dr. S. Watts (Oxford Brookes University), Gradko Ltd and G. Lawson (De Montfort University) for this study.

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2. Blades, N., *Measuring pollution in the museum environment*, *V&A Conservation Journal* 14, January 1995, pp9-11.

	75%+ of locations	25-75% of locations	less than 25% of locations
Kensington Palace	dimethyl hexane, toluene, siloxane, dimethyl octane, tetrahydronaphthalene, methyl nonane, decane, pinene, undecane	methyl cyclohexane, ethyl benzene, dimethyl benzene, methyl cyclopentane, ethyl methyl benzene	butyl formate, heptane, ethyl methyl butanoic acid, decanol, methyl heptane, pentanol propanoate
Tower of London	toluene, ethyl benzene, dimethyl octane, tetrahydronaphthalene, decane, undecane	siloxane, dimethyl benzene	methyl cyclopentane, ethyl methyl benzene, methyl nonane, pinene, dodecane, propanetriol triacetate, methyl naphthalene, pentanol propanoate
Hampton Court Palace	toluene, siloxane, tetrahydronaphthalene, methyl cyclopentane, ethyl methyl benzene, decane, undecane	ethyl benzene, dimethyl octane, methyl nonane, pinene	dimethyl hexane, heptane, trichloroethylene dimethyl benzene, ethyl methyl butanoic acid, dodecane, propanetriol triacetate, pentanol propanoate, tetradecane

Table 2. Summary of the VOCs identified at the palaces.

Hearing the Original Instrument

Robert Barclay
Senior Conservator, Canadian Conservation Institute

This article is based on a talk which Robert Barclay gave to the V&A on 1 May 1997 as part of the V&A Conservation Colloquia.

It is commonplace that the great bowed string instruments of Cremona, made during the seventeenth and eighteenth centuries, continue in use in the hands of fortunate *virtuosi*. It is also commonplace to restore historic musical instruments to playing condition so that the music of earlier periods can be explored. There are three categories of treatment for an historic musical instrument: the instrument can be maintained in its current playing state, it can be restored to a conjectured previous condition, or it can be preserved in the condition in which it now stands, unplayable but with the unique information it possesses intact. These categories are termed here currency, restitution and preservation, and each possesses unique features that characterise it.

Currency is concerned with keeping the valuable aesthetic and historical qualities of the instrument alive through a continual process of playing, repair, restoration and improvement. It is seen most clearly in the treatment of early violins, especially those of the Cremona school, some of which have been in constant playing condition for over three centuries. Three axioms should be kept in mind:

1. Playing necessitates repair and maintenance
2. Fashions change
3. 'History' is selective

The following paragraphs offer a deconstruction of a classic Italian violin in the form in which it has come down to us today (Figure 1).

- The neck angle of the violin changed radically at the end of the eighteenth century in response to musical fashions. The neck angle evolved as it was adjusted to support the higher string tension demanded of a louder instrument. Usually, the neck was replaced and the original scroll spliced onto it. During this process the string length was increased by up to half an inch. The bridge was required to be much higher to complement the increased neck angle.

- The top block¹ was removed and replaced to allow the new neck to be set in, instead of nailed flush as was traditional. The bottom block and corner blocks were often removed, sometimes temporarily, but quite often replaced with enlarged ones.
- The fingerboard became progressively longer in the course of the eighteenth and nineteenth centuries as the range of the instrument was increased as far as possible. The old fingerboard was removed and a new one glued on. Fingerboards wear out and are either planed down or replaced on a regular basis.
- Changes within the instrument were the most far-reaching in terms of acoustics. The bass bar, which lies under the bass side of the bridge, was removed and a much larger one inserted. The soundpost, which lies under the treble side of the bridge, became thicker.

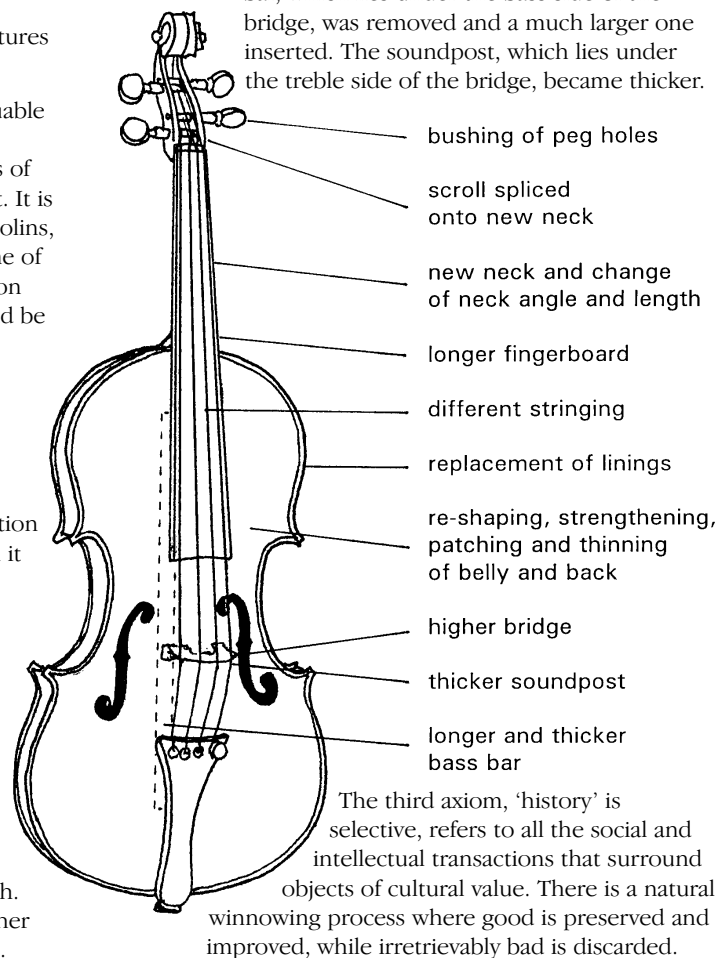


Illustration by Robert Barclay.

Figure 1. Schematic diagram of a violin.

Questions and answers: Review of “The interface between science and conservation”

Helen Jones
Course Tutor, RCA/V&A Conservation Course

One always hopes that the next conference one attends will provide the answer. Naive, perhaps, but universal truth is comforting. Almost equally so is the belief that it really is out there - somewhere, waiting to be discovered. This conference (British Museum, 2-4 April 1997), like others before it, did not provide the answer. To be fair, its title did not really pose a question, but allowed speakers to describe and explore a territory which, if not virgin, is well worth re-visiting. An interface is a region where two species of some kind come together. They are often interesting places with potential for unusual phenomena or change. Is an interface a connection or a separation, common ground or no-man's-land? The answer is, of course, that it can be both, and both scenarios were represented at the conference¹.

There were numerous case studies illustrating the contribution science makes to conservation research and problem-solving. The fact that they will not be discussed here does not mean that they were neither interesting nor valuable - many were both - but I feel that their overall message can be taken as read. Surely few would dispute that science is vital to conservation practice today.

As many speakers stated, a first step in scientific - or any other - research is to frame the question correctly. In his foreword to the pre-prints Andrew Oddy asks the question “So what is the rôle of these (conservation) scientists?” and this may be taken as the intended conference theme. More to the point was Ellen Ruth McCrady's title, “Can scientists and conservators work together?”

A historical perspective on the British Museum was provided by Sarah Watkins and Susan Bradley brought this up to date. They reminded delegates that conservation developed from the influence of scientific thought and method on traditional, craft-based restoration practices. This makes the (unattributed) comment on day three that “if there was no conservation, there'd be no conservation scientists” appear somewhat churlish in hindsight, however amusing to conservators in the audience at the time!

Norman Tennent's career enabled him to provide an authoritative overview of the state of conservation science and also to suggest a practical way forward. He was far from alone in identifying communication as being crucial to the advancement of conservation science; the difficult part is to achieve it in a timely, representative and constructive fashion. Publication is one important tool and Tennent proposed the launch of a new journal for Conservation Science. As described, it sounded laudable, but could have the disadvantage of removing “proper” science from the conservation mainstream and reinforcing communication barriers.

Stephen Hackney's call for a special fund for conservation research was countered by Clifford Price's assertion that conservation is no more special than many other disciplines and should expect to compete on the same terms. This may dismay some in conservation - the “specialness” of conservation is why we do it, and we want everyone to recognise it - but there is a danger that protectionism could lead to inferior research and so defeat its purpose.

If we're not currently communicating effectively, why not? One reason seemed to be that stereotypes still thrive. Mary Brooks and Sheila Fairbrass parodied popular conceptions of scientists with their slides of mad and/or sinister characters. Despite frequent cautions about generalisations, much of the discussion still seemed to be based on the scientists' view of conservators as highly skilled but emotional, instinctive and scientifically ignorant. Correspondingly conservators see scientists as cool but patronising rationalists with little appreciation of the complexities of conservation. The paper by Jerry Podany and David Scott gave a balanced review of scientists' and conservators' perceptions of each other and what each can contribute to conservation projects. McCrady's brisk presentation also gave a pithy summary of some of the reasons for conflict. Using examples from beyond the conservation sphere, she both suggested measures to improve the communication flow at local level and confirmed

They can be browsed as WWW documents or a single query can perform an exhaustive search over all the archives. There is no requirement for the databases held in the system to be of the same type, as long as they support the query standard Z39.50

(<http://renki.helsinki.fi/z3950/z3950pr.html>). Therefore, vast archives held by museums can be put on-line without major re-engineering. It is technically feasible, in a system like SQUARELLE, that all the conservation information from collections management systems could be made available.

Serious use of the Internet is often centred around groups collaborating on projects. As a classic example, video conferencing can be achieved over the Internet using products like CU-SeeMe™ (<http://cu-seeme.cornell.edu/>). CU-SeeMe™ is a public domain software package for Macintosh (Macs) and PCs. Each machine in the conference has CU-SeeMe™, a microphone, and a cheap (less than £100) camera, which send pictures, audio and data to windows on each of the other participant's machines. The system also has a whiteboard where participants can work together on documents. Collaborative work offers great potential for conservation.

For example, loan couriers could use it to communicate with the museum-based conservation teams.

The types of media that the Internet will be able to manage will also improve in time. Work has been going on for some time on a Virtual Reality Markup Language (VRML) which can describe and browse three dimensional (3D) spaces. When bandwidth permits, the manipulation of complex 3D models of objects, perhaps created using 3D laser scanners, may become possible.

When collaborative and Internet technologies develop in the future, the conservation of an object could be debated by remote conservators using video conferencing, and conservation techniques 'tested' on 3D rendered models before physical treatment.

In summary, the Internet has great potential for the conservation profession. It allows collaboration and simple dissemination of information between geographically separated individuals and teams. There are a limited, but expanding, number of information providers. As future technologies develop more imaginative Internet uses for conservation will emerge.

And the result is a highly selected and refined sample; "improved" in the case of violins by generations of restorers and connoisseurs to the point where distinctions become blurred or lost. The violins of Cremona, happening to respond magnificently to changes their makers could never have anticipated, gained prominence. The result is that the entire mechanical and acoustic character is utterly transformed, to the extent that it can be regarded as a new instrument.

Restitution, on the other hand, attempts to return the instrument to a previously understood condition. An argument articulated in the field of restoration is that only by being returned to a previous functional state can an historic musical instrument justify its continuing existence. If it is silent by policy, it can no longer be regarded as a musical instrument. An untreated and dilapidated musical instrument has lost all point to its existence. Thus, if enough information exists concerning the early history of an instrument, it is possible to return it to a previous state in order to learn from it. By measurement, by comparison and by the study of relevant historical sources it is possible to establish a definitive state.

The term restitution is used to describe this activity of reinstating a previous condition because the word restore is problematic. The Oxford English Dictionary defines restore as "To bring back to the original state; to improve, repair, or retouch (a thing) so as to bring it back to its original condition." Even in the mid-nineteenth century, Ruskin had referred to restoration as a lie, and we know now that it is, in fact, physically impossible. However, in the nineteenth century 'to restore' contained much more of the flavour of maintaining currency, of keeping in good condition. If there was ever an intention to return an object to an imagined previous condition, it was overlaid by a very confident and long standing craftsmanly aesthetic.

The effectiveness of restoration to an assumed previous condition is based upon two interlocking assumptions: that all the necessary information to effect the transformation exists, and that the resulting transformation will, indeed, restore the lost character of the instrument. Modern historical thinking, and experience with past restoration attempts, shows that neither of these assumptions is tenable. The restored instrument becomes a modern facsimile of the original in its essential mechanical and acoustic features.

The above are the two categories of functioning instruments - currency and restitution. It is clear that the instrument, either returned to some earlier condition or continuing in daily use, can say nothing meaningful about the same instrument when new. Minute adjustments to the set-up of an instrument have profound consequences to the action and tone quality, so on-going repair, maintenance, and restoration over centuries will have a concomitant effect. Any trace of the original set-up and acoustic spectrum must have been totally obliterated. The contention, therefore, that listening to the original instrument provides any information about its past performance is simply not tenable.

The third category, preservation, encompasses museum conservation of musical instruments. Application of conservation standards implies silence because, firstly, bringing the instrument into working condition requires intervention and secondly use of the instrument incurs a falsified interpretation. The dilemma of any caretaker of historic musical instruments is in reconciling these views with the prevalent and quite justifiable desire to bring the instruments out of their dusty display cases and let them sing. What must be found within conservation is a workable contextualism: a re-establishment of the boundaries between the three kinds of activity outlined here. The status of a particular musical instrument must be based upon its unique value as a carrier of aesthetic and technical information, and how best that information is expressed and exploited. In the case of the violin illustrated above, the decision is comparatively easy. These working instruments have had so much done to them, over such a long period of time, that they are virtually copies of themselves, and they should continue in the traditional rôle that has been assigned to them.

A key future rôle of museum conservators of musical instruments will be to show to the museum- and concert-going public that there can, indeed, be a real working space where all aspects of the musical instrument - aesthetic, historical, social and technical - are weighed and evaluated in their context before action is taken.

Notes

1. The blocks are reinforcements inside the body of the violin, placed between the sides and the top and bottom plates. There is one at the top of the instrument where the neck is attached, one at the bottom where the tailpin is set in, and four at the sides above and below each bout (or inward curve).



Conservation on the Internet: Practicalities and Possibilities

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The Internet is an expanding global network of computers, connecting millions of world-wide users and with new users and information providers joining daily. Databases and information services have long been accessible on the Internet, but until recently they were hidden behind cumbersome interfaces, often requiring knowledge of a complex query language. Thus, in practice, access was restricted to specialists.

With the growth of the World Wide Web (WWW) the situation is rapidly changing. The WWW provides a 'point and click' interface to documents containing a mixture of text, images, sounds and videos; with 'hyperlinks' linking related topics.

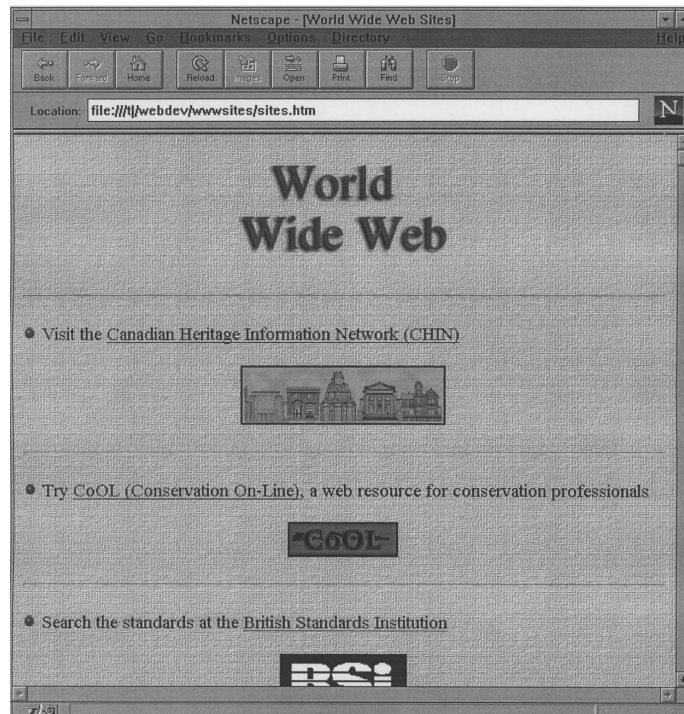
To use the WWW you need a browser such as Netscape™ (Netscape Communications Corporation) that can be downloaded (see <http://home.netscape.com/>) and an Internet connection (more later). A browser retrieves and displays documents from the WWW and highlights any links (usually referred to as hyperlinks) to other useful information sources. When you click on a hyperlink the browser retrieves and displays the document at the end of the link. These hyperlinks may be to documents on the same site, or a site elsewhere in the world. Hence, the term world wide web. The WWW is also capable of sending queries to traditional database systems and displaying the results.

The WWW is so synonymous with the Internet, that people miss the fact that the Internet has many more tools to offer. These are summarised below; however for a more detailed account see <http://www.eff.org/papers/eegtti/eegttitop.html>. It is worth noting that it is possible to use these tools from within some WWW browsers.

You can send messages to other Internet users provided they have an electronic mail address (E-mail); mine is cdtaylor@vam.ac.uk. E-mail tends to be delivered quickly and is excellent for disseminating information to geographically distant recipients. These messages are usually

text, but increasingly E-mail is capable of handling documents with sounds and images. A variation on E-mailing a specific person is to use a 'mailbase'. These are based on discussions topics which have an associated list of subscribed users' E-mail addresses. When an E-mail is sent to the mailbase a copy is forwarded to the subscribed users. For example, there is a mailbase list for textile conservators using the E-mail address texcons@simsc.si.edu. Instructions for subscribing to this mailbase can be found at <http://palimpsest.stanford.edu/byform/mailling-lists/texcons/>.

Another tool similar to E-mail is USENET news. Here messages are 'posted' to newsgroups, such as bit.listserv.museum-l, where they are held for a limited time. These postings are not forwarded to users, rather the user must access the newsgroup and read the messages, like a traditional noticeboard.



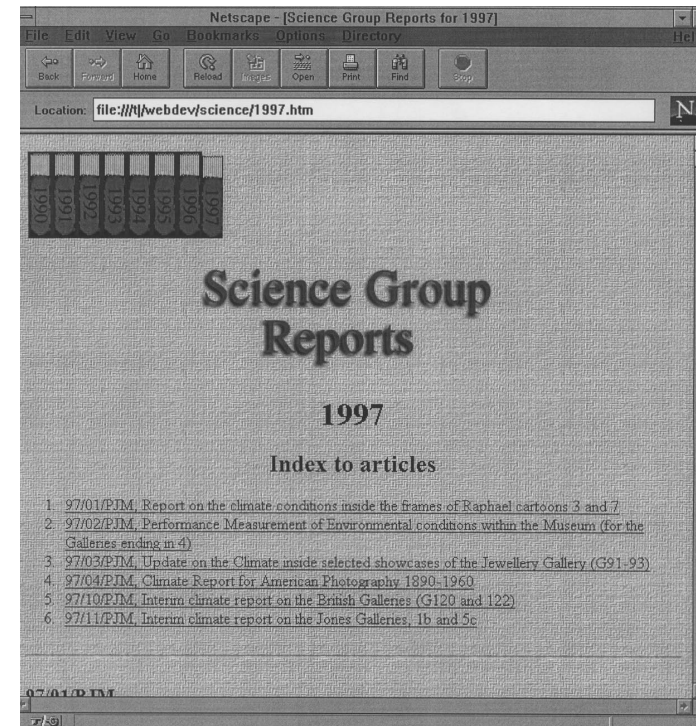
File Transfer Protocol (FTP) and Gopher enable you to move files safely from another Internet site to your own computer or vice versa. Both can have 'point-and-click' interfaces and organise the information hierarchically.

Wide Area Information Servers (WAIS) and TELNET allow you to search vast databases and run applications on remote machines respectively, but largely these have been replaced by the WWW's query support language.

The following is a brief description of just three WWW conservation sites, CoOL, CHIN and the forthcoming CONSOLE. You may want to use these sites as a starting point, or find other sites using the WWW search tools such as AltaVista™ (Digital Equipment Corporation, <http://www.altavista.digital.com/>).

1. CoOL (<http://palimpsest.stanford.edu/>)

The Conservation On-Line (CoOL) site, at Stanford University Libraries, describes itself as "a full text library of conservation information ... of interest to those involved with the conservation of library, archives and museum materials". It provides resources for reading papers on subjects ranging from Digital Imaging to Pest Management, for finding contact details of conservators and for finding information about conservation organisations and mailbases.



2. CHIN (<http://www.chin.gc.ca/>)

The Canadian Heritage Information Network (CHIN) is a site that covers broad museum issues including conservation. Part of CHIN is the Conservation Information Network (CIN), which allows you to perform searches within databases including bibliographies, suppliers and materials.

3. CONSOLE

At present the V&A Conservation Department has a small Internet presence (<http://www.vam.ac.uk/news/dept.html>). We are in the process of creating an Intranet (a museum-wide, but not world-wide Internet) called CONSOLE. Parts of this will eventually move to the Museum's Internet site. Work on the Intranet is proceeding in parallel with an information audit designed to identify information sources. As an example, the abstracts for the Science Group's reports have been made available on the V&A Intranet.

Connecting to the Internet will depend on your local circumstances. One route is through a dedicated Internet connection, such as through the UK's Joint Academic NETwork (JANET). Alternatively, more limited access can be achieved by subscribing to an Internet Service Provider (ISP), usually through a modem using the normal telephone lines. ISP's provide access to a selection of tools, such as E-mail and WWW, and may even provide space for you to publish WWW documents.

The biggest problem with the Internet as a day-to-day tool for conservation is lack of bandwidth. Bandwidth equates to the amount of information that a network can carry. Although bandwidths are often large they have to be shared by all the people trying to access information. Coupling this with the demands for bandwidth-greedy media, such as video, causes bottlenecks, making the Internet appear slow. More powerful networks and techniques such as compression, are being developed to tackle this problem.

The avenues for future conservation Internet use are wide and varied. There are moves in the heritage field, most notably AQUARELLE (<http://aqua.inria.fr/>), to create vast archives of information online. These archives are held locally by information providers and can contain complex multimedia data, as well as databases.