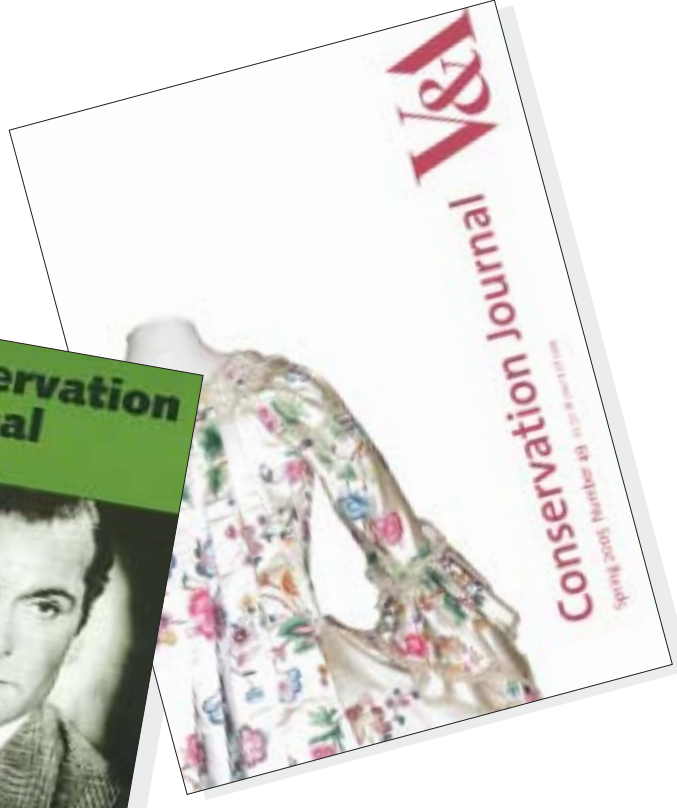
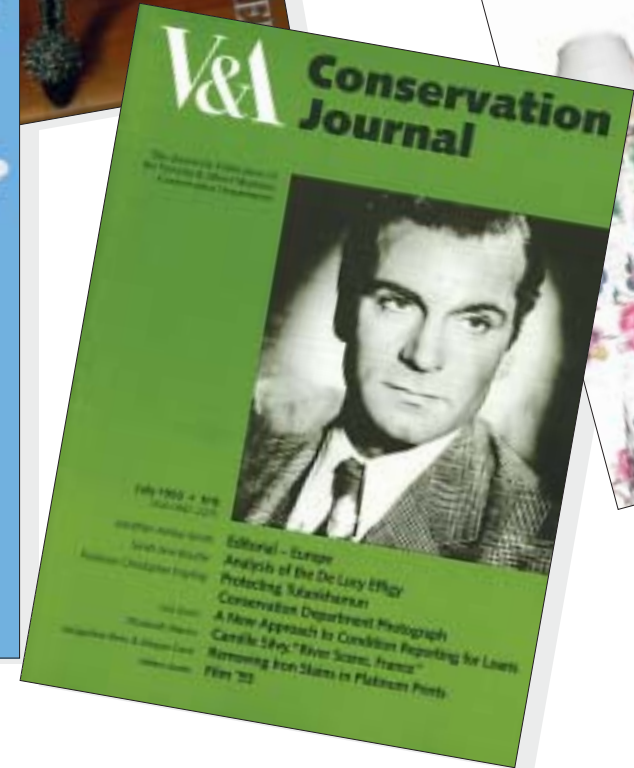
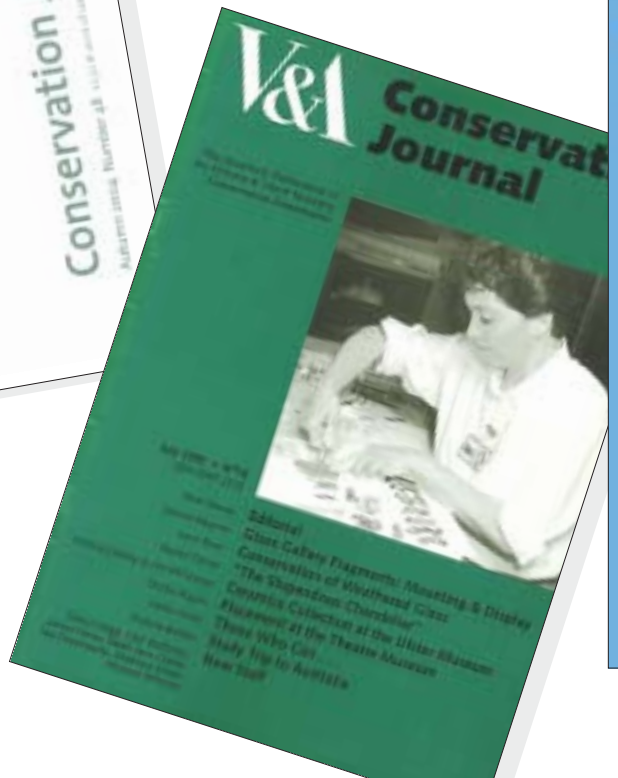


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Conservation Journal

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V&A Conservation Journal No.50

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The *V&A Conservation Journal* is now available online at: http://www.vam.ac.uk/res_cons/conservation/journal/index.html

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Head of Conservation
Sandra Smith

PA & Dept Secretary
Fiona Campbell

Conservation Department Staff Chart Summer 2005

Science	Furniture, Textiles & Frames (FTF)	Paper, Books & Paintings (PBP)	Sculpture, Metals, Ceramics & Glass (SMCG)	Administration & Information Systems
Graham Martin	Albert Neher	Pauline Webber	Alan Derbyshire	
Boris Pretzel Brenda Keneghan Valerie Blyth Lucia Burgio Catherine Simes	<i>Furniture</i> Shayne Rivers Tim Miller Nigel Bamforth <i>Gilded Furniture and Frames</i> Christine Powell Zoë Allen <i>Textiles</i> Lynda Hillyer Marion Kite Albertina Cogram Frances Hartog Susana Fajado-Hunter Elizabeth-Anne Haldane Lara Flecker Miriam Duffield Natalia Zagorska-Thomas	<i>Paper</i> Merryl Huxtable Victoria Button Michael Wheeler Susan Catcher Lisa Nash (RIBA) Eoin Kelly <i>Preservation Conservators</i> Clair Battison Simon Fleury Chris Gingell <i>Books</i> Jane Rutherston Anne Greig (RIBA) <i>Paintings</i> Nicola Costaras	<i>Sculpture</i> Charlotte Hubbard Victor Borges Sofia Marques <i>Metals</i> Diana Heath Joanna Whalley Sophy Wills Donna Stevens Katia Viegas Wesolowska Jon Privett Gates Turner <i>Ceramics & Glass</i> Victoria Oakley Fi Jordan Juanita Navarro Amanda Barnes <i>Stained Glass</i> Sherrie Eatman Ann Marsh Daniella Peltz Kathrin Rahfoth	Tim Carpenter Laura Jiggins Michelle Murray
				Visiting Researchers Titika Malkogeorgou
	Internships <i>Furniture</i> Miho Kitagawa <i>Paintings</i> Lara Wilson <i>Paper</i> Sanam Ali Khan			
RCA/V&A Conservation William Lindsay (RCA) Alison Richmond (V&A) Alison Bracker (RCA) Vincent Daniels (RCA) Joanna Baden (RCA) Harriet Standeven (V&A)		Students <i>Surface Studies</i> Charis Theodorakopoulos, PhD Marie Vest, PhD <i>Historical/Technical Study</i> Allyson McDermott, MPhil Timea Tallian, MPhil <i>Modern Jewellery</i> Cordelia Rogerson, PhD <i>Computer Visualisation</i> Nicholas Frayling, PhD <i>20th Century Materials</i> Fotini Koussiaki, PhD (with Tate) <i>Books</i> Karen Vidler, MPhil	<i>Textiles</i> Alice Cole, MA Hazel Arnott, MA (with Historic Royal Palaces) <i>Sculpture</i> Anna Kagiadaki, MA <i>Conservation Science</i> Konstantinos Ntanos, MA (with British Museum) Naomi Luxford, MA (with English Heritage) Tsing-Young Dora Tang, MSci (with Imperial College) <i>Furniture</i> Katja Tovar, MA Barbara Schertel, MA	<i>History, Ethics & Management</i> Maria Troupkou, MPhil Helen Evans, MPhil <i>Natural History</i> Melissa Gunter, MA (with Natural History Museum) <i>Ethnographic Materials</i> Heidrun Gassner, MA (with Horniman Museum) <i>Paper</i> Clair Walton MA (with Theatre Museum) <i>Metalwork (with other materials)</i> Louise Parris, MA

Key

 Senior Management Team

Editorial

Sandra Smith

Head of Conservation

Welcome to the 50th edition of the *V&A Conservation Journal*. A time for celebration for reaching the golden age. This bumper edition, which includes articles from many of the individual studios, reflects changes that have occurred in the Department since the first edition of the Journal was published. It is not intended as a retrospective, rather, it explores where we are now and considers some of the changes to be faced in the future.

Pauline Webber's article reminds us that the *V&A Conservation Journal*, which was first printed in October 1991, was established to improve communication within and beyond the Museum. This has certainly been very effective, the Journal is now sent to over 800 different locations and is held by conservation libraries throughout the world. The Journal is frequently used by the Museum to reflect excellence, attract sponsorship and to demonstrate our duty of care to the collections. Its impact has been far more wide reaching than originally anticipated.

Despite this success communication continues to be a concern, perhaps because, our audience has changed. Now it is not sufficient to communicate with the Museum, conservators and conservation scientists. There is an increasing public awareness of and interest in 'conservation', whether it be concerning the environment through green issues and sustainability, the increasing effects of globalisation, or culture and identity of both the tangible and intangible heritage. Media interest in antiques and collectibles expands public knowledge of preservation, whilst global warming and biodegradation increases consciousness of materials and the way they interact with the environment.

Whilst the physical treatment of objects may remain a specialised and highly skilled activity, the concept of object/heritage conservation is no longer the exclusive preserve of conservators and conservation scientists.

Object/heritage conservation has an opportunity to become more involved with these issues through the Institute of Conservation. The Institute's new Chief Executive, Alastair McCapra, comments that 'there are reserves of energy in the membership as well as a strong desire to raise your game as a profession' and he aims to 'transform that energy and desire into real, tangible progress'. This must involve more openness and inclusiveness. Having increased communication so effectively with a printed copy of the Journal we are now taking the next (obvious) step of publishing it on the V&A website. This will make it accessible to all, in the spirit of Freedom of Information, and allow the use of multi-media and audiovisual to demonstrate the work of the Department more effectively (Campbell).

The Museum's approach to display and access has developed during the last 17 years. No longer are the collections the preserve of scholars, educators and designers but they are now intended to be relevant and accessible to the broadest audience. V&A visitor numbers exceeded two million for the first time in 2002/3. To maintain and exceed this figure, visitor needs and expectations must be accommodated and traditional approaches to display re-examined. Partnerships with other museums (e.g. Sheffield Galleries & Museum Trust) take the collections to a wider national audience and plans are in hand to create an international V&A collection. Early involvement of Conservation with the design and development of gallery spaces and storage areas can facilitate this for the future (Wheeler). The V&A now houses the 600,000 RIBA drawings and the RIBA archive, uniting them for the first time with the 35,000 V&A (RIBA) drawings within one building. Nash & Greig reflect on the partnership from a conservator's perspective.

Advances in the understanding of the impact of chemicals on both the environment and the human body have led to the loss of some chemicals for use in conservation. Safer, perhaps less effective substitutes must be found and traditional housekeeping techniques reintroduced into the Museum (Smith & Blyth). Changes in staff roles reflect the shift in emphasis towards non-interventive collections care. Preventive conservators and a preservation conservator maintain the core collections, whilst through better storage (Rutherford) and increased understanding of polymer science (Keneghan) more holistic approaches to preservation have evolved. The revised Ethics Checklist (Richmond) accepts that treatment of an object must be considered within the wider concepts of the needs of the whole collection.

Since 1991 the Department (and the Museum) has become increasingly reliant on information technology to record the condition and treatment of the collections, to communicate and to plan (Carpenter, Jiggins & Murray). Conservators and scientists spend increasing amounts of time at the computer terminal and the need for back-up, in the form of a highly skilled administrative section, who are able to keep up with latest developments, train and establish new systems is now essential for an effective functioning Conservation Department.

Research and development remains a vital role for the Department (Martin, Jordan & Oakley, Fearn). Advances in technology increasingly offer non-destructive ways to examine and research collections. The globalisation of research, changes in funding and the need to make research relevant to a wider audience is benefiting conservation. EU funding provides opportunities to share expertise, resources and knowledge and the Department has just successfully secured two AHRB grants for PhD studentships in partnership with Imperial College and the University of Southampton. That such funding is now accessible to conservation, is a considerable breakthrough for cultural heritage research.

What has remained constant throughout the years is the skill and expertise of the staff. Their understanding of the collections and intelligent questioning of all aspects of their work enables the Museum to represent damaged objects in their original and beautiful form (Whalley, Vidler) and to understand original methods of manufacture (Catcher & Burgio). Through their enthusiasm and personal interest conservators can kindle or rekindle interest in areas for the Museum's collections which perhaps have been overlooked in the past (Hillyer, Powell & Allen).

Whatever the next 50 editions of the Journal hold I am sure that it will continue to reflect this expertise as it is through this that the knowledge of the collections, its accessibility and its longevity continues to expand. Well done to everyone involved in the *V&A Conservation Journal* whether that be author, editor, administrator and nowadays – webmaster.

Rising Damp – a history of the Conservation Department

Pauline Webber

Head of Paper, Books & Paintings Conservation



(Photography by V&A)

Figure 1. Early departmental photograph

One hundred and fifty years ago the V&A had workers called 'repairers'. There are very few photographs documenting the work they did, but we know that they were predominantly men and that in 1856 the site thought most suitable for the repairer was a dark, damp basement.

The work alternated between packing, mounting, framing, cleaning and repairing. Every medium and every type of work was attempted: cleaning tapestries, covering chairs, repairing labels, repairing metal tankards, even repairing stained glass windows. Activities did not always take place in the workshop, but throughout the building and off site. Work such as 'taking down tapestry in the Raphael Gallery, framing paintings in the North Court', 'mounting miniatures in Reception', 'framing and mounting needlework in the North Court from 8am to 8pm'.¹ In some catalogue entries it made occasional reference to alterations performed by the 'Art Workshop' but with very little reference to the materials and techniques used.

The transition from Art Workshop 'repairers' to Conservation did not happen until after the Second World War. 'Change was an inevitable part of the explosive growth and development of conservation throughout the world spurred on by need; generated by headline catchers such as the "Florence floods" and "Venice in Peril".² This transformation, which began in 1960, was led by Norman Brommelle³ and then after his retirement in 1977, by Dr Jonathan Ashley-Smith,⁴ the second Keeper of Conservation. Both keepers pressed for the expansion of the Department and a major increase in space and staff took place around 1977.

Throughout its history, the Conservation Department has been changing, developing, progressing, expanding and contracting. Specialist areas like miniatures, gilding, framing, tapestries and book conservation have flourished independently and then have been absorbed into larger groups. As sections grew they populated any available pockets of space at South Kensington. The sections were scattered widely across the site making it difficult to manage and this also hampered communication.

It seems appropriate that the 50th edition of the Conservation Journal is used to reflect on the Department and the Journal's beginning and how the Journal has helped to document the changes in the Department, developments in the profession, fashions, trends and working practise inside and outside the Museum.

The origin of the Journal came about at the first ever meeting of the whole Conservation Department in 1978. The main topic of that meeting was communication. At this time the Department consisted of nine specialist sections working in fifteen locations and with no central meeting point. It was thought that Conservation would benefit from exchange of ideas and a greater sense of Departmental identity. The first Newsletters, made up of several typed sheets (the first electronic typewriter was purchased in 1983), were photocopied and stapled together. These reported on recent conservation work, purchases of equipment and visits to other workshops.

As the Newsletter developed, articles got longer and more informative and were punctuated throughout with cartoons. There were cynical and witty articles, conservation crosswords and reports on happy events. The Spring 1984 Newsletter was attacked for not being serious enough and it had been given over to a bunch of 'scurrilous cartoonists and flippant pretentious literati'.⁵ There was dissatisfaction from staff who did not want to publish serious work in an in-house magazine, but it was no longer an in-house magazine, the distribution had increased and it had found its way to Rome and been accepted into the IICROM Library.⁶

By 1985 came the first refurbishment and reorganisation of the Conservation Department costing one million pounds. The newly refurbished Conservation Library served as focal point or meeting place for the Department. The Newsletter gave way to the Conservation Bulletin with news in brief and calendars of forthcoming events.

At the first Conservation Residential it was agreed there was still room for improvement if it was to reach a wider audience. So the V&A Journal in its present style was one of the outcomes of the meeting. The Department had been accused of insularity and there was a need to build bridges and improve communication with curatorial departments and senior managers in the Museum and to colleagues and professionals outside the Museum.

The first issue of the V&A Conservation Journal was published in October 1991. It was designed by Richard Doust at the RCA⁷ and one of the driving forces behind the change in appearance and content of the Journal at the time was the development of the RCA/V&A Conservation course in October 1989. The Journal was a means by which students could publish ongoing research, and it was also a publication which was intended to give a quarterly snapshot of the work of the Conservation Department at the V&A, written by interns, staff, contractors and guest writers.



(Photography by V&A Photographic Studio)

Figure 3. The Conservation Department in 1983

Issue 20, 1996 records another landmark in the Conservation Department at the V&A. In 1992 Austin Smith: Lord were commissioned to prepare designs for the conversion of the Royal College of Art building. The aim of the project was to bring together all the Museum's Conservation sections that were scattered around the South Kensington site and Osterley Park.

In December 1995 Conservation Administration, Paper, Books, Textiles, Sculpture and Science Conservation moved to the RCA block. The large flexible spaces enabled projects that could not have been entertained prior to the move to be undertaken. The amount of practical work increased with greater efficiency. The new facilities have provided space to train students, interns and placements drawn from institutions here and abroad. Numerous courses have taken place to provide on-going training for conservators from all over the world. In 2004, Administration moved and Paintings have since joined Books Conservation.

Issue 34 marks the beginning of a New Year and a new century 'Out with the old in with the new'. The theme for this issue is 'contemporary', reminding us that the V&A was founded as a contemporary museum. The wish to strengthen the relationship with the audience under pins the current contemporary initiative. This also presented the Conservation Department and the Museum with new ways of working in presenting/preparing objects for display, investigating forms of display which allow design to be experienced as well as looked at. By the time this is published the next major contemporary show entitled 'Touch me' will be open, where the audience is invited to touch, stroke and interact with objects on display. Issue 39, Autumn 2002, of the V&A Conservation Journal celebrates the completion of the British Galleries. It highlights the immense range of work and scientific activity undertaken in the Department over five years prior to its opening in November 2001. It also discusses the development of the CONCISE data-base and a new way of working for the Department.

The British Galleries was the biggest project the V&A had embarked upon for fifty years and the largest project the Conservation Department had ever undertaken. Over the next four years and beyond, the Museum will need a continued high level of delivery from the Conservation Department for projects within the FuturePlan. CONCISE is being used as management tool for projects such as the Architecture Gallery, Medieval & Renaissance Galleries, the Sculpture Techniques Gallery and Exhibitions. It is being developed so that all work carried out in the Conservation Department will be recorded on CONCISE.

The theme of Journal 41, Summer 2002, is 'out reach'. The contributions in this Journal describe different ways the Department communicates and interacts outside the Museum. The Sharing Museum Skills programme funded by the Millennium Commission, funded two secondments to spend time in the Conservation Department. Collaborative Projects such as the Japanese Lacquer Project with Japan, which has recently received funding from the Getty Foundation, work and advise on projects abroad such as the Satyajit Ray Archive in Calcutta and the partnership project with the Prince of Wales Museum of Western India - described in this issue.

It would be impossible to write this article without including the greatest influence on the Department over the last 25 years. In his last editorial Jonathan Ashley-Smith introduces issue 41: 'Reaching out'. After 25 years, Jonathan Ashley-Smith, gave up his post as Head of Conservation to become a senior member of the Research Department of the V&A. He did this in order to write his second book for Elsevier Science *Sustainability and precaution in the conservation of cultural heritage* to be published in 2005. He continues to teach on the RCA/V&A course, in Europe and beyond and continues to communicate conservation to the widest possible audience.

Since Jonathan's departure there have been many changes to the Museum and the Department and these events have been published in subsequent issues of the Conservation Journal. Issue 44 is introduced by Sandra Smith, the new Head of Conservation, who started at the V&A in January 2003. In Journal 46 the New Paintings Gallery is reported on and OCEAN⁸ is also in place and reported to be working well. The Department once again changes its shape to align itself with the changing Museum and the structural chart on the back of the Journal was redesigned to reflect these changes and identify the new senior management team. This reorganisation was carried out in November 2003.

It is interesting to return to the content of the earlier publications documenting the Department and make comparison with the more recent ones in terms of the changing attitudes to conservation, the changes within the Department, how the needs of the Museum are reflected in the articles and how the position/status of the Department has evolved.

The Journal continues to be a cost affective way of reaching thousands of people and a useful tool to chart the developments in the Department. To signal another land mark in the history of the Department and the V&A and under the direction of Sandra Smith, the Conservation Journal is now available on the Web.



Figure 4. 'The Department has a new Hoover', from the V&A Conservation Archive

Acknowledgements

Thanks to Jonathan Ashley-Smith who kindly allowed me to use extracts from his unpublished paper on the history of the Conservation Department and to other contributors to the Conservation Journal.

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8. OCEAN On-line Centred Environmental Analysis Network

V&A Conservation on the World Wide Web: A secondment to the V&A Web Team

Fiona Campbell

PA & Conservation Department Secretary

From 1 July 2003 to 31 January 2004 I was offered the chance to be a member of the V&A Web Team. My aim was to build the Conservation pages of the new V&A website. Web Team secondees frequently concentrated on creating microsities for specific projects, however I had always been keen to further develop the Conservation presence on the website.

Helen Armstrong from Records & Collections Services and I were to be the last secondees, as the Online Museum was already tendering for redesign of the entire V&A website and was setting up the new Content Management System (CMS), Rhythmyx, in preparation for the migration of the content from the old website design to the new (Figure 1). In simplest terms a content inputting program, Rhythmyx has replaced the use of a previous CMS, called MediaSurface, in V&A website creation and maintenance. It is intended to be gradually devolved across the Museum, eventually allowing representatives of departments to maintain their own areas of the new V&A website.



Figure 1. Rhythmyx: the new Content Management System for the V&A website

We spent July 2003 doing the excellent Photoshop and DreamWeaver training that the secondment offers. The Photoshop training in particular was invaluable. A two day course covered all the basic settings, photographic image processing and manipulation, as well as processing for the web. These skills have also come in extremely useful post-secondment in assisting the conservators with images for condition reports and articles. After each course we had two days of 'consolidation' training with the Web Team back at the V&A. As part of this process, Helen and I put together an experimental microsite - The Ark - and filled it with ceramic animals from the collections. Aimed at a young audience, it even included an attempt at an interactive quiz, courtesy of Helen. We were very pleased with the result.

Initially we worked on a recently completed microsite called 'Behind the Scenes'. Originally designed and built by two members of the Collections Services Division (CSD), everyone was very keen to see the 'Behind the Scenes' site continue as it is a beautiful and informative microsite. We were to add a behind-the-scenes story or activity of our choice.

In August 2003 the work began in earnest. I chose two recently conserved objects for my 'Behind the Scenes' subjects: an Indo-Portuguese Chest and the Hitchcock Transformation Print. I would follow the conservation of each object in text and photos, showing the gradual changes made to each object. All information on the V&A website must be accessible to as wide an audience as possible, so the more technical detail of the conservation process would be handled via a glossary and carefully selected links.

As well as progressing the microsite, I again put forward a proposal for the Conservation Department to have webpages within the main (new) V&A website. If this were accepted, I would work only on those pages.



Figure 2. The top level link 'Research & Conservation', above the new Conservation front page

After discussion it was agreed I was to work on the Conservation webpages with the aim of inserting them into a newly re-designed V&A website, under the top-level link: 'Research & Conservation' (Figure 2). Due to time constraints, I was initially asked only to complete the biographical information for the staff pages ('People & Studios'). From the beginning I wanted to build an entire site, as a partial site would have little to offer when it came to publication. I now had only three months to complete the site.

I initially set up the site structure on a theme of two strands, interventive and preventive conservation. These actually quite controversial distinctions were used purely as a content guideline only. To ensure accessibility, the often very detailed information supplied had to be handled as broadly as possible. The Conservation Department Website Working Group, after some debate, chose the following titles for navigation of the site: People & Studios; Treatment & Care; Research; Training & Education; Advice & Access; Conservation Journal.

- The 'People & Studios' section (Figure 3) includes history of the Department and links to five pages describing each of the Conservation Department Sections: Paper, Book & Paintings; Furniture, Textile & Frames; Sculpture, Metalwork, Ceramics & Glass; Science; Management & Administration. Each of these pages includes a brief description of the studios. They also link to staff lists with specialisms and job titles. Staff names are clickable to individual pages, with photos and bibliographies.



Figure 3. 'People & Studios' section of the Conservation webpages

- 'Treatment & Care' includes current projects. Houghton Hall is one such example, hopefully to have its own dedicated pages shortly. Work on objects in the Core Collection of the V&A is described here, as well as equipment and information on technique. This area could in the future provide information on couriering, surveying, condition reporting, storage, a conservation records database and possibly even the conservation of Museum 'highlights' from the past. Some of these processes are already described under the 'Behind the Scenes' link.

- Conservation 'Research', including Conservation Science, is often at the cutting edge and projects are frequently conducted in partnership with other organisations, described here with links to further information. A conservation glossary is included here as a separate link.
- 'Advice & Access' includes commonly requested documents such as the Ethics Checklist and the Environmental Policy. It also includes contact information and external links such as the ever popular Conservation Register, an external website providing information on private practice conservators. Treatment advice leaflets have been proposed for the future. The tours and events listed are generalised, more precise information being dependant on updating arrangements yet to be made.
- 'Training & Education' provides Continuous Professional Development information for Conservators, links to the RCA/V&A Postgraduate Course and information for prospective interns. Currently these pages contain general explanations and contact information, but in the future listings of internships actually available in the studios could be included here.
- The Conservation Journal has had its own area of the V&A website designed especially for it, post-secondment. I completed training on Rhythmyx - to be able to input the Journal and perhaps to contribute to the updating of the Conservation webpages - in September 2004.

Processes taken into consideration when building any website include site maintenance. Currently three of the webpages will need updating. The emphasis was on trying to make the published information initially as 'dateless' as possible, with the notable exceptions of current projects, ongoing research and forthcoming events. Procedures had to be put in place for the updating and submission of new content, including the staff pages. A Departmental Website Editorial Board has been established to oversee the content of the site. I 'signed over' the site for inputting into Rhythmyx on 31 January 2004.

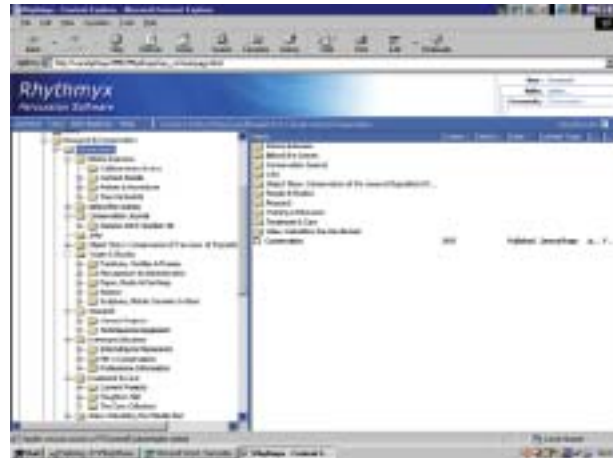


Figure 4. Rhythmyx content explorer

Once content has been approved by the editorial board, it is input into the Rhythmyx database, usually by pasting it into specially designed page templates. Each page, image or other element is given metadata, i.e. keywords, to enable site searching. Rhythmyx provides the structure for the pages within the website (Figure 4). After a further review process involving both the Web Team and individuals in Conservation via email, the new information is cleared for publication as part of the V&A website. Rhythmyx will accept a range of media so there are options for using videoclips and other more interactive elements, at a later date.

The Conservation Journal is one of the first department-led pieces of information to go online via Rhythmyx. As various web projects are completed, ideas for other sites are suggested: Houghton Hall, the Mazarin Chest, the Ethics Checklist etc. An application for further Conservation-led webpages has just been approved.

The new V&A website, complete with the Conservation pages under a top-level link, 'Research & Conservation', was launched on 31 August 2004 at: http://www.vam.ac.uk/res_cons/index.html

Issue 48 of the Conservation Journal was launched online in January 2005 (Figure 5). Ten of the most recent back copies are currently being processed. Issue 49 online should coincide with distribution of its printed version and Issue 50 will be a special celebratory event online as well as in print. The Online Conservation Journal is found at: http://www.vam.ac.uk/res_cons/conservation/journal/index.html

Acknowledgements

With grateful acknowledgements to everyone on the Web Team and Graham Martin, Head of Science, in particular for sharing my enthusiasm for this project so convincingly.



Figure 5. The Conservation Journal Issue 48, online

The Ethics Checklist - ten years on

Alison Richmond

Senior Tutor RCA/V&A Conservation

Ten years ago, we could never have predicted the resounding success of the “Ethics Checklist”. Drafted initially for our own use, it was first introduced to the profession by Jonathan Ashley-Smith at a conference at The British Museum in 1994. It has since been the subject of a number of articles and appeared alongside other decision tools in a recent textbook.¹ Most gratifying of all has been the continued popularity of the Checklist, recommended and widely used, within the profession and beyond, in the UK and internationally.

It was called the Ethics Checklist because it grew out of discussions about the principles upon which the conservation staff at the V&A were basing conservation practice at that time and an expressed desire on the part of individuals for guidelines on decision-making. After wide consultation a working group produced a tool that provided a common set of criteria that would help conservators feel more confident about their decisions. It was based on the assumption that good decision-making is the first step of ethical practice.

Why is the Checklist so popular? In the answer to this lies both the perceived strength and the weakness of the Checklist: it is “common sense” that should come naturally to a professional conservator and a convenient *aide memoire* that contains most of the things a conservator should consider in a single list of questions. In addition, its potential as a teaching tool for staff and students was recognised from the outset. Although never formally adopted as Museum policy, today it is a requirement specified in the Museum-wide documentation system. It was always intended that it would be re-assessed on a regular basis, as things changed within the Museum, the conservation profession and in the larger world of cultural heritage.

It troubled me that while the Checklist had stayed the same, the context in which conservators were making decisions had changed. A preliminary survey of V&A conservators revealed that the Checklist was still considered to be of practical value but could also be usefully updated. Respondents felt that it needed to reflect new developments. The emphasis on access to collections in Museum funding agreements and

the emergence of a project culture were making new demands on conservators. Part of these developments was an inclusiveness in decision-making, the need to work across teams and beyond the walls of the Museum. These, in combination with changing staff demographics and a greater reliance on contractors, were transforming the context and nature of conservators’ work. At the same time, museum codes of ethics and decision tools, such as the Burra Charter,² were being revised to reflect these developments and to give increased prominence to the consideration of cultural values and significance, the recognition of less tangible aspects, and respect for diversity. The concepts of risk and sustainability, considered jargon in 1994, had become familiar to conservators. All of these were factors suggesting a need for a review.



(Photography by V&A Photographic Studio)

Figure 1. Mamluk Qur’an, Manuscript, c.1400, Egypt or Syria (7217-1869)

The Checklist was used by two book conservators in the assessment of over-size folios and bifolia of a Mamluk Qur’an in order to discuss treatment proposals, methods of repair and rebinding.

Consideration was given to full conservation treatment of 19 leaves. Treatment options were formulated with input from curatorial staff, in-house book conservators and external expert conservators on paper conservation and rebinding. There is no evidence of the original binding structure.

One conservator found that using the Checklist ensured that all actions necessary in making treatment decisions had been considered. This was particularly important for this object due to the need for extensive interventive conservation treatment and possible change to its original structure and housing. It also underpinned the need to have dialogue with others who may influence the decision-making process.

The other conservator found the Checklist assisted in sorting her thoughts into a verbal or written form using standard key terminology which could be passed on to those involved in the conservation treatment decision-making process. It is a useful tool for assisting the practising book conservator within the V&A when moving from repetitive simple repairs to more considered, detailed, full conservation treatments.

There was also evidence that the Checklist was not used regularly and that newer members of the Department were not aware of its existence - no one could find it! We thought its structure could be improved and the whole made more easily accessible by creating an electronic version.

To find out if we could develop a decision-making tool that improved on the current one, a research group was set up in the Department. The outcome was a revised Checklist that would be piloted in the Department to evaluate its effectiveness and then launched on the Internet.

The purpose of the Checklist was redefined. Although originally intended to be applicable to all conservation activities, we decided to acknowledge that in reality it deals with the relationship between conservator and object or objects, and is most often used for treatment decisions. Although it is not a policy it should act as a filter, invoking the Department’s culture. It should be made available to the public and used to describe how conservators approach their work. It should not be used for training only; practice should compare favourably with what we teach (and preach!). The name Ethics Checklist should be kept as it reflects its role as a decision tool within the ethical framework of professional conservation practice.

The new Checklist is situated on the intranet, formally within a V&A procedures manual and is supported by other documents such as codes, guidelines, standards and legislation. Together these documents will provide an ethical and legal framework for the V&A conservator. The wording of the Checklist was altered, but in most cases only slightly. Using the Burra Charter as a model, a commentary on each question was incorporated to assist the user. The glossary was expanded to include new words that may be unfamiliar. Words that were dismissed in 1994 as jargon, such as “stakeholder” and “risk”, are now well-understood and were incorporated.

The pilot study gave an indication of whether the proposed changes were appropriate for the Department’s needs. While many respondents echoed the old *crie de coeur* that it was “common sense”, they admitted that it did aid decision-making and was especially useful for projects presenting complex problems or requiring a lot of intervention. One respondent said, ‘Although I would usually consider all of the things on the checklist anyway this would not necessarily be in such an ordered way’.³ Another reported, ‘The Checklist helped consider each repair on its individual merits’. Its usefulness in training was reiterated. Generally people found the Checklist clear and easy to use, but recommended some specific re-wording.



(Photography by V&A Photographic Studio)

Figure 2. Male Profile (illustrious man), panel painting, 16th century, School of Mantua (668-1904)

The Checklist was used by a conservation intern for the treatment of a 16th century Italian panel painting from a series of similar panels which were originally arranged along the roof beams of a room in a castle at San Martino di Gusnago/a. Several of the set are held by the V&A and will be displayed in the new Medieval & Renaissance Galleries in a reconstruction of their original arrangement.

The Checklist helped the conservator to clarify which would be the most important aspects of the treatment and what results she should be aiming for, in particular, homogeneity across the group of paintings.



(Photography by V&A Photographic Studio)

Figure 3. The War of Troy, Tapestry, 1475-90, Tournai (T6:1887), detail
 The Checklist was used by a conservation MA student to consider the treatment for this tapestry. Although previously displayed in the Museum, the tapestry has not been conserved since its acquisition. The process of conservation will involve a number of conservators and will last approximately 18 months.
 The conservator found the Checklist to be a good starting point for considering the work to be undertaken, especially the decision about which previous repairs to remove. The Checklist helped the conservator consider each repair on its individual merits.

The wisdom of developing an online interactive version was considered. Current levels of computer access and configuration within the Department prevent conservators from working on computers near objects. 'With only one PC in the studio shared between four conservators, it wouldn't be used'. While the research group was enthusiastic about the extra documents and commentary of the new Checklist, the single A4 sheet of the old Checklist was preferred by some respondents. 'The document is very clear, but a shorter "quick-reference" version should accompany this version'. Appending the single-sheet Checklist as a front page seemed to be an acceptable compromise.

Just as in 1994, it was recognised that the context in which conservators carry out their decisions and do their work has an impact on those decisions and actions, so in 2004 the research group realised that the Checklist was of limited use in addressing these issues. Under-resourced projects resulting in few interventive treatments being carried out in the Department were felt to have ramifications both for the care of collections and for the maintenance and development of skills. One conservator put it this way, but it was a common feeling among respondents: 'This treatment is fairly standard and indicative of approx. 75% of all treatments undertaken.' In answer to the question: *Did the checklist help you in the decision-making process?* 'In all honesty, no, in this case due to external factors such as lack of time to treat the object as I would have wished.' Just as in 1994, conservators were concerned about their lack of influence in 'the continuum of decision-making' - the decisions being made before the conservator encounters the object and after it leaves his or her care - leads to conservators feeling disempowered. 'Some aspects, such as preventive conservation in the

galleries, are difficult for individual conservators in a big museum to control ... although it might be possible to consider preventive conservation measures ... and to make suggestions, whether or not these are acted upon may be out of the individual conservator's hands. It is therefore difficult to make treatment decisions which are dependent on the implementation of preventive conservation measures.' We recommended that consideration be given by management to concerns voiced by conservators in the current study.

During the process of this research, suggestions were made for possible future projects and much consideration was given to developing a training version that would be visually interesting, available on-line and interactive. By creating a non-linear, image-based diagram, we thought we could encourage a different kind of interaction with the questions. When first considering a diagrammatic layout the questions appeared to fall naturally into groups, but on reflection, any attempt to impose an order was proscriptive and went against the philosophy of the Checklist. The interactive version is still in development and, in the meantime, the Checklist questions remain in the form of a list (please see Appendix 1 on page 56 to view the first page of the Ethics Checklist).

In the end, I have to admit, very few changes were made to the Checklist. I like to think that this was due in part to its enduring value as a tool for conservation decision-making. The V&A Conservation Department "Ethics Checklist 2004" can be found at: http://www.vam.ac.uk/res_cons/conservation/advice/policies/index.html

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Plastics preservation at the V&A

Brenda Keneghan

Polymer Scientist

Two previous articles on the subject of plastics degradation have appeared in the Conservation Journal since its inception. The first (issue 6, January 1993) was written by Edward Then, the original post-holder of the newly-founded position of plastics conservator, and Victoria Oakley, Head of the Ceramics Conservation Studio where the position was located. The piece outlined the strategy that was to be taken in tackling this recently recognised problem, beginning with a survey. In issue 21 (October 1996) a second article on the subject appeared under my name. The survey was almost complete and five polymers had been identified as those most susceptible to degradation. But by this time the problem had been recognised as more scientific in nature than previously thought, and the position was now located in the science laboratory. In 1998 the job title was changed to polymer scientist in recognition of the fact that the problem was chemical in nature and required a scientific background to understand what was happening before any approach to treatment could be even considered.

So what have been the main developments in plastics degradation and conservation at the V&A since that last article? As we delved further into the chemistries of the various materials involved several issues emerged. It became quite clear that plastics behaved differently and, therefore, must be approached differently to the more traditional materials. The main issues can be summarised as follows: There are very many different types of plastic – not just one. Of these many types, the results of our survey have shown that five are particularly susceptible to degradation and some actually cause damage to other materials while undergoing degradation. Each of those five plastics has a specific chemical composition and each must be treated as an individual material. Secondly, plastic materials generally degrade in a more dramatic fashion than the more traditional materials. This is because the deterioration of plastics has a relatively long induction period followed by accelerating degradation. In lay persons terms - what looks

in fine shape one day may be a pile of dust six months later. Thirdly, what may appear a relatively innocent treatment, e.g. swabbing a surface with solvent or adhering broken parts, may result in much more severe damage appearing at a later date. Finally, it must be accepted that the degradation of plastics is due to irreversible chemical reactions. Although it cannot be reversed it can, given the right conditions, be slowed down.

Armed with this information a more holistic approach to the problem has evolved and the focus has shifted slightly from conservation towards preservation. Raising an awareness of the problem and education were the first steps taken in tackling the deterioration of plastic objects in museums. To this end, the results of the survey have been the topic of several departmental seminars, conference presentations and invited lectures, as well as forming part of the annual lecture on the subject to students on the RCA/V&A Conservation programme. They have also been published in the journal *Museum Management and Curatorship*, in the hope of reaching the widest possible target audience, as it is curators who generally come across the objects in the first instance, especially in the smaller museums. At least by being aware of the possibility that some plastic objects in their collections may be degrading, museum professionals can keep their eyes (and noses!) open for tell-tale signs and smells.

On the educational theme, plastic identification workshops for conservators and other interested parties were planned. Before taking them into the studios, however, trials of the published chemical spot tests for identifying various plastics were undertaken in the laboratory. These tests were found to have serious drawbacks which make them unsuitable for use by the conservator in the studio. As well as requiring toxic chemicals, many of the results are subjective. Most of the tests only appear to work when the identity of the material is already indicated in some other way. Testing completely unknown samples showed the results to be highly ambiguous. However, as in reality most historic plastic materials

are reasonably stable, it is really only the five highlighted ones (especially in older objects) that need to be identified in collections. The two most dangerous materials with respect to the damage they may cause other objects, are cellulose nitrate and cellulose acetate. These plastics are no longer in general use and mostly their occurrence relates to reasonably specific time periods and the imitation of natural materials. It is therefore possible to approach their identification in other ways, e.g. by the style of objects or by their date etc., and also by keeping an eye on any suspect objects. Unfortunately newer objects made from synthetic polymers can also cause problems, as artists especially often use these materials for the novel effects that can be produced without paying due care to the manufacturers instructions. Thus the resulting stability problems, in contrast to the historic objects, are often avoidable.

Although we do not have all the answers yet, we are now pretty clear on what the problems are, and the next stage in our strategy is to investigate the long-term effects of recommended conservation treatments on selected degraded plastic objects. While we are approaching interventive treatments cautiously, minimal cleaning is currently undertaken for some objects, most recently on several pieces of pop furniture from the 1960s and 70s (Figure 1).

Continuing with the preservation course, control of the environment is essential to help prevent or slow down the degradation reactions of polymers. Therefore, the correct choice of storage conditions is vital for the preservation of plastics especially the five most susceptible polymers. A current project in this area is the assessment of the best storage environment for photographic negatives. The Museum has large photographic archives which



(Photography by Nigel Bamforth)

Figure 1. Modern plastic furniture from the V&A collection

contain negatives with bases made from both cellulose nitrate and cellulose acetate. The negatives are degrading rapidly and we are in the process of evaluating the various packaging systems before placing them in cold storage. As commercial packaging systems are extremely expensive and often contain non-essential elements, a knowledge of the different degradation chemistries involved allows the most cost-effective system to be chosen.

The formation of the Contemporary Team and the dedication of gallery space to the 'Contemporary' has resulted in very successful exhibitions of non-traditional content. These have included *Brand*, *New*, *Zoomorphic* and *Brilliant* where plastics were in abundance. 'Touch Me' actually invites the public to do just that to objects, many of them made from synthetic polymers. In response to the changing nature of the objects being accessioned and also these different types of exhibitions, curators now regularly ask for information about synthetic plastic objects before making decisions on their accession or inclusion in an exhibition. As we publish issue 50 of the Conservation Journal I can honestly say that the "plastics denial syndrome" which was particularly prevalent in the various collections, and referred to in issue 21, has been eliminated completely.

As the subject of plastics degradation has become more widely publicised, interest continues to come from national and international radio, newspapers and art magazines. As more and more art objects are made from these relatively unstable materials, the problem is likely to increase. The Conservation Department at the V&A remains a leader in the field tackling this problem and is regularly contacted for advice and assistance by a wide range of organisations ranging from regional museums and other heritage bodies to auction houses.

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Working for Diaghilev

Lynda Hillyer

Head Textile Conservator

In December 2004, an exhibition opened at the Groninger Museum in The Netherlands called *Working for Diaghilev* (Groningen, 11 December 2004 – 28 March 2005). It comprised 30 costumes from the Diaghilev Ballet and 230 paintings, drawings, set and costume designs. The State Tretyakov Gallery in Moscow lent over 100 works of art many of which were being displayed in the West for the first time. Other lenders included the Theatre Museum Bakrushin, Moscow, the Centre Pompidou in Paris, the Musée Picasso, Paris, the Musée des Arts Decoratifs, Paris, the National Gallery of Australia in Canberra and the Victoria and Albert Museum (Theatre Museum).

Groninger is a surprising museum situated in the heart of a traditional Dutch town. It was built in the 1980s with revenue from the discovery of natural gas in Northern Holland. The main building is an avant-garde structure designed by the Italian architect Alessandro Medina. Philippe Starck and the architects known as Coop Himmelb(l)au created two adjoining areas of the museum. Medina has created distinct colour combinations within the exhibition space so that the interconnecting rooms appear as a series of coloured cubes with contrasting floors, walls and ceilings, an almost perfect setting for an exhibition on Diaghilev. Facilities in the museum include a very large goods lift that opens directly into storage areas on each floor and provides easy access for packing and unpacking loan objects. The museum has a permanent collection of ceramics and costume, but its main activity is its programme of exhibitions. In recent years it has initiated important displays of Russian painting, notably *Ilya Repin* (2001) who became part of Diaghilev's circle for a brief period in the 1890s, and the beautiful exhibition *Russian Landscapes* which transferred to the National Gallery, London in 2004.

The preliminary request for the loan of objects for *Working for Diaghilev* coincided with the start of a comprehensive survey of the Diaghilev Ballet costume undertaken by Sarah Woodcock, Curator of Photography and Costume at the Theatre Museum, and myself throughout 2004. The core of the collection was acquired for the Museum



Figure 1. Chaliapin's costume from the Coronation scene, *Boris Godunov* (possibly dating from 1908) designed by the painter Alexander Golovin (S.459-1979) (Photography by V&A Photographic Studio)

through the foresight of dance critic and historian Richard Buckle, an authority on Diaghilev, when costumes first came onto the market at Sothebys in the late 1960s. In 1974 Buckle donated them to the newly-founded Theatre Museum. The collection, since added to by gift and purchase, now totals about 500 costumes and part costumes plus about 100 accessories. The purpose of the survey was to identify all priority exhibition costume and assess its conservation needs, to identify materials and initiate the analysis of

metal threads and early plastics used in their construction and to assess storage needs in preparation for the proposed re-storage of the Theatre Museum collection. The results of the survey will be entered onto a database that will prepare the ground for further loans and exhibitions of this important collection. Groninger's initial request for 30 costumes resulted in the selection of 15 costumes including one of Theatre Museum's most spectacular and important objects, the costume worn by the Russian bass Feodor Chaliapin in the Coronation scene from Mussorgsky's opera *Boris Godunov* (Figure 1).



Figure 2. The Buffoon's wife from *Chout* (1921) designed by Mikhail Larionov (S.762-1980) (Photography by V&A Photographic Studio)

Diaghilev's dream was to bring Russian culture to the West and create the Wagnerian ideal of *Gesamtkunstwerken*, a total work of art in which décor, costumes, music and expression were one harmonious whole. He achieved this through exhibitions and concerts but most lastingly through the ballet performances which began in 1909 and, once he established his own company, lasted until his death in 1929. Between 1909 and 1929, when the Western world was itself experiencing vast changes, Diaghilev's vision created a revolution in the theatre and had far reaching influences on the visual arts and the future of dance. Ballet in Russia had become moribund and in the West a rather dubious entertainment. Diaghilev's death in 1929 became the catalyst for the beginnings of major ballet companies in Europe and America including the Ballet Rambert, The Royal Ballet and New York City Ballet.

In Russia, Diaghilev was part of the circle of artists creating the influential publication *The World of Art*, which included Alexandre Benois and Leon Bakst. It was Benois who introduced the choreographer Michel Fokine into the group and thus turned Diaghilev's interest toward the ballet. At the end of the 19th century, scenery was created by scene painters working in the prevailing style of realism. Diaghilev therefore turned to his friends within *The World of Art* to design Fokine's ballets. The first Russian ballet season opened in the Theatre Châtélet in Paris in 1909. The casts included the now legendary dancers Vaslav Nijinsky, Tamara Karsavina, Anna Pavlova and Adolf Bolm. Fokine's one act ballets revealed an exotic, seductive and thrilling world often perceived as shocking and revolutionary. Diaghilev's designers created explosive colour combinations that had never been seen before. His choreographers created new ways of moving, sometimes primitive and erotic with prominence given to the male dancer. Above all the Diaghilev Ballet showed that dance could express mood and emotion. Diaghilev introduced the West to Russian music and discovered and promoted both Stravinsky and Prokofiev. The success of the Diaghilev Ballet gave artists like Picasso, Gontcharova, Derain and

Matisse the opportunity to realise their visions on the massive scale demanded by the design of backdrops. Diaghilev's genius lay not only in the brilliance of his vision and his enormous gifts for seeking out and promoting talent but in his eye for detail and organisation. In the years leading up to the first ballet season in Paris, he had already organised 16 exhibitions of painting including a masterly exhibition of 4000 Russian portrait painters in St Petersburg. Diaghilev supervised every detail of production, especially the lighting, in which he was an expert. He developed new choreographers, designers, composers and dancers, found patrons and funding, oversaw the organisation of the tours and the myriad routine tasks involved in running a touring company that, until the last few years of its life, had no permanent base.

The survey of the costume revealed the reality of day to day existence within the Company. There is much evidence of the stress on the costumes in performance; there are remains of make-up and theatrical repairs and some costumes still smell of sweat! The names of the dancers survive inside some costumes with second and third casts written in Russian or English. Customs stamps plot the tours of the Company. But above all, the materials and construction of the costume indicate the fluctuating fortunes of the Diaghilev Ballet which sometimes bankrupted Diaghilev's backers. The embroidery used for the creation of the Coronation robe for Chaliapin's role in *Boris Godunov* is the work of a professional ecclesiastical workshop. The outstanding quality of the work is some indication of its cost. In contrast, the materials used for the ingenious Constructivist costumes from *Chout* (1921), designed by Mikhail Larionov, were made from curtain lining materials (Figure 2) as is Matisse's design for the costume of a Mourner from *Le Chant du Rossignol* (1924) which is currently part of the Art Deco Exhibition tour.

The request for the loan of the costumes to Groninger was the largest loan that Textile Conservation has ever undertaken. The work on the *Boris Godunov* costume alone took more than 1000 hours. Initially, the costume was not considered suitable for loan because of the fragility of its surface decoration. It could not be handled or moved safely and for a number of years had been stored in the Textile Conservation Studio. The costume is decorated with facsimile pearls known as 'pearls of the Orient'. These were made from spheres of blown glass, coated on the inside with a mixture made from fish scales (often bleek or herring). The glass spheres were then filled with



Figure 3. Lady in Waiting (1921) designed by Léon Bakst for the *Sleeping Princess* (S.776-1980) (Photography by V&A Photographic Studio)

wax to give them some solidity.¹ The weight of the costume when lying flat had crushed many of the brittle glass spheres. The ground fabric of the costume was made from a metal thread weft and a silk warp. The silk warp had disintegrated throughout the costume causing the metal thread to lift. The stitching holding many of the green and red glass beadwork had deteriorated causing the loss of many beads and the potential loss of more decoration.

Two conservators were employed to undertake the necessary work. Anne Kwaspen worked solely on the *Boris Godunov* costume, while Anja Bayer worked on the remaining 14 costumes. The loan enabled us to have a custom made mount designed for the *Boris Godunov* costume that will ensure its future safe storage and display.

The world of Diaghilev still captures the imagination. During the course of the survey and the conservation work for this loan, many visitors came to see the costumes. A tour of V&A patrons to the studio resulted in requests for further visits to see more material in storage. There was a visit from a large group of students involved in the Fashion Awareness Direct Graduate Fashion Competition whose theme for 2004 was 'From St Petersburg to Moscow'. The wardrobe at the Royal Opera House came to see work in progress; Sarah Woodcock advised The Royal Ballet on their revival of *Le Spectre de la Rose* (1911) and two of the brightest principals of The Royal Ballet, Alina Cojocaru and Johan Kobburg visited Blythe House to see, among other objects, Bakst's extraordinary costumes for the 1921 production of the *Sleeping Princess* (Figure 3).

There have been many exhibitions showing Diaghilev's artistic legacy but nothing as comprehensive as the memorable Diaghilev exhibition organised by Richard Buckle in 1954. The survey of the costume and the conservation work carried out for Groninger have made this important collection more accessible and have increased the possibilities of a major exhibition within the V&A.

Acknowledgements

I am grateful to Sarah Woodcock for reading this text and making helpful additions and adjustments

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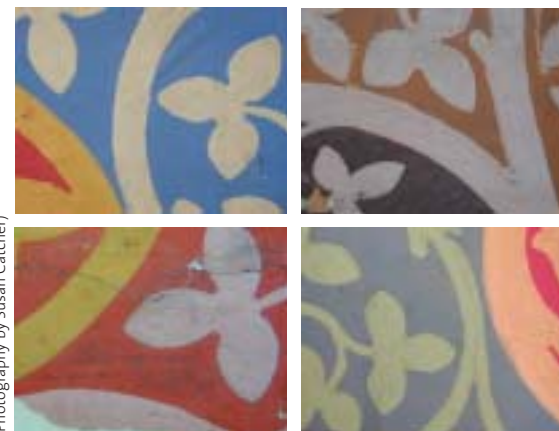
Pugin's wallpapers from The Grange

Susan Catcher, Paper Conservator

Lucia Burgio, Object Analysis Scientist

In April 2004, The Landmark Trust offered the Victoria and Albert Museum a rare opportunity to take samples of wallpapers from The Grange, in Ramsgate, Kent. This house was originally designed for and by A.W.N. Pugin incorporating one-off designs of floor tiles, stained glass and wallpaper, featuring his personal emblem, a bird. Some of the wallpapers were discovered beneath later paneling, skirting and door architraves and provide evidence of many coloured waves including the inscription '*en avant*' as well as a more geometric design found underneath a bell pull frame. The house will eventually be used for recreational lettings and whilst being fully documented, certain fragments were considered as sacrificial since they would be lost during the building work. With the help of Merryl Huxtable, Senior Paper Conservator at the V&A, we spent a very cold day removing fragments to be conserved by Paper Conservation. The pigments on some of the fragments were also investigated using a combination of complementary scientific techniques, described below, with the aim of determining if toxic pigments were present and whether a possible date for the wallpapers could be suggested (Figure 1).

Each wallpaper fragment had been adhered with a starch-based paste onto a cream, machine-made lining paper, which in turn had been adhered to a wall covered with lime plaster embedded with horse hair. The blue '*en avant*' design had been adhered to an external wall and consequently had suffered the most damage, having been weakened by water penetration and by the addition of iron posts to secure the later paneling. The right section was mouldy, and also showed signs of extensive flaking of the paint as well as shattering of the paper substrate. Conversely, the green geometric wallpaper was so well adhered to an internal wall that all day was required to release it. Some of the underlying plaster was also removed with it. The paint was flaking and gloss household paint was found at the edges. Both fragments had surface dirt, tears, missing areas and pigments that required further investigation (Figure 2).



(Photography by Susan Catcher)

Figure 1. '*En avant*' colour waves



(Photography by Susan Catcher)

Figure 2. Initial damage on recto

Table 1

Wallpaper fragment	EDXRF*	PLM	RM
Blue	Copper Calcium Iron Mercury Arsenic	Ultramarine blue Synthetic azurite Vermilion Chalk Barite	Ultramarine blue Azurite Chalk Barite
Green	Copper Arsenic Calcium Iron Titanium Chromium	Ultramarine blue Chrome yellow Chalk Barite Iron(III) oxide Scheele's green	Ultramarine blue Chrome yellow Chalk Barite

* major elements in bold font.

Table 1. Results of the scientific analysis of the Pugin wallpaper fragments

Initial cleaning was kept to a minimum with the use of a soft brush to remove particulate dirt and a shaped chemical sponge on the non-friable areas. All the wallpapers were printed with a distemper onto a distemper-coated, machine-made, cream paper. The two printed surfaces were not well keyed together and the top design appeared to be lifting off. This was not helped by the change in humidity conditions from a damp environment at The Grange, to a relatively dry conservation studio at the V&A, which may have contributed to the breakdown of the proteinaceous medium of the distemper. Consolidation treatments included looking at the use of methylcellulose, hydroxyl-ethyl-propyl-cellulose and funori. Funori, a consolidant made from Japanese seaweed, was selected because of its good penetration, reversibility in water and matt appearance on drying. A 3% w/v funori solution was made using 6g of seaweed sheet previously rinsed to remove excess salts and soaked overnight in 200ml cold water. This was then simmered for twenty minutes, cooled and strained through polyester gauze. The pH of the resulting solution was 8.5.

The plaster was removed mechanically using a scalpel working between the lining and object. Health and safety was an issue as the plaster had a lime base, so eyes, skin and respiratory tract had to be protected. Likewise the pigments gave cause for concern as the wallpaper's probable date, the late 1840s, indicated that the greens could contain arsenic and the white could be lead-based.

Fragments of the wallpaper were investigated by a combination of complementary scientific techniques, i.e. energy-dispersive X-ray fluorescence analysis (EDXRF), polarized optical microscopy (PLM) and Raman microscopy (RM), in order to determine if the fragments contained arsenic or other heavy metals and therefore constituted a health hazard; the wallpaper fragments were also analysed to identify all the pigments present and assist in dating the wallpaper (Table 1).

EDXRF was chosen as it is a non-destructive, non-intrusive technique which reveals the elemental composition of the objects analysed by it, and it is particularly suited for the detection of heavy metals. PLM, a technique used traditionally in the investigation of pigments and artists' materials, was used to examine the optical properties of the pigments on the wallpaper fragments. Raman microscopy has only recently started to be used on a routine basis in museums and heritage institutions and is particularly suited for the non-destructive, non-intrusive analysis of pigments and some dyes. One of its main advantages is that it provides a fast and unambiguous identification of the materials analysed.

EDXRF analyses revealed that arsenic was present on the green wallpaper fragment (Figure 3). Raman and optical microscopy analysis of the same fragment identified synthetic ultramarine blue, chrome yellow, and the white pigments chalk and barite (Figure 4). A pale green pigment was probably the arsenic-containing Scheele's green. The blue fragments were found to contain synthetic azurite, synthetic ultramarine blue, chalk, barite and vermilion.

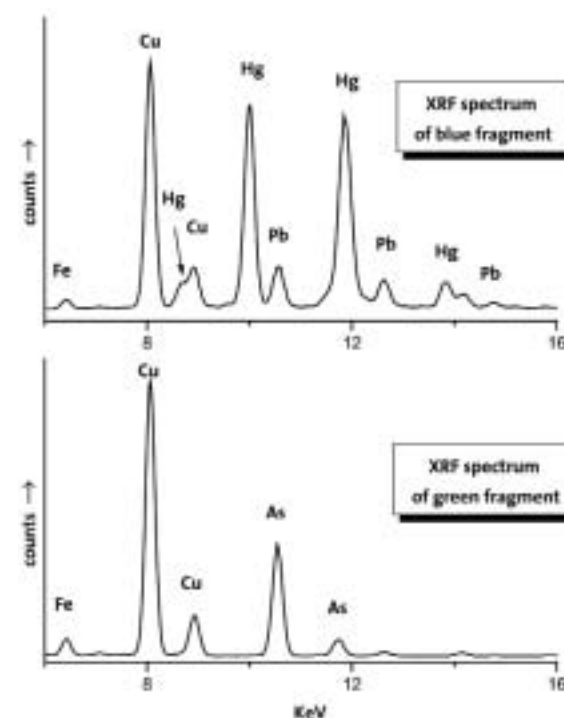


Figure 3. EDXRF spectra of Pugin wallpaper fragments

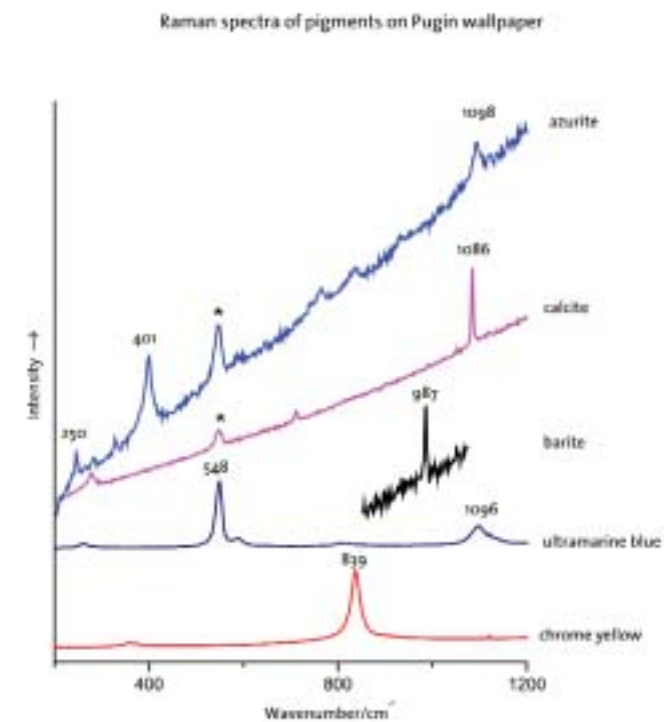


Figure 4. Raman spectra of pigments found on the Pugin wallpaper fragments

Because of the fragile and toxic nature of the pigments it was decided that the consolidation and lining would be carried out as a single operation. The wallpaper was initially humidified using the capillary matting/Gore-Tex™ method and then laid recto side up onto a piece of melinex (mic 125) as a support.² Rayon paper was laid over the surface to face the object and warm funori was brushed through with a soft brush.³ The temperature of the solution was kept below 50°C as any higher would result in the loss of adhesion. Polyethylene was then placed over the top to facilitate moving the object prior to and during lining. The wallpaper was turned over, recto side down, and the polyethylene underneath stretched onto the table. The removal of the existing cream, machine-made lining paper was carried out after spraying with tap water and peeled off with the help of a bamboo spatula. A lining of Japanese Sekishu

paper was applied immediately using wheat starch paste. Borders were attached and the object was placed recto side up onto felts for drying. The polyethylene and rayon paper were carefully peeled back separately. After the initial drying period the borders were trimmed and the lined wallpaper re-humidified before being attached to the kari bari board and left for at least two weeks to dry. Infilling was carried out whilst the wallpaper was still on the board using archival text toned with watercolour and Carbothello pastel pencils and adhered with wheat starch paste. The use of pastel pencils allowed the matt chalky surface to be recreated. It was decided that areas of considerable loss would not be restored, as it was difficult to replicate the design, so a compatible colour was used (Figure 5). Storage prior to acquisition was provided by a deep covered mount to protect the chalky surface of the wallpaper.

These unique wallpaper fragments will now become a valuable addition to the V&A collection. The presence of poisonous heavy metals such as arsenic, mercury and chromium in a friable distemper dictated the method of treatment which was a combination of overall consolidation and lining in one operation using funori as the consolidant. This allowed minimal handling and disturbance of the surface of the wallpapers. Any future handling of the Pugin wallpaper should be undertaken with caution. The presence of synthetic ultramarine blue on both wallpaper types, dates the wallpaper to sometime after 1828.



(Photography by Susan Catcher)

Figure 5. Conserved fragments

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Acknowledgments

The authors are grateful to The Landmark Trust for providing the V&A with the opportunity of sampling the wallpapers and to Professor Robin J.H. Clark, University College London, for the use of his Renishaw Raman spectrometer.

Prevention is better than the cure

Sandra Smith, Head of Conservation

Valerie Blyth, Preventive Conservator, Science Section

Political agendas, public accountability, FuturePlan and a review of collection's storage are increasingly affecting the way the collections are displayed and the Museum sites are used. The Gershen Report highlighted the need for institutions to become more efficient;¹ for the Museum, this involves looking at the cost of running the site, using space most effectively for display and storage of collections with minimal overheads. Part of the Museum's response to the need to improve access to the collections is to increase the number of loans and touring exhibitions. The Museum's current environmental parameters are narrow. In light of the real-time information on gallery and storage conditions these need to be re-examined, to determine if they can be relaxed to aid loaning in the future.

The Museum is exploring ways to make the displays more attractive to a wider audience, to become more socially inclusive; using multimedia displays, removing barriers, placing objects on open display and improving the illumination of objects. Additionally, withdrawal of slow release Dichlorvos strips, Vapona™, has increased the risk of insect attack to the Museum's textile collections. An urgent review of the Insect Pest Management (IPM) strategy was therefore needed.²

Identifying realistic, workable and flexible standards for the object environment is a priority for the Department next year; ensuring that these standards can be achieved efficiently and economically are equally significant. In 2004 working groups were established to review existing and new policies, and create associated strategies to ensure that the Museum has appropriate and pragmatic object centred policies for:

- temperature and humidity
- light and UV
- insect activity
- dust and pollution
- vibration and handling

The need to review storage in advance of the redevelopment of some on-site stores for the Medieval & Renaissance Galleries highlighted a need for the creation of a new Preventive Conservation post. This was initially created as a six-month pilot to establish and maintain preventive conservation standards. Valerie Blyth is currently filling this post. The policies and strategies relating to dust, pollution, vibration and handling are still at an early stage of development, whilst those for temperature and relative humidity, light and insect pest management are more developed.

Object centred environmental analysis network (OCEAN) has provided an excellent insight into the Museum environment.³ Temperatures in summer and relative humidity in winter are regularly outside the parameters recommended for loan. The extremely dry winter conditions, caused by the heating system, have highlighted a need to manage the use of the building in order to make the environment more stable for the collections. By working with the Projects & Estates team, the overall Museum temperature has been lowered. This not only benefits the collections, public and staff but also reduces running costs. By using real-time environmental data, the Department is now able to consider the options for relaxing environmental parameters for the collections to realistically achievable levels. Solutions may lie in centralising environmentally sensitive collections and using local environmental control methods such as humidification/dehumidification.

Recent innovations with the use of Lightcheck, an early warning system for preventive conservation, is providing a more effective evaluation of the quantity of light received by a museum exhibit. Work is still needed to identify types of light sources, and innovative types of display which will create an acceptable balance between access and longevity of light sensitive material.⁴ We certainly want to provide a useful and meaningful viewing of objects as a poorly lit object has very little worth. Light dose is a powerful tool that the improved technologies can now support. Proximity sensors, light ramping or push button devices may offer acceptable solutions.

Since the dichlorvos strips were removed from the display cases and stores there have been two severe outbreaks of carpet beetle. A review of the Bug Committee was carried out and membership was increased to include representatives from all Museum departments. Working groups were established to look at the pest policy and effectiveness of the strategy, the system for data collection and analysis, and current storage projects including the relocation of the Theatre Museum archives. Insect pest risk zones have been categorised on the South Kensington site which will determine the level of monitoring and priorities for action. This project is a collaboration with our IPM consultant, David Pinniger.

As the Museum is adopting a mixed media display type and many of the stores are by geographical separation rather than material, this presents challenges with regard to the environment. The Storage Project Group has been set up with a brief to cost solutions to the Museum's storage requirements identifying short-term and long-term storage needs. The Preventive Conservator has advised on best and efficient practice for the many museum object moves required to facilitate the Medieval & Renaissance Galleries and other FuturePlan developments.

Introducing object centred policies and strategies to the Museum requires a team approach. All staff have a valuable role to play. Training is a key element to the success of the strategies that will ultimately be implemented. It is envisaged that staff will have pest awareness training as part of their induction course. Refresher courses are being considered for staff at all levels. Basic preventive conservation training is available as part of the Curatorial Development Programme. OCEAN training is accessible to staff to enable them to use the system. Object centred policies relating to the environment are increasingly important to the Museum to ensure a high standard of collection care. Ensuring that the working documents that underpin the policies are flexible, workable, realistic and pragmatic will be as important to their success as the training of Museum staff in order to implement them.

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Research

Graham Martin

Head of Science Section

Research is a small two-syllable word that has lots of hidden (and sometimes emotional) depth. It is both a noun and a verb. Yes – I could give you dictionary definitions of both uses but that is not the purpose of this contribution. I could offer you my own definitions of both the noun and the verb usage: this would be arrogant of me to do so. One minor subject I do not want to discuss are the pronunciation issues – I am personally happy with either the UK English or US English pronunciations. I would much rather offer a mixed sample of the type of research that is conducted within the Conservation Department in order to illustrate the research that goes on.

Firstly, I would like to spend a short time considering the noun usage of the word research. Yes, I did look up several dictionaries in preparation for writing. The majority of them used a verb to describe the noun. For me, the practical use of the noun describes the output of the action of research. It is the presentation of the findings of the work. Such presentations may be verbal such as a conference presentation, written (as a paper in a learned journal) or as a CD-ROM. Of course there are many other outputs and the audience largely determines these. If one wishes to cross the professional structures then it is often efficient to talk as this enables a dialogue to develop. Whereas, if the audience are ones professional peers then publication in an appropriate learned journal can be appropriate. Often, there are multiple audiences and several or combined methods of communication are employed. Within the Conservation Department research output is communicated on many different levels; from local intra-Department symposia, through specific and targeted meetings via professional sub groups through to international conferences. What is interesting to me to note is the general lack of attention in presenting these research findings to the public. Most research output tends to be 'behind the scenes' and with little public presentation. The recently published Departmental Annual report focuses greatly on the output and it is gratifying to see a continued presentation of the research output to public audiences through such events as gallery talks, school visits, public lectures etc. Should we (and other teams in conservation) do more? Should these events be given a higher priority?

Now I would like to adjust the focus to the verb usage of the word research. In the V&A we are fortunate to have many areas in the organisation that support research. This varies from the Research Department that provides output relating to the collections, the Education Department that is very much involved with the delivery of the public output, the Collection Services Division that researches imaging processes, data collection techniques and conservation related matters. The V&A undertakes a great deal of research at a variety of different disciplines and levels.

An often-asked question that I hear is "How do I do research?"

My eyes roll upwards at such a question, I take a deep in take of air and then implode! We all 'do' research. It is nothing magical or mystical. If you want to buy a new car or a new washing machine, very few of us part with our hard earned cash on the first item we see. We generally put some parameters to our needs (how many seats for the car or how fast does the spinner work in the washing machine?). So we are defining and refining our needs and attempting to match those needs with the best on the market. I am sure that we are all very similar – in that the first item that meets our needs is far in excess of our budget (oh yes, that is another item that generally gets pre-defined – the budget). Then comes the compromise or decision-making phase that goes something like;

How much?

It does not do everything I require!

It is too expensive!

It will not fit in the space or garage!

The delivery time is too long!

These (and many other) factors are balanced up before making the purchase.

How do we determine that we need the item of research? This can come from many different levels and is determined by the complexity or scale of the task. At the biggest end of the scale, look at organisational strategic plans. All large heritage organisations produce such plans – usually a requirement of the funding agencies. On a local level,

the Jewellery Gallery at the V&A is an excellent example of strategic planning influencing the actions. The V&A is committed to the re-display and study of its collection of jewels. Inevitably, in writing catalogues and other learned papers there is a need for factual information. In deriving this factual information there are many other uses that the same (or very similar) information can be put to. There are the requirements of the researcher in their own skill sets (gemmologist, metallurgist, analyst). So from a simple desire to re-display a gallery there are many parts. Yes, these plans may be one sentence 'wish' lists but they give an excellent view of organisation needs and often the research needs fall directly from these. The skill is identifying those areas of research that help support or deliver the strategic plan. Alternatively, the needs may be determined by the requirement to improve a technique or process (such as a new and less interventive conservation process) – this is a much more local requirement. In all but the smallest of research areas there will be a need to secure the resources to undertake the research. This requires negotiation skills along with skills of presentation.

To re-cap, you now have the basic premise for the research and you have secured the resources required to undertake it. Now is the time to do the work! However, the verb research now translates into the noun research – the need to publish or tell others about the outcome.

The scale of research has little to do with process – this remains a constant. What is a valuable approach is to consider the quality of research. This has two essential aspects that require assessment – technical audit and resource audit are the key tools for performance. But this still leaves an assessment of quality. I have not yet encountered a totally sturdy approach for this. The Research Assessment Exercise (RAE) that takes place in academia is perhaps the most robust. The basis of these and all other 'quality' assessments is some form of peer review. Sometimes this can take years. There is no substitute in this quality assessment for experience.

It does not matter if the research is cross-national borders or local one day a week – the processes and the approach remain constant. Develop the premise for the research, test it in theory, undertake the practical work to test the variables, evaluate these (and this could go on for several cycles) and publish the outcomes is the basis for all research. We can all undertake research.

The Castellani diadem

Joanna Whalley

Senior Metalwork Conservator

The Jewellery Gallery of the V&A is currently undergoing complete refurbishment. This work has created an invaluable opportunity for staff and external specialists to conduct in-depth study and analysis of materials and techniques used in the manufacture of jewellery from Ancient Egypt to the present. It is hoped that the redisplay will incorporate up to four and a half thousand objects, including some which were previously not in a displayable condition. A gold, enamel and pearl diadem (640-1884) designed by Alessandro Castellani is one such example.

Alessandro's father, Fortunato Pio, founded the firm of Castellani in Rome in 1814. Towards the late 1830s Fortunato Pio began to study the ancient jewellery making techniques he had observed in Greek and Roman archaeological objects. The work produced was extremely fine. This work was further developed by his two sons, Alessandro and Augusto.

The design for the diadem, by Alessandro Castellani, is believed to have been closely based on the 'Palo' diadem, an ancient Greek artefact believed to have been found at Cumae, Italy (now in the Louvre, Paris). There are only five known versions of this work, each having variations in design.

The diadem was acquired by the Museum from a sale of Castellani's effects in 1884. A photograph taken before 1903 (Figure 1) shows the diadem as complete and in good condition. However, after the picture was taken, the condition of the diadem was dramatically altered: the thin gold tube which forms the base/frame had been straightened, there were two

complete fractures and two repaired fractures (with adhesive) along its length. Some of the decorative panels were also crooked and had a number of their tips and flowers crushed (Figure 2). There are no Museum records of how or when the damage occurred.



(Photography by Joanna Whalley)

Figure 2. The diadem before treatment

Richard Edgcumbe, Senior Curator in the Metalwork Collection, requested that the diadem be examined with a view to returning it as near as was possible to the original state. Factors taken into account at this point were: the lack of structural stability (the various broken parts were free moving and were causing unavoidable damage through handling); in the current condition, the diadem couldn't convey to the visitor a clear understanding of its function; although

(Photography by V&A Photographic Studio, pre-1903)



Figure 1. The diadem shortly after acquisition (neg. 25341)

a very long time ago, the damage had been incurred while the diadem was in the care of the Museum, and as such it was felt we had a duty to return the diadem to the form in which it was acquired. It was decided that the benefits of restoring the diadem outweighed the risks.

An x-ray was taken to aid in the understanding of the construction and later repairs of the tube frame. The broken lengths of tube had been straightened, and would need to be reshaped to a gentle curve. Pure gold is consistently malleable and easily reshaped, however the gold from which the diadem is made is an alloy, and as such is susceptible to fracture if further tension is applied to areas which have been 'work hardened' (manipulated/worked to a point where the plasticity of the metal is severely decreased). Another concern was the possibility that the tube may buckle if undue pressure was applied, though this risk can be reduced with the use of a temporary core material such as a wire or fine sand.

In this instance, a jeweller might consider removing the panels, annealing the tube (heating to allow the crystals in the metal to redevelop and so make the tube more flexible and less likely to fracture when being reshaped), and soldering the damage already incurred. This could not, of course, be considered in this case. The process involves high temperatures and therefore there are a number of inherent risks, particularly with thin tubing. It would also permanently alter the crystal structure of the metal which might affect any subsequent research into Castellani's manufacturing techniques. A more conservative approach was obviously required.

The early photograph of the original form was studied and a template of the base of this form was drawn. The diadem was placed over the template and the separate parts were aligned as closely as possible to the shape. The tube was then very slowly and gently eased back into the curved form.

The old adhesive repairs to two of the fractures in the tube frame were checked: there was an excess of what appeared to be epoxy resin around the joints. The excess was removed mechanically under magnification and retained for FTIR analysis.² The repairs appeared to be stable and strong, and so were

left in place: the strong solvents necessary to remove this adhesive may not penetrate the join properly and could possibly create long term problems if they were not successful. Should the adhesive fail in the future then access to the interior will be afforded and the adhesive will be removed and replaced more safely.

The next step was to repair the two open fractures in the tube frame. The fractures had occurred in areas which are vulnerable to further damage from flexing in many directions. The choice of repair had to provide a great degree of support in response. An internal armature was made (from gold) which should prevent any movement around the join from affecting the join itself (Figure 3). Ideally the adhesive selected should be easily reversible, and Paraloid B-48N (methyl methacrylate/butyl acrylate copolymer) seemed most suitable. However, on application the join proved relatively air tight and the solvents in the adhesive couldn't evaporate fully to allow it to set properly. There were also general reservations about its relative strength. As a result, a 2-part epoxy resin was used for the repair. The new and old repairs were partially disguised using fine gold powder dusted onto a weak solution of Paraloid B72 (ethyl methacrylate/methyl acrylate copolymer) in toluene and Industrial Methylated Spirit (IMS).

The distorted decorative panels were straightened, the gold here had not been work hardened and was still very soft. Where there were extreme distortions to the applied leaves and petals, these were reshaped in the same way.



Figure 3. Internal armature



Figure 4. The diadem completed



Figure 5. The mount

(Photography by Joanna Whalley)

(Photography by Joanna Whalley)

Once the diadem was structurally stable, it was possible to clean it. This was done using IMS. The enamels appeared to be chemically stable and so they were also cleaned using IMS. There were fine fractures to three small enamels where the gold panels had been allowed to move freely before the tube was repaired, these were consolidated using a weak solution of Paraloid B72. The pearl beads were cleaned with deionised water (Figure 4). Finally, a closely fitting mount was made in brass with Plastazote, to provide gentle and even support (Figure 5).

The diadem was recently included in the exhibition Castellani and Italian Archaeological Jewellery at the Bard Graduate Centre in New York, transferring to Somerset House, London, 5 May to 18 September 2005.

The newly refurbished Jewellery Gallery will reopen at the beginning of 2008. The display will explore and present all aspects of jewellery making techniques and materials through the V&A's exceptional collections.

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Suppliers

Plastazote®, Polyformes Ltd, Cherry Court Way, Stanbridge Road, Leighton Buzzard, Bedfordshire, LU7 8UH

In pursuit of a clear answer: An Exhibition Road partnership

Fi Jordan, Senior Ceramics Conservator

Victoria Oakley, Head Ceramics Conservator

As conservators, a significant part of our work is involved with problem-solving. In pursuit of solutions to particularly complex problems, one approach is to bring together interested experts willing to share their knowledge, ideas and resources. It is fortuitous if such individuals happen to be located nearby. For a number of years conservators at the V&A have been collaborating with scientists on the other side of a road in South Kensington, in the Department of Materials at Imperial College (ICSTM), to investigate the problem of glass deterioration and the care and conservation of the objects affected.

At the outset of the project in 1991, the team were under no illusion that finding a solution to the problem would be easy. Nor could it be foreseen that it would create such an enduring and productive partnership. It is through the perseverance and curiosity of its participants that at the end of the last phase of research in December 2004, the collaboration had been running successfully for thirteen years.

An article in this Journal's third issue¹ recalls the then "recent survey of the condition of 6500 objects at the V&A" which found that approximately 10% displayed some form of glass deterioration.² Further surveys followed alongside the beginnings of research at ICSTM into the mechanisms of glass decay. The collaboration began modestly with a three month funded undergraduate project: Afi Amaku's quantitative chemical analysis of a 16th century Venetian glass. The supervisors, Dr Philip Rogers and Dr David McPhail (ICSTM) and Victoria Oakley (V&A), were sufficiently inspired by the results to seek funding for longer term post-graduate research.

Three studies have followed since 1992, each lasting three years with different researchers bringing new methods and insights. Jason Ryan's PhD research involved a systematic investigation of unstable glass, studying the ageing of replica samples in order to understand the complex processes that cause a glass object to deteriorate. His thesis acknowledged the need for the continued research and proposed a number of ways forward.³ A second post-graduate

student, Simon Hogg, examined one of these areas – "an active conservation approach" using monofunctional organosilane compounds to provide protection at the surface of the glass.

The most recent phase of the research, funded by the Leverhulme Trust, enabled Dr Sarah Fearn, Research Associate, to take advantage of recent advances in analytical instrumentation to study the corrosion of glass samples at room temperatures. Consequently this approach gives a more accurate representation of museum conditions. Her research is discussed in the following article.

Over the years, the partnership has brought together not only scientists and conservators, but also curators and glassmakers. This has resulted in a balanced approach to the project. The scientist brings an analytical approach to complex scientific concepts, the curator provides a historical perspective and the craftsman reveals an insight into why an object was made in a certain way. The conservator can be seen to have a realistic approach to the treatment and display requirements of museum objects. They are also aware of the need to interpret results into



Figure 1. Glass ewer with gilt metal base (1809-1855), 17th century, Venetian or Netherlandish, in advanced state of decay (crizzled)

(Photography by V&A Photographic Studio)



(Photography by Fi Jordan)

Figure 2. Vase by Tapio Wirkkala, Finland 1950-1969 (Circ.438-1964), with early signs of glass decay (cloudy appearance), during cleaning

workable, practicable procedures. As the affiliation grew over the years it is probably true to say that the team conspired to think alike. The shared goal has been the fundamental desire to find a practical solution to the problem whilst staying within acceptable ethical boundaries.

The researcher's role is pivotal in the team. Regular meetings kept all participants informed of their progress and also became a forum for constructive criticism and an exchange of ideas. The researcher was encouraged to disseminate information in journals and conference papers and to develop links with other institutions and interested parties. This has contributed to a greater understanding of glass deterioration amongst a wider community.

Each research project has built on the findings of the previous studies, often generating more questions than answers, and emphasising the importance of further investigations. There is, therefore, a clear need to continue the work that has been completed so far. This will require a further commitment of resources from interested parties. In the article that follows,



(Photography by Fi Jordan)

Figure 3. Circ.438-1964 after cleaning

Sarah Fearn ends by highlighting a number of areas she feels require further research. Most importantly, they emphasise the need to focus investigations on practical proposals that will bring us closer to finding clear guidance on the optimum environmental conditions and interventive treatments required in the care of vulnerable glass objects.

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Investigation of the room temperature corrosion of replica museum glass

Sarah Fearn

Research Associate, Department of Materials, Imperial College

The problem of deteriorating glass remains a serious issue for many collections around the world. It is now well known that the composition of a glass object strongly determines its properties. In many modern applications, it is common to modify the composition of the glass in order to improve its properties, for example to resist heat. However, this is also true of historical glass, where the glassmaker also manipulated the composition in order to create objects with the desired aesthetic qualities, but in doing so, unwittingly affected other properties, such as durability. The best example of this, and indeed one of the most vulnerable groups of glasses, is cristallo. Here, in the endeavour to achieve a clear crystal-like glass the raw materials were repeatedly refined.¹ Analysis of these glasses has shown that the resulting compositions are high in soda and/or potash, accompanied with a very low lime content. This high alkali, low lime combination leads to a glass which readily absorbs moisture from the atmosphere.

As the objects start to absorb moisture, the glass deterioration will begin. The various stages of this corrosion process have been very well described by Oakley² and are only summarised here. As moisture is absorbed from the atmosphere, essential elements, typically the alkalis sodium and/or potassium, are leached out of the glass and onto its surface. The leached species then form corrosion salts on the surface, leading to a dulling and loss of clarity. If the alkali is allowed to build up on the glass surface, its pH will continually increase until a point where it is so high that dissolution of the strong silica network occurs. In the most extreme case, the glass object will lose much of its mechanical strength and will eventually collapse.

In museums it is the responsibility of curators and conservators to care for these vulnerable objects and hopefully prevent their further decay. By using passive conservation, the usual approach is to display and store the objects in an environment maintained at stable temperature and relative humidity (RH) levels. A stable environment prevents the absorption/desorption cycle that occurs due to daily

and seasonal changes in climatic conditions, and hopefully prevents either further moisture attack or moisture loss with consequent cracking. However, uncertainties remain as to what can be considered a 'safe' environment for these vulnerable glasses.

Recent work has focussed on the room temperature corrosion of a replica of a 16th century Façon de Venise glass composition. The composition for the replica glass was obtained from a de-accessioned piece from the V&A's collection (in weight percent: SiO₂ 72.72%, Na₂O 17.95%, K₂O 3.27%, CaO 2.17%, MgO 0.74%, Al₂O₃ 1.21%, Fe₂O₃ 0.23%, and Mn₂O₃ 0.37%). The replica, copying the original object as closely as possible, was fabricated at the Royal College of Art and blown by Ian Hankey, now of Teign Valley Glass. The 'skin' formed on the glass due to the glass blowing process is an important feature of the replica material. Normally this is polished away in order to create the flat samples required for any subsequent analysis. To remove the need for polishing, large flat plates were produced.

To investigate the ageing of the replica glass under various environmental conditions, replica material was placed in chambers set to known relative humidities, also in cold storage (~8C). As a large quantity of glass was made, it was not all used in one go. It was, therefore, stored in a chamber with flowing nitrogen at room temperature. This also meant that the long term effects of storing the glass under flowing nitrogen could be examined. Previously simulated ageing has been carried out at elevated temperatures, but for these investigations the ageing was carried out at room temperature. This was made possible by the capabilities of the techniques that were subsequently employed to analyse the aged glass. This study, therefore, is one of the first that has looked at the real-time ageing of a replica museum glass, which has been fabricated using traditional methods.

The relative humidities used in the simulation experiments were 55%, 40%, 20% and 4% (dry silica gel). The samples were then left to age for known periods of time ranging from 1 day up to 45 days. After ageing, the samples were examined for the presence of corrosion salts using a three dimensional optical microscope.

It was found that after only 24 hours, corrosion salts had already formed on the surface of the glass samples aged at the highest two relative humidities. As ageing time increased, it was observed that the surface roughness and development of the corrosion salts also increased for all relative humidities, including the glass stored in the dry silica gel (4%RH). Surprisingly, to the eye, most of the samples appeared clear and would not be considered cloudy enough to require cleaning. If corrosion products are not removed from the glass surface immediately, they will continue to develop further. Work currently being carried out at Edinburgh University in conjunction with the National Museum of Scotland, has shown that the corrosion salts react with other atmospheric species such as carbon dioxide and UV, to form formate salts.³ If these surface salts are not removed they will leave behind permanent marks on an object's surface once they are removed.

As well as measuring changes occurring on the glass surface, compositional changes directly beneath the glass surface were also measured using a technique called secondary ion mass spectrometry (SIMS), this technique was also extensively used by Jason Ryan (see previous article). The sensitivity of this technique means that very small concentration changes can be measured. It is therefore possible to monitor the small changes that occur during room temperature deterioration.

The SIMS analysis was carried out on all the aged replica material with respect to the element sodium (Na), the alkali ion known to readily leach out of the glass during the corrosion process. Figure 1 shows an example of the changing sodium concentration for a glass aged at 40%RH and ageing times of 2, 6, 12, 25 and 45 days. The profiles show that directly below the glass surface, the sodium concentration is very much lower than the concentration of sodium deeper in the glass. This region where the sodium has been removed is known as the depletion region.

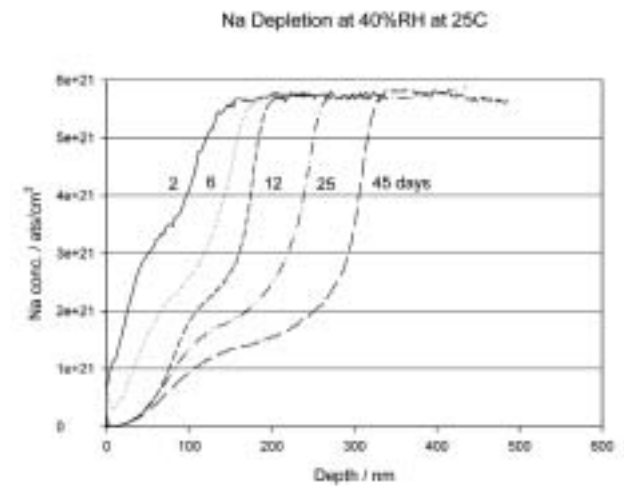


Figure 1. The development of the sodium depletion at 40%RH and room temperature for increasing ageing times from 2 to 45 days

As anticipated, at increased relative humidities, the depletion depth of the sodium also increased. However, surprisingly, the depletion was also occurring at the two lowest relative humidities: 20%RH and 4%RH (the dry silica gel). These results indicate that at any given RH, sodium is leaching from the glass. Although the rate at which the sodium is leaching from the glass is slower at the lower humidities, with the slowest leaching occurring in the dry silica gel, it still occurs resulting in the formation of damaging corrosion salts on the glass surface.

Professional Collaboration - the Prince of Wales Museum of Western India

Mike Wheeler

Senior Paper Conservator

The effects of altering other factors in the environment were also assessed on the replica glass to see if the leaching of the sodium could be reduced or stopped. Figure 2 shows the Na depletion profiles for a glass sample that has been stored in flowing nitrogen for one year. Also shown is the Na depletion profile of another sample that has been placed in a cold storage for 40 days. Both of these profiles have been compared to the Na profile measured on the replica glass the day it was made, and a glass sample that has been aged at 20%RH for 40 days. The Na depletion profiles from the four samples are quite different. It appears that for the samples that have been placed into either a flowing nitrogen or cold environment, the leaching of the Na has been considerably slowed. This is particularly true when compared to the glass stored at 20%RH. It appears that by altering the environment to one that has either a flowing atmosphere or a lower temperature, the leaching of the sodium from the glass can be slowed down.

Na Depletion Occurring in Various Storage Environments

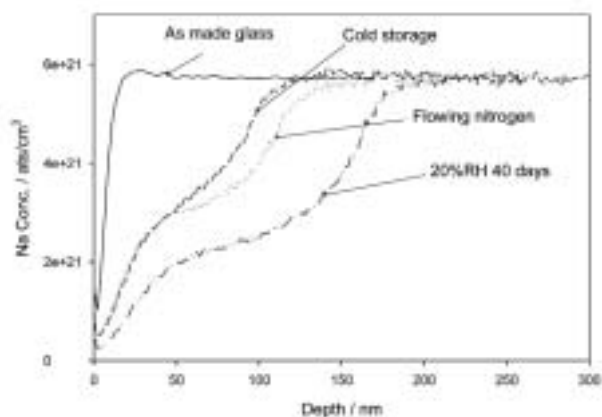


Figure 2. Sodium depletion occurring for replica glass stored in flowing nitrogen, in cold storage and a relative humidity of 20%

The funded three-year project ended in December 2004. The environmental test results came towards the end of the research and there are areas that still require clarification and further research. The development of a small test display case would allow the long term effects of specific environments to be studied, comparing, for example, the effects of an environment of flowing air with one of flowing nitrogen and considering different rates of air flow. Further tests on reducing temperatures are required to see if less dramatic temperature reduction, possibly only 5°C less than room temperature, might produce a useful reduction in the leaching of the sodium from the glass. It does appear that by altering the environment of a display case, the longevity of vulnerable glass can be improved, and there is an identified need for further research in this area.

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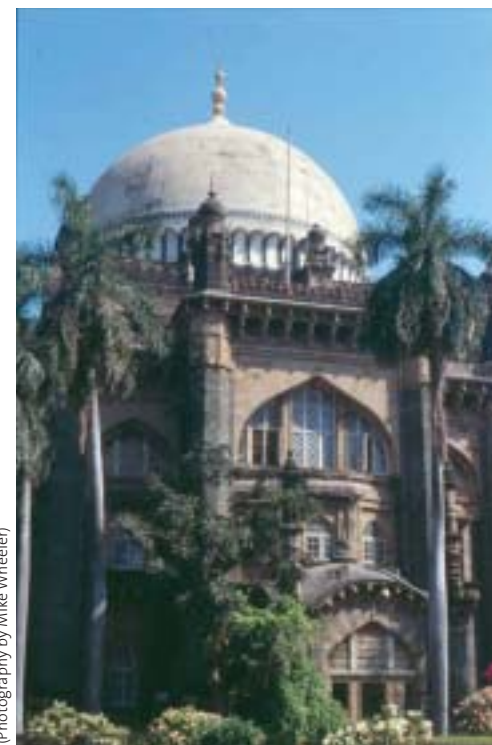


Figure 1. The façade of the Prince of Wales Museum built in the Indo-Saracenic style.

The foundation stone of the Prince of Wales Museum of Western India (Chhatrapati Shivaji Maharaj Vastu Sangrahalaya) was laid in 1905. It is situated in the centre of Mumbai in the district of Colaba known as the Crescent Site. The architect of the building, George Wittet, was selected after an open competition in 1909. It is a very fine building in the Indo Saracenic style, which combines Hindu and Saracenic architectural forms, at times incorporating some elements of western architecture (Figure 1). The museum houses a superb collection of miniature paintings and manuscripts, oil paintings, sculpture, textiles, bronzes and decorative arts.

I made an initial visit to the Prince of Wales Museum (POWM) in 2002 at the request of the Director, Dr Kalpana Dessai who had approached Mark Jones, Director of the V&A. Part of my remit was to examine a selection of important Indian and Persian manuscripts from the POWM collection and advise them concerning the development of a conservation studio, which is housed in the newly renovated Premchand wing of the museum. This also provides space for a temporary exhibition gallery, a new maritime gallery and a modern lecture theatre.

Partly as a result of this first visit in 2002, the POWM and the V&A entered into an official partnership in 2003 which acknowledged the important symbiotic relationship of the two institutions with a view to sharing both professional expertise and collections in the future. In 2003 Mr Sabyasachi Mukherjee (now acting Director) spent three months as an intern at the V&A in the Asian Department and in the Paper Conservation Section. As well as improving his knowledge of conservation, he attended lectures in the Museum and shadowed several senior members of the curatorial staff. During this time he worked in close liaison with the Head of Collections, Debby Swallow, who helped to arrange suitable contacts and visits.

The costs of my second visit in January 2005 were shared between the V&A and the Prince of Wales Museum, assisted by a grant from the Nehru Foundation. My remit was to follow up on some of the survey work I had carried out in December 2002 and to carry out the conservation of two of the most important manuscripts.

The *Anwari-i-Suhayli* manuscript (Figure 2), considered to be dated around 1575 is an important and highly attractive Mughal manuscript which is undoubtedly one of the jewels in the crown of the POWM collections. It is thought to have been commissioned by Akbar to give thanks for the birth of his first son and was produced at Fatehpur Sikri, near Agra. This manuscript had been damaged by fire in the 19th century when it was in the collection of Lord Elphinstone at Poona. It was given to the POWM in 1973. The manuscript was repaired in the early 20th century

(possibly at Windsor Castle). During the restoration, many of the badly damaged folios were trimmed down and adhered to poor quality paper mounts which both damaged the paper of the original and obscured the text on the verso, which could not previously be read or studied.



(Photography by Mike Wheeler)

Figure 2. Anwari-I-Suhayli. Mughal manuscript, circa 1575. Fragments of this manuscript were glued down onto a paper backing after having been damaged by fire. Removal of these backing papers during conservation will allow the manuscript to be reassembled in the correct order.

Conservation treatment carried out in January 2005 included the removal of the backing papers to which the folios were adhered, consolidation of flaking pigments and inlaying the fragments into hand-made paper to allow them to be handled safely and mounted in such a way that the edges of the pictures could be clearly seen. About 12 fragments were treated during the visit, but it should be possible for staff at POWM to continue the work over the next 12 months. In the meanwhile, all of the folios have been photographed and scholars continue to study the sequence of the paintings, which will now be assisted by the portions of text which have been revealed by conservation. Several staff members took part in practical training sessions, worked under my supervision carrying out the necessary treatments and were shown methods of mounting and display which conform to present conservation standards.



(Photography by Mike Wheeler)

Figure 3. Verso of a folio of Gulshan-E-Ishq. Deccani manuscript. Circa 1711. The dark brown areas indicate damage by copper pigments used on the recto.

The *Gulshan-E-Ishq* (Figure 3) is a Deccani manuscript from Bidar dated 1711. This illustrated text in Persian had been rebound several times and was in a very bad condition as a result of the degradation of copper pigments which had caused extensive damage to the paper. This manuscript was so delicate that it was impossible to handle it, or even photograph the pages for study or reproduction. In conjunction with staff at POWM it was decided to disassemble the binding so that the pages could be repaired properly and displayed as individual folios. This drastic step was taken because the present binding was actively causing damage to the book, was preventing access and was not contemporary with the original manuscript. A small selection of folios from this manuscript were repaired with a combination of toned Japanese paper and original hand-made paper which had been used as end leaves. The individual folios were then re-mounted using conservation mounting board, imported from the UK. The mounting system chosen was very similar to that



(Photography by Mike Wheeler)

Figure 4. Detail of a Shahnama in the collection of the POWM.

used at the V&A for the display of some early Mughal manuscripts with folios being attached into mounts with a hinge along the left-hand edge which allows the page to be turned in order to view images or texts on the verso.

A one-day workshop on handling paper and textiles was attended by all POWM staff and a handful of museum staff from institutions in Western India. This consisted of a lecture followed by a series of practical demonstrations and a lively discussion of present handling techniques and storage methods used at the POWM. A public lecture on 'The Materials, Techniques and Conservation of Indian Paintings' was delivered on 17 January 2005 in the new lecture theatre, attended by about 120 people including representatives from the national press.

In summary, the POWM is a very interesting and well managed museum. The collections of works of art on paper, textiles and sculpture are of a very high quality and gradually the museum is being upgraded and improved. The professional staff work extremely hard to ensure that the collection is well cared for and properly displayed within the limited funds which are available to them. It is hoped in the future that the POWM will provide both a temporary exhibition space of international standards, as well as a conservation studio for the treatment of a wide variety of materials including paper, paintings, textiles, metals and sculpture. It is the vision of the present director that the POWM will become a regional centre of excellence, and will provide training and mentoring to staff of other smaller museums throughout Western India. Previously, there was no dedicated specialist conservation facility in Mumbai which makes this new project especially timely.

V&A/RIBA partnership

Lisa Nash, RIBA, Special Collections Conservator

Anne Greig, RIBA, NMCT Project Conservator



Figure 1. RIBA Architecture Drawings Study Room

The British Architectural Library was established in 1834 as the Library of the Royal Institute of British Architects. This resource, which includes all aspects of architecture, is the largest and most comprehensive in Britain and is used both for research and information. From November 2004 the RIBA Drawings, Archive and Manuscripts Collection have relocated from 21 Portman Square and 66 Portland Place in London, to be re-housed at the V&A on Levels 3-5 of the Henry Cole Wing. The Architects Wright & Wright were appointed to design the scheme, partly funded by an award from the HLF, to re-house the two RIBA collections within the existing V&A Print Room space. Office space for the RIBA staff was also designed together with a new user friendly space for both the V&A/RIBA study rooms, which includes a shared group teaching room (Figure 1).

The Drawings Collection is the principle British repository for architectural drawings, consisting of work of the major British architects from the 15th century to the present. Amongst others, Sir Christopher Wren, Inigo Jones, J.B. Papworth, Pugin, Voysey, Scott and Waterhouse families and Lord Norman Foster. The 600,000 drawings also include important foreign groups, including the majority of the surviving Palladio drawings and drawings by Royal Gold Medallists that include Le Corbusier, Frank Lloyd Wright and Mies van der Rohe.

The Manuscript and Archive collection, of over 750,000 objects, includes papers by British architects from the 17th century to the present. Document types include letters, diaries, project correspondence and building accounts.

The Photographic Collection has remained located at RIBA Headquarters, 66 Portland Place, housed in a climate controlled store. The collection comprises over 1.3 million images, in varied formats, of world wide architecture dating from the 1850s, including complete archives of major British architectural photographers. In addition to paper based objects, the RIBA's Special Collections also include many other objects associated with architecture. The range incorporates over 300 models, drawing instruments, medals and office furniture either designed or used by architects. All of the collections provide a rich resource used by historians and students as well as those engaged in the conservation and restoration of historic buildings.

Two conservators are employed by RIBA, both located at the V&A within the Paper, Books and Paintings Section. Since 2001, the RIBA full time conservator has been responsible for the collection care and conservation programme for all three Special Collections. This includes the conservation of all RIBA objects for the V&A/RIBA Architecture and Temporary Gallery and the preparation for all external loans.

The RIBA also has a National Manuscript Conservation Trust funded conservation post for the duration of a year. The project relates to the Dove Brothers collection, a North London building firm based in Islington from 1781 to 1993. The collection contains all building types as the Dove Brothers worked with most of the major architects of the late 19th to 20th century.

There are many problems, some unique, associated with the conservation and preservation of architectural drawings. For example, their scale makes them very vulnerable to physical damage and the heavy use of inferior quality or translucent papers can cause them to become extremely fragile and difficult to store. The introduction of differing processes, which may include modern methods such as electronic formats, often need re-formatting due to technology changes and the possibility of obsolete formats. Architects' use of photomechanical processes, first introduced in the



Figure 2. Corian drawer. Drawing RIBA Ref. PA1263/2 (16) Design for the Glass Retention System, Willis Faber & Dumas Building by Foster Associates 1973. Pen and Transfer. Letratone. Lent by Foster Associates

The Temporary Gallery has a changing programme of displays which totals three exhibitions per year. Objects are either displayed in window mounts or float mounted using either magnetic tape or magnets for easy attachment to the metal wall of the main display case. The magnets are supplied by Goudsmit Magnetic, this method of display first being applied in the Netherlands Architecture Institute. This type of display was chosen as it works well with all architectural

form of a blueprint in 1842, poses many problems as differences in the manufacture of certain drawings ensure they cannot be safely stored together. The varying residual odours and chemical nature of production means they can be harmful to other drawings and with time may cause irreversible changes to either the media or the papers structure.

The gallery collaboration between the V&A/RIBA is the first in the country to be dedicated solely to the promotion of architecture. In the gallery's permanent display the paper based objects are presented within Corian, drawers. The drawers allow the object to be viewed only when required by the visitor. The use of this system limits the amount of light exposure, allowing a longer rotation programme. The drawings are placed under glass, float mounted using masumi usimono Japanese hinges fixed onto a Zerkall, mouldmade calcium carbonate buffered paper. The float mounted drawings are set on a 4mm thick layer of Plastazote, (a cross-linked polyethylene foam) which acts as a buffer from the base of the drawer whilst also providing a non-slip surface on which the drawings can rest (Figure 2).

drawing medium, being highly flexible and adaptable. It allows both presentation and working drawings to be sympathetically displayed close to the nature of their first intended use, highlighting the early stages of ideas and development to the final stages of design (Figure 3).



Figure 3. Temporary Gallery Display – Inside Out Exhibition. 02 March to 05 June 2005

Working within the Paper, Books and Paintings Conservation Studio has allowed RIBA conservators the access to expertise, support and the use of facilities available throughout the Conservation Departments in the V&A. The extensive size and the varied nature of the RIBA's collection has made this opportunity invaluable.

Although the RIBA retains the ownership of its own collection, the partnership of the V&A/RIBA will form a comprehensive resource for the study of architecture, uniting collections of the V&A's 35,000 drawings, 600,000 RIBA drawings and the RIBA Archive, for the first time, within the one building.

Acknowledgements

We are grateful and would like to thank both Pauline Webber, Head of Paper, Books & Paintings Conservation, and Jane Rutherford, Head Book Conservator, for their help, continual support and accepting us warmly into their studios.

Suppliers

Zerkall Mould Made Acid Free Paper 350gsm, John Purcell Paper, 15 Rumsey Road, London SW9 OTR e-mail jpp@johnpurcell.net

Plastazote®, Polyformes Ltd, Cherry Court Way, Stanbridge Road, Leighton Buzzard, Bedfordshire

Picture and mirror frames: Reflections on treatment past, present and future

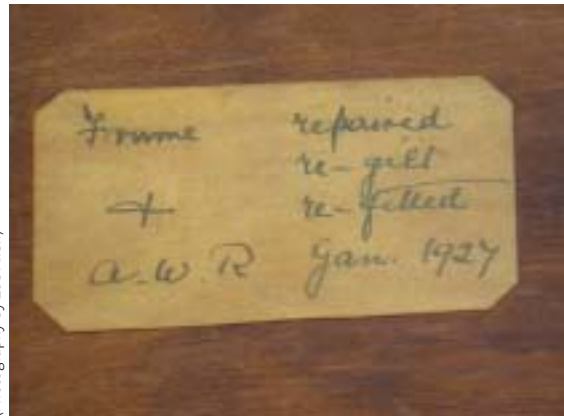
Christine Powell, Senior Furniture & Frames Conservator

Zoë Allen, Frames & Furniture Conservator

The V&A has a large collection of European gilded picture and mirror frames both on display and in storage. These date predominantly from the 18th and 19th centuries with a small number of earlier and later examples. The painting collection is mainly framed in 19th century British and some French composition frames, many of these can be seen on display in the new Paintings Galleries. Earlier elaborately carved and gilded 18th century British mirror and picture frames are on display in the British Galleries. During the 19th and 20th century the V&A also acquired a collection of Renaissance mirror and picture frames dating from the 15th century. Overall, the collection of mirror and picture frames are made from a variety of materials and techniques such as carved wood, papier-mâché, composition and leather. Decorative techniques include tooled and raised gesso work, sgraffito, oil and water gilding and japanning.

This article will give a brief overview of some of the current conservation treatments carried out on frames in the Conservation Department at the V&A. We will also consider past treatments and attitudes and look forward to their future care. As the ethics, materials and processes in the conservation of mirror and picture frames are many and often complex they cannot be considered in great detail here. However our current approach to treatments is summarised below, illustrated with examples from past and present exhibitions.

Existing documentation is examined prior to deciding treatment, consulting both collections and conservation files. There are few written conservation records regarding the treatment of mirror and picture frames prior to 1980. However occasionally V&A treatment of frames was briefly recorded on hand written labels attached to the backs of picture frames, on backboards or on the back of the paintings stretcher (Figure 1). The object is examined closely to assess its condition and identify the presence of any earlier schemes as the appearance of gilded objects is often changed over time due to repair or change in tastes or fashions.



(Photography by Zoë Allen)

Figure 1. Hand-written label recording treatment found on the back of a 19th century frame

After examination different levels of treatment are proposed and discussed with curators. Minimal treatments usually include stabilising the structure and surface decoration through consolidation, light cleaning, such as removal of dust, and toning out any distracting losses. More complex treatments include compensation of losses, further cleaning, removing or improving past treatments and revealing or re-creating earlier schemes.

A good example to illustrate how an object's appearance can change is the Lock Table and Mirror, circa 1745 (W8-1960), on display in the British Galleries. The first scheme, probably the original, was water gilding applied all over. Later a second decorative scheme of gold and dark green was applied (Figure 2), probably in the early 19th century to update the appearance according to fashionable trends of the time, with the green imitating bronze. Then in 1984, for the V&A *Rococo* exhibition, gilding conservator Malcom Green was asked to recreate the original fully gilded appearance of the first finish. This was achieved by gilding over the green elements.



Figure 2. Second decorative scheme of gold and dark green (Casa D'oro Issue 52, November 1967)

Once it is decided how the object should finally appear and treatment has been agreed with curators and signed off, the object is photographed. Risk assessments are carried out prior to treatment commencing to cover all processes such as manual handling, materials and equipment. Treatment is then carried out with every attempt to facilitate concerns of reversibility and detectability. All treatment and findings, such as previous schemes, are documented using text and image. Materials and techniques used for the conservation of gilding and other decorative finishes on frames are discussed in further detail in previous articles.¹

In addition to treating the decorative surfaces preventive conservation treatments are also carried out. A main function of picture frames is to protect the paintings they surround. The addition of glazing and backboards acts as a buffer from pollution, dust and fluctuations in RH. UV inhibiting low reflective glass also provides protection from light damage. More vulnerable panel paintings are occasionally fitted in a microclimate box, which is accommodated into the frame. These alterations and additions to the frame often result in the painting standing proud at the back of the frame and the sides of the paintings are exposed. In these cases the frame is built up behind to accommodate the extra depth. All paintings in the recently opened Paintings Galleries were re-glazed and build ups and back boards attached where required.

Paintings on display and going on loan from the V&A that are larger than one meter are generally glazed with UV inhibiting low reflective laminated glass.² This protects both the painting during transportation, object handlers and those coming into close contact from risk, as it does not shatter if broken. Laminated glass has the disadvantage of being heavy and for large frames, such as *The Tree of Life* by Burne-Jones (Circ. 525-1953) on display in the *International Arts and Crafts* Exhibition, the main joints of the frame often have to be reinforced.

Where glazing has been added spacing strips are fitted to stop the painting coming in contact with glass. Black velvet ribbon is placed on these to protect the front of the painting and any gaps at the back are taped to prevent the ingress of dust. Old fittings such as rusting nails, which originally held the paintings in place, are replaced with brass mirror plates cushioned with plastazote, which is also used to fill any gaps between the painting and the rebate.

The main preventive conservation measure for mirror frames is the protection of the original mercury-tin amalgam mirror finish applied to the back of the glass from dust ingress and handling. The backs may have original protection in the form of paper sheets or wooden boards, however the paper may have become torn and the boards split. Gaps in boards are covered with gummed linen tape or for larger areas Tyvek®, sheet is used held with the tape, avoiding any contact being made with the mirror back. These methods slow dust ingress but allow air movement.³ Labels and where possible original backing paper on both mirror and picture frames are protected with melonex or removed and stored on file.

Over the years frames have been increasingly valued as objects in their own right. We look forward to spending more time analysing and treating the frames within the collection for future projects. When planning for future display, objects are surveyed to assess condition, treatment needs and the best examples of type, before the final selection is made. At present we are surveying renaissance picture and mirror frames for possible display in the Mediaeval & Renaissance Galleries. The collaboration of curatorial art historical research together with technical analysis from conservation and science helps us to better understand and authenticate our collections.

The future of the mirror and picture frame depends on preventive conservation on a wider level. Current and continuing improvements to storage and display, environmental control, housekeeping and maintenance and care of our core collection will ensure the longevity of the mirror and frame collection.

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2. There is no law requiring this, however it is standard practice as carried out by other conservation departments such as the Tate. What does appear to be a legal requirement however is that if any glass (larger than 250mm) is on display below 1500mm then it is a requirement by Buildings Regulations 1991 to have laminated glass.
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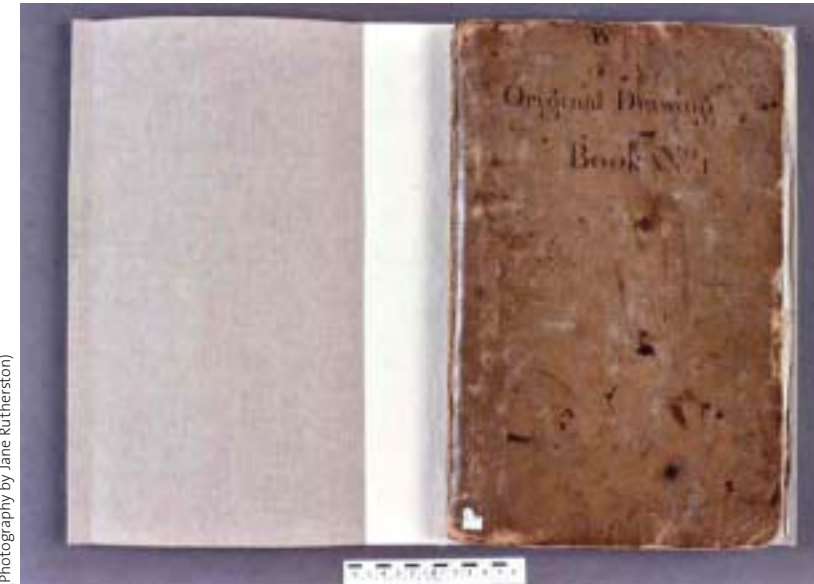
Suppliers

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Tyvek®, Preservation Equipment Ltd, Vincas Road, Diss, Norfolk, IP22 4HQ

A simple solution?

Jane Rutherston
Head Book Conservator



(Photography by Jane Rutherston)

Figure 1. The book in its chemise with the front cover off

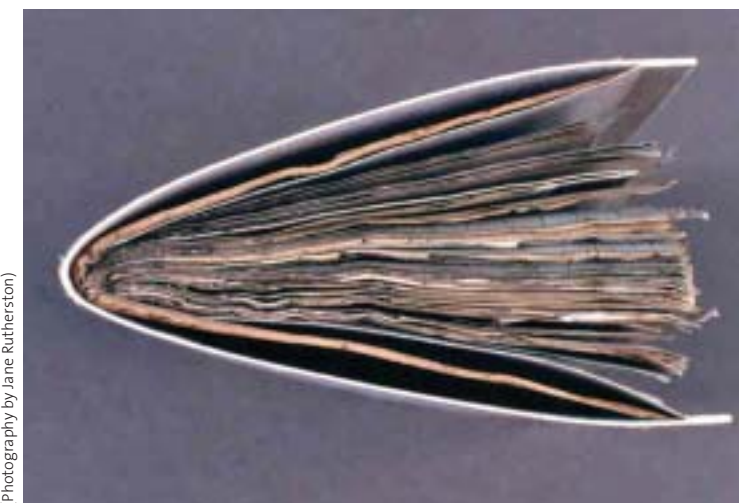
A pattern book of the Leeds firm of Potters, Messrs. Hartley, Greens & Co. was requested for loan to Sheffield Galleries & Museums Trust for their exhibition *The Biggest Draw*, which opened in September 2004. A V&A catalogue entry describes the book (Museum No. E.576-1941) as containing designs and sketches of domestic pottery on loose sheets pasted into a used account book, and made up of a single section of 108 blue laid paper pages stitched into a millboard cover. The front cover is inscribed in ink: *Original Drawing Book No. 1*. The sketches date from 1778 to 1792.

It is standard practice within the Victoria and Albert Museum to ensure that books going out on loan or exhibition are protected adequately by a box made from archive-quality box board (affectionately known as a 'phase box'). Unfortunately some of the designs in the pattern book had been adhered or folded in such a manner that they extend beyond the book block edges resulting in loss of protection from the cover boards. Placing such an object in a phase box would only result in crushing, with associated damage, of the extending designs and sketches.

The solution was to design a chemise (a loose cover for a book with pockets into which the boards are inserted)¹ in order to improve the protective function of the cover boards by extending it at the fore-edge.

With limited time it was only possible to investigate materials immediately available to the Book Conservation Studio. Properties such as conservation grade, colour, suitability and flexibility were considered. The final choices were Aerolinen (an unbleached linen supplied by Samuel Lamont & Sons Ltd., Ballymena, Northern Ireland), a hand-made paper, museum board and domett (a brushed cotton used by textile conservators at the V&A). A

mixture of wheat starch paste and EVACON-R™ (a water soluble, non plasticised, pH 7.5 ethylene-vinylacetate copolymer emulsion, supplied by Conservation by Design Ltd.) were used as the adhesive – unfortunately attempts to use only wheat starch paste proved unsuccessful.



(Photography by Jane Rutherston)

Figure 2. The book in its chemise viewed from one end, showing fit of cover boards

Conservation of a tortoiseshell book cover

Karen Vidler
Book Conservator

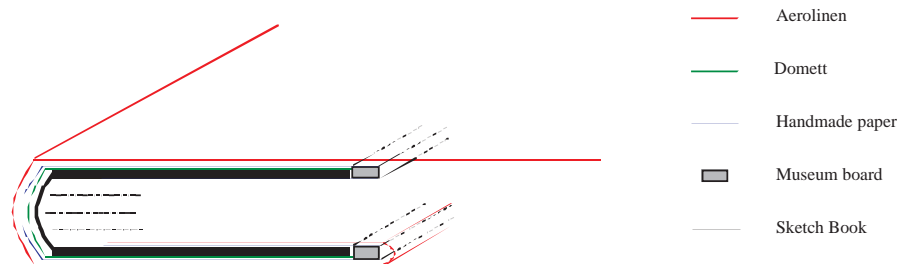


Figure 3. Diagram of the chemise (by Karen Vidler)

The inner flaps were made to extend almost to the back fold of the book, thus optimising the snugness of fit and minimising movements of the chemise. The strips of museum board were cut to compensate for the differing widths of the upper and lower cover boards in order to provide a flush fore-edge; the weight of board was chosen to obtain the correct depth for the cover boards to fit into. Domett provided a soft surface against the outer surface of the boards but was not used to line the inner flaps as it would have caused too much bulk.

The chemise fulfilled its two objectives of, firstly, providing extra width to the fore-edge in order to protect the extended book block edges from becoming crushed and secondly, it ensured flush board edges, thereby minimising any movement of the book and chemise within its phase box.

Acknowledgments

My special thanks to Karen Vidler for her superb diagram illustrating the various layers of the chemise.

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Figure 4. The chemise with the book inside



Figure 1. Front cover of *Les Pseaumes de David*, 1658 (L.1149.1969)

This 17th century tortoiseshell cover is part of a fascinating collection of bookbindings from the National Art Library, Victoria and Albert Museum. The detached cover is small in size measuring 14 x 9 x 1.5cm and encloses and protects a 1658 edition of *Les Pseaumes de David* by Clement Marot (L.1149.1969), a small printed volume containing sacred songs and poems. It is a highly decorated, pocket sized book used for worship (Figure 1).

The embossed cover design imitates a gilt, full-leather book in its design and furniture: a cover design of figurative centrepiece and floral borders and book furniture of four silver gilt, engraved corner pieces with two matching pin-style clasps and semi-circular hinges.

Tortoiseshell is a much admired decorative material derived from certain species of marine turtle, especially the Hawksbill. It is a thermoplastic material and withstands repeated softening by heating and will harden again when cooled. This made it suitable for decoration using heat embossed, block stamp designs such as the floral design on the cover of *Les Pseaumes de David*.

Little is known about the use of tortoiseshell as a book binding material. Shenton's survey of approximately 20 such bindings held in English collections highlighted the only evidence for dating most of these bindings: the printed text block,¹ which could have been inserted at a later date. The use of tortoiseshell as a book cover became popular in the 17th and 18th century for religious texts, small bibles, prayer books, and gift books.² There was a brief renewed interest in tortoiseshell as novelty bindings for wealthy Victorian book buyers.

The cover has a well-documented history of previous repair.³ Examination of the cover using transmitted light revealed several excellent repairs to the spine. The detached lower corner had been previously reattached using gold beaters skin and a Poly(vinyl acetate) adhesive (Mowilith50®). The two edges of the break no longer matched due to distortions of the cover and corner (Figure 2).

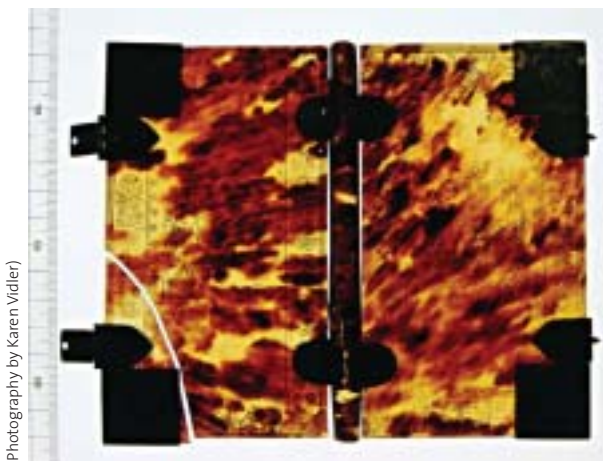


Figure 2. Cover on light box (exterior view)

Before proceeding with conservation, the repair line between the cover and detached corner was cleaned with acetone to remove the previous repair of gold beaters skin and Mowilith adhesive (Figure 3). To degrease the area, acetone was selected, as it does not damage the tortoiseshell or silver decoration when used sparingly.



(Photography by Karen Vidler)

Figure 3. Previous repair using goldbeaters skin

The current repair required the reattaching of the lower corner, which includes a silver clasp and silver corner piece. To leave the corner loose within the drop-back box housing would increase the chances of further damage, continued planar distortions and possible loss. An investigation of current methods for reversible repair and transparent in-filling of translucent materials was conducted with a view to reattaching the lower corner.⁴

Ken Watt, Head of Ceramics Conservation and Restoration at West Dean College, and his students have performed successful repairs to tortoiseshell objects, using Fynebond epoxy resin developed by conservation scientist Norman Tennent. Fynebond has high bond strength, some flexibility which allows it to move with the material under fluctuating environmental and physical conditions and gap filling properties. Due to the planar distortion, good contact along the line of breakage was required. Roger Rose, Head of Early Stringed Musical Instruments at West Dean College, recommended a two-stage casting process that could be adapted to make a mould to exactly fit the contours of the cover and lower corner, ensuring accurate contact and bonding along the repair line.

A bespoke wooden jig was constructed to ensure the cover was fully supported during the moulding and repair procedures. A polyester film barrier (Melinex) was placed between the tortoiseshell cover and jig. A polyester repair paste (Isopon P38) was used to make the two-stage mould (Figure 4). Clamps with polyethylene foam padding (Plastazote) were used to ensure the object remained in position during this procedure, which resulted in a single mould. Care had to be taken when allowing for the polyester paste to set. Due to the exothermic nature of the paste there was concern it might result in further distortions to the object. For this reason, it was only left in contact with the object for the recommended drying time of 3 minutes. The mould was then allowed to air dry for 7 days before proceeding to the next stage of the repair.



(Photography by Karen Vidler)

Figure 4. Making the two-stage mould

The Fynebond adhesive comprises a two-part resin – a crystalline epoxy group and liquid hardener. For this repair, 1g of crystals were dissolved in a double boiler before adding 0.32g of the hardener. The resulting adhesive had the viscosity of a commercial fast-bond adhesive. This allowed good flow over the repair surfaces while not oozing or flashing beyond the

repair line. Meanwhile, a thinner polyethylene barrier (Cling film) was placed between the cover/corner piece and the polyester paste to release the object when the repair was completed. The cover and corner fitted snugly into the contours of the mould and good contact on the repair line was achieved. Using a sable 000 brush the Fynebond was painted along both break lines and slotted in place. The clamps and Plastazote padding were returned to the same position as before by referring to earlier digital photographic records taken during the mould making process. The repair was allowed to cure for 48 hours, as determined by the curing time of a spot test of the adhesive placed on a new piece of tortoiseshell at the same time as the repair.

After 48 hours the in-filling was completed using a more viscous mixture of Fynebond - achieved by 12 hours refrigeration of the same mix used previously. The harder mixture allowed for accurate placement of the resin in the remaining open areas of the break-line without flashing beyond the repair. Flashing would be difficult to remove without damage to the fine embossed decoration on the surface surrounding the repair area. Four days later the repair area was given a final polish with a fine, 8000 grit polishing Micromesh cloth and abrasive polishing pastes (Tripoli and Rottenstone) in de-ionised water. This gave the repaired area a more sympathetic finish. An additional off-gassing time of 5 days was allowed before the text block could be returned to the cover to allow for off-gassing of volatile compounds.

Using the Fynebond epoxy resin to reattach the lower corner has proven successful (Figure 5). The flexible nature of the adhesive allows some movement of the tortoiseshell and the repair. The transparent repair does not detract from the attractive pattern for which tortoiseshell was so prized. This tortoiseshell cover offered a chance to repair one of the more unusual materials used for adorning a book. There are other interesting bindings in the National Art Library that incorporate the use of unusual covering materials.



(Photography by Karen Vidler)

Figure 5. Reattached lower cover

Acknowledgements

Ken Watts and Roger Rose, Programme Tutors, West Dean College for invaluable advise on the repair of tortoiseshell objects, Jane Rutherford, Head Book Conservator, V&A, for her encouragement.

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- Kuhn, H., Trone, A., Objects made from Tortoiseshell and Horn, in *Conservation and restoration of works of art and antiquities*, Oxford: Butterworth-Heinemann (1987), p.132
- Shenton, p.78, ibid
- Davison, S., Reversible fills for transparent and translucent materials, *Journal of American Institute for Conservation*, volume 37, Number 1 (1998), pp.35-47

Suppliers

Fynebond Epoxy Resin, Fyne Conservation Services, St. Catherine's, Argyll, PA25 8BA, Scotland
Tel/Fax: 44 (0) 141 357 4107

Micromesh, D.E.P Fabrications Ltd, Unit 33, Cam Centre, Wilbury Way, Hitchin, Hertfordshire SG4 0TW
Tel: 01462 441 414 / Fax: 01462 442 110

Polishing Pastes, Alec Tiranti Ltd, 27 Warren Street, London W1T 5NB
Tel: 020 7636 8565 / Fax: 020 7636 8565

The hand that rocks the cradle: Conservation Administration, present and future

Tim Carpenter, Information Systems Manager, Head of Conservation Administration

Laura Jiggins, Conservation Administrator

Michelle Murray, Conservation Administrator

The Administration Section of the Conservation Department consists of three members of staff. The support functions of the section are distributed evenly, but each member has a specialism: Tim develops and manages the information systems in the Department, Laura administers the Department's finance, maintenance and health and safety procedures and Michelle concentrates on the students, interns and the production of the Conservation Journal. The section currently supports 47 conservators and scientists, 19 students and anything up to 4 interns at any time.

In the six years that Tim Carpenter has been Head of Section, the basic remit of the section has been the same i.e. to support the activities of the Conservation Department, namely:

- practical conservation
- research and development
- education and training
- communication
- management

In this article we will illustrate:

- the core functions and responsibilities of the section
- the changes in roles and responsibilities in response to the ever-changing needs of the Conservation Department
- how the section is evolving in order to maintain an effective level of service for the Department and the Museum as a whole

There has been an increasing need within the Department to be able to plan and predict resource needs in both money and conservators' time. Admin maintain the conservation database CONCISE and have created the Estimator (See "Planning and Estimating" *V&A Conservation Journal* No. 48, 2004). These systems have proved invaluable in ensuring that the needs of the Museum are met and projects can be delivered on time and within budget. Admin also support the Department's *ad hoc* IT needs, by purchasing digital media and providing training and support in related applications. The Department's Internet and Intranet systems also support internal and external communications. Admin support the activities of the RCA/V&A Conservation Course and administer the Department's programme of internships. Duties include organising interviews and colour vision testing, organising security arrangements and work permits. However, the majority of the work is carried out once the student or intern has started, ensuring that lectures are organised, inductions are carried out and general administrative support is available.

Four categories were identified during a recent review of the activities of the section that cover the variety of the work carried out. They were:

Non time-based activities: these are tasks that cannot be anticipated, except for the fact that we know they might occur in the course of any working day. These include telephone enquiries from the public, e-mails, questions about finance or budgets and assistance with computer applications. It was calculated from timesheets that 30% of our time was spent on these tasks.

Time-based activities: these activities have to be carried out at a specific time and can be planned in advance. Tasks include organising lectures, attending meetings and finance audits and dealing with student or intern administration (33% of time).

Regular projects: these are tasks that take up a significant amount of time, they are open-ended projects in the sense that they will never be completed, but they require regular input to ensure relevance. Tasks include administering the Conservation Library, producing the Conservation Journal, updating the Intranet site and maintaining the Department's Health & Safety database (25% of time).

Development: these are projects that have a specific remit and time-scale. Tasks include developing new library and finance databases, a training needs analysis on CONCISE and continued personal development (12% of time).

It became apparent that the balance of time allocation needed to be addressed to ensure that development became a more prominent activity in the section. A lot of time spent on non time-based activities could be seen as non-profitable time and we explored ways of modifying working patterns so that this time is rationalised and spent on development. Simple measures were put in place, such as moving staff into the same office to improve internal communications, having a group telephone pick-up system and having set times in the week to deal with tasks that can be planned such as auditing, ordering and dealing with external enquiries. Certain days in the week or month were also set aside for the Conservation Library, finance reconciling and Intranet development.

On first impression, it would appear that the roles and responsibilities of the section have continued along the same lines for six years. However, a number of both internal and external factors have made it essential that tasks and emphasis in Admin change. Probably the most significant factor that has prompted this change has been the ever-increasing dependence of the Department on information technology. The average conservator spends around twice the time using PCs and digital media than they did six years ago. Around 40% of a conservator's time can be accounted for as spent on activities such as data entry and producing, storing and printing digital images. The benefits, with regards to the accessibility of data, quality of condition reports and ability to communicate both internally and externally, are very noticeable. However, servicing these needs with regards to IT support, maintenance and training has taken a lot of time away from Admin's traditional role of dealing with paper-based tasks. Most conservators type their own letters and so the need for touch typists has given way to requiring flexible IT literate staff. There have also been changes to the basic tools of the trade in Admin: Rolodex's have given way to electronic address databases, printed memos once placed on notice boards are now converted to pdf files before being e-mailed and minutes of meetings are now placed on the Intranet. New legislation such as the management of hazardous substances and the Freedom of Information Act has also put Admin in the forefront of ensuring that the Department is reactive and compliant.

In short, the need for specialists in the section has given way to a requirement for proactive, IT literate multi tasking and flexible staff. This has made the job more diverse and rewarding but also highlighted how important it is to plan and prioritise tasks.

Conservation Administration is unique in the Museum, as it is the only section that exists specifically to support the activities of a professional body of people within its department. It is important that members of the section can communicate effectively and understand the needs and requirements of the conservators. Core skills training for Admin staff can be addressed by means of tapping into the excellent array of training courses available in the Museum. Courses include training in the various applications used in the Museum and also personal skills training, such as time management, minute taking and managing change.

So, what does the future hold for Conservation Administration? Firstly, there has to be an acceptance that there will never be enough time or resources to be able to achieve everything that is desired. Secondly, that emphasis will continue to change as a response to internal and external requirements. Finally, staff turnover within the section is inevitable. These three factors not only mean that the section must continue to move and improve, but they also highlight the importance of developing the section around systems and procedures as well as the skills of current staff. Having robust systems and procedures also allows the section to expand and contract according to the tasks assigned to it.

Developing transparent systems of administration allows the rest of the Department an opportunity to see how we operate, contribute to improvements and above all empathise with the work of the section. The ideal situation would be that Admin are able to anticipate the needs of conservators and plan accordingly, the reality is building on a culture where the section can at least respond to needs as quickly and effectively as possible.

It is difficult to pin down exactly what motivates the Conservation Administration Section. But, although we have little or no direct contact with objects and we are not at the forefront of new research or awarded for our work as so many of our colleagues are, everything that the Department does and therefore achieves has an Admin contribution. Working in Admin gives us an invaluable insight into the workings of one of the best conservation departments in any museum in the world so there is little wonder that our predecessors have gone on to bigger and better things. As the saying goes, 'The hand that rocks the cradle...'

New Staff



Catherine Simes

Assistant Scientist

I graduated from the University of Bristol in 2002 with a first degree in Chemistry, that included a year in Europe studying at Université Joseph Fourier in Grenoble. During this time I learnt how to ski and appreciate French red wine!

I then went to Durham University to take an MA in the Conservation of Historic Objects. This involved a one year internship at the National Museums of Scotland in Edinburgh, where I was based in Artefact Conservation. During this time I worked on a range of objects carrying out analysis and interventive conservation, as well as undertaking environmental monitoring projects. My dissertation looked at the application of electrochemical techniques in accelerated aging tests. On finishing my course I took up post as Preventive Conservator at the National Museums of Scotland, before joining the V&A.

I am interested in the application of scientific techniques to collections, especially where this can improve methods of preservation. I am looking forward to working in the Science Section where amongst other things I will be involved in the OCEAN project.



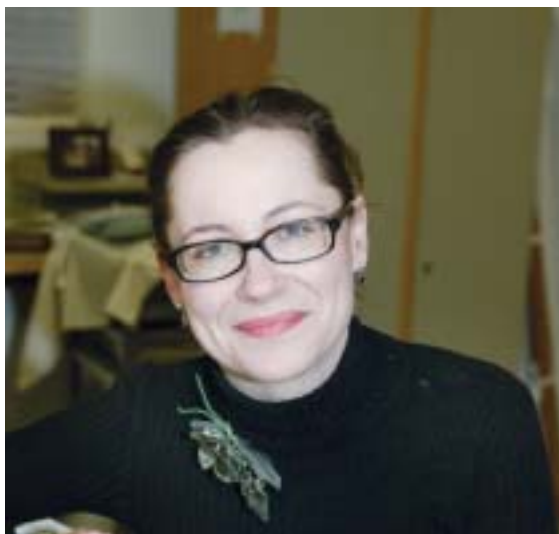
Miriam Duffield

Textile Conservator

I completed an MA in Textile Conservation at the Textile Conservation Centre, Winchester, in 2004. Prior to my conservation studies, I worked as a freelance theatrical costumier in Edinburgh. For over six years, I worked with many different companies in Edinburgh and Glasgow, producing and designing costume for theatre, dance, and occasionally, opera. The job allowed me great freedom to experiment with textiles, and was very enjoyable. However, I really wanted to specialise, and as my job brought me into contact with many deteriorated and neglected specimens of costume in theatrical costume stores, I realised that a good opportunity lay in textile conservation. It seemed that the scope of the subject would absorb and satisfy my interest in textiles for some considerable time, and I therefore applied to study for an MA.

During my final year at the Textile Conservation Centre, I undertook dissertation research that employed light microscopy, X-radiography and SEM to examine fibres and fabric from deteriorated garments that were thought to be ritually damaged. This subject allowed me to develop my analytical skills and investigate a very interesting area of social history. I am now engaged in the conservation of textiles for the Jameel Gallery of Islamic Art, opening in the summer of 2006, and am very pleased to join the Conservation Department at the V&A.

New Intern



Natalia Zagorska-Thomas

Textile Conservator

I studied for my first degree at Central St. Martins School of Art and Design, graduating with a BA(Hons) Fine Art degree in 1995. I spent the next seven years working as an artist and supplementing my income with various part-time, arts related, administrative jobs. I also made theatre costumes for an international theatre company based in Krakow and London, as well as jewellery and accessories for the catwalk.

Through my artwork I became aware of how much of our material culture is made from textiles and I was interested in studying them in a wider sense. This eventually led me to study at the Textile Conservation Centre in Winchester, completing an MA Textile Conservation course in 2004. My dissertation related to an upholstered 18th century saddle. I was interested in the relationship between conservation and historical research and in particular the level and nature of information which a conservator is able to obtain in the course of treating an unattributed, undated object. My research included non-destructive methods to determine the structure of a 3D composite object using X-ray and CT Scanning techniques.

Since then I have worked on a short contract basis at the Museum of London, and the Royal Academy, conserving and mounting costumes and flat textiles for exhibition. I am delighted to be working at the V&A for the next 12 months conserving Islamic textiles to be displayed in the Jameel Gallery of Islamic Art.



Sanam Aly Khan

Paper Conservation Intern

I started my career in the paper conservation field in 2000 as trainee cum conservator in the conservation department of the Rampur Rasa Library in north western India, where I am currently employed.

During my internship at the V&A I would like to learn more about advanced paper conservation techniques, such as paint consolidation, float washing, inlaying, and float mounting. My aim is to learn conservation and preservation techniques relevant to the Raza Library's collection. I am hoping to enhance my knowledge of practical conservation treatments and will collect related literature regarding paper conservation treatments and the most up to date equipment. My experience at the V&A will be augmented by visits to other conservators in London and south east England.

During this internship I will do my best to understand practical techniques through first hand experience of treating objects. I would also like to further my understanding of paper technology. I would like to learn about different conservation treatments, and how to diagnose problems related to paper based objects.

I feel that every item I have treated or conserved so far has been a stepping-stone towards the goal I have set for myself but to get to a summit, one needs to climb step by step.

I am thankful to the Nehru Trust for awarding me a visiting fellowship in the UK.

Appendix 1:

Victoria & Albert Museum Conservation Department Ethics Checklist

2nd Edition December 2004

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| <p>A. Why is action needed?</p> <p>B. Have I consulted records?</p> <p>C. Have I consulted stakeholders, peers, other specialists?</p> <p>D. Have I considered and weighted the factors contributing to the identity and significance of the object(s)?</p> <p>E. What are my options for action which will produce an appropriate result with minimum intervention?</p> <p>F. What effect will my action(s) have on the evidence of the factors contributing to the identity and significance of the object(s)?</p> <p>G. Do I have sufficient information and skill to assess and implement action(s)?</p> <p>H. What are the benefits/risks of each course of action and how will I continue to assess these throughout the course of action?</p> | <p>I. Can the use or environment be adapted instead of intervening on the object(s)?</p> <p>J. Is my intended action(s) the best use of resources and is it sustainable?</p> <p>K. Do established courses of action need to be adapted or new ones developed?</p> <p>L. How will my action(s) affect subsequent action(s)?</p> <p>M. Have I taken into account the future use and location of the object(s), and have I made recommendations accordingly?</p> <p>N. Will my actions be fully documented to a known and accepted standard?</p> <p>O. Will the information resulting from my actions be accessible?</p> <p>P. How will I assess the success of the action(s), and how will I get feedback from stakeholders and peers?</p> |
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This is the first page of the Ethics Checklist. For the rest of the document please go to http://www.vam.ac.uk/res_cons/conservation/advice/policies/index.html