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Editorial

Sandra Smith

V&A Conservation Journal to become an annual publication

Change from tradition is always difficult, but never more so than when longstanding practice has achieved success and continues to deliver it. This is the case of the Conservation Journal; established to highlight the activities and achievements of V&A Conservation in a timely way, it is a source of considerable pride and inspiration to the Department and the Museum and much admired by other institutions.

But it is the time for change. The creation of the Conservation website has provided a new vehicle through which we can disseminate our knowledge and expertise and make it available to the widest possible audience. Over the past four years we have made a concerted and concentrated effort to ensure a good web presence. The site continues to develop; in 2007 advice on care of materials will be included within the collections areas of the site and we will have an area referring to 'frequently asked questions'. We therefore have two forums to showcase the work of the Department, and it is opportune to consider how each can most effectively be used.

At a time when the Museum requires our professional expertise to deliver visitor-focussed activities, it is essential that we do not lose sight of the need to share and debate conservation practice with the conservation profession. Research and presentation of the results through conference papers and posters, refereed professional journals and heritage publications requires time and resources. Continuous professional development is essential for a forward-looking department and a dynamic staff. Time taken to deliver publications aimed at a more general audience, such as the Conservation Journal and the Website, restricts the contribution that we make to the wider profession. There is a need to redress this balance so that we continue to contribute to the wider professional knowledge pool.

After much soul searching and considerable discussion, the decision has been made to reduce the Conservation Journal to one edition per year. This single annual publication will continue to highlight the skills, expertise, versatility and innovation of the Department. Through brief articles each Section/ Studio will have the opportunity to showcase some aspect of their work. It is anticipated that there will be a mixture of retrospective, current and ongoing practical projects together with articles on other key departmental activities, such as education and strategic development. Where appropriate these articles will link to more information-related subjects on the website, providing a more coherent and integrated approach to our knowledge and expertise. The website will become the forum for timely information, such as staff, intern and student details, which was formerly presented in the Conservation Journal. The printed version of the annual Conservation Journal will be in full colour and will continue to be mailed to museums, galleries and libraries throughout the world. The Journal will also be available electronically through our website.

All that is left for me to say, is to thank all the contributors to this last edition of the tri-yearly Journal. I look forward to writing the editorial for the annual *V&A Conservation Journal* which will be published in spring 2008.

Stein Mellon Textile Project at the V&A

Helen Persson
Curator (Collections Management), Asian Department

The major phase of the Stein Mellon Textile Project took place between October 2003 and August 2004 when the V&A participated in a co-operative project to create an international resource for material recovered from sites along the ancient trade routes in Central Asia. The project attempts to redress the lack of access and knowledge that international scholars have previously experienced in relation to these collections.

The Far Eastern Section acts as custodian for nearly 600 textile fragments; all retrieved from the chain of abandoned oasis settlements along the Silk Road. The entire area now falls within the boundaries of the People's Republic of China in the Xinjiang Uygur Autonomous Region. The fragments were brought back from three long expeditions by the Hungarian-born archaeologist Sir Marc Aurel Stein (1862-1943) between 1900 and 1916. These significant textiles, dating from around 300 BC to AD 1200, came to the Museum in the 1920s and 1930s and are on loan from the Government of India. At the time, the HM Indian Government funded Stein's explorations, with the British Museum for his second expedition, which has textiles from his Central Asian journeys as does the Museum of Central Asian Antiquities in New Delhi.

With funding from The Andrew W Mellon Foundation, the fragments have been photographed and catalogued and will be made accessible on the Foundation's planned Silk Road database as well as on the British Library's International Dunhuang Project website and the V&A's own Collections Online database. This major phase of the project was completed ahead of schedule and well within budget. In May 2005, The Andrew W Mellon Foundation approved a proposal to extend the project and use the remainder of the grant to improve storage of the Stein textile collection, pursue scientific analysis on some of the fragments and rebind Stein's publication *Serindia* (5 vols., Oxford: Clarendon Press, 1921). It has been a cross-departmental project, in particular involving the Asian Department, Photographic Studio, Records Section and Conservation (Textiles, Books, Preservation and Science), but also collaboration with colleagues from external institutions.

The Stein textile collection comprises a wide variety of different techniques and materials, and embraces examples of domestic textiles to sacral silks. It also bears witness to the cultural diversity in the Silk Road area, the exchange of ideas and the vibrant trade in all directions. The collection could also be significant in the discussions of origin and spread of tapestry and carpet weaving. Most research interest and attention have been given to the finds from Cave 17 of the Buddhist cave complex of the Mogao Grottoes, near the oasis town of Dunhuang, in the Gansu corridor. The cave complex is also known as Qianfodong, 'the Caves of the Thousand Buddhas'. Famous as the site of the world's largest and earliest paper archive, and as the only surviving Buddhist library of its time. It was discovered in 1900 in a small side-cave whose door had been plastered over and concealed by paintings, probably in the late eleventh century.

Among around 40,000 documents, in Chinese, Tibetan and other languages, and paintings, there were also a great number of long, narrow silk strips and small squares. These silk fragments show an incredible breadth of colours, from canary yellow through the clearest red to deepest indigo (Figure 1). The Dunhuang finds demonstrate a range of beautiful yet subtle damasks, vibrant polychrome pattern woven silks, and embroidered gauzes, clamp-resist dyed and painted silks. A number of complete and fragmented banners, canopies and altar valances give evidence of the importance of this shrine site as one of China's great Buddhist pilgrimage complexes.

The wide-spread use and dominance of Chinese silks in these Central Asian trading oases is further illustrated by several examples of *jin* silks from the ancient burials in Astana, dated between the third to the end of the eighth century AD. The fragments show the richness of face-covers and other burial clothing used by the ruling classes of a kingdom centred on the cities of Karakhoja (Gaochang) and Yarkhoto. However, textile finds from Astana also indicate a new weaving technique and highlight the trade of silk in the other direction and transferring of motifs, with Sassanian and Sogdian silk material. A much more assorted collection of

Photography by V&A Photographic Studio

Figure 1. A rainbow of coloured silks from Dunhuang (LOAN:STEIN.658, Ch.00488; LOAN:STEIN.639, Ch.00236; LOAN:STEIN.459, Ch.00256; LOAN:STEIN.455, Ch.00325; LOAN:STEIN.463, Ch.00436; LOAN:STEIN.671, Ch.00495b; LOAN:STEIN.465, Ch.00314).

Photography by V&A Photographic Studio

Figure 2. A carpet fragment from the burial grounds of Loulan (LOAN:STEIN.647, L.C.ii.09.a).

materials comes from Niya. Among the silks there are fragments of leather and fur, grass ropes and matting, and lots of wool. The wool comes from sheep, Bactrian camels, yaks and goats.

The oldest textile fragments in the collection were discovered at Loulan, a complex comprising many sites: the ruins of dwellings, adjacent refuse heaps and nearby grave pits. The silks show typical small-scale classic Han (206 BC-AD 220) patterning of cloud scrolls and mythical beasts interspersed with dedicatory inscriptions. But the wools from this site are very interesting, in particular the knotted pieces or carpet fragments (Figure 2). The designs show Hellenistic influences rather than Chinese, but with a Central Asian colour palette. These fragments have been radiocarbon dated to 800 BC-200 BC which conflict with the accepted date range for this site, and therefore will need further tests and research for confirmation. The Stein collection has also some fine examples of shoes and sandals used in the region, predominantly from Mazartagh, and what Stein named as 'The Limes Watchtowers', based on their resemblance to the Roman limes in Europe. These were a line of fortified encampments stretching both

north and west of Dunhuang and designed to ensure the safe transit of goods across the area, dating from 200 BC to AD 400. The finds from these encampments are more utilitarian, suitable for the hard life of a soldier far away from home.

The collection has been subjected to some scientific analyses. Beside the already mentioned C14 tests, around 30 samples have been sent for fibre and dye identification. We hope that the results can indicate likely production areas. Textiles have also been analysed by Dr Lucia Burgio, Senior Object Analysis Scientist, with Raman microscopy and X-ray fluorescence, to identify pigments used and metallic components of paint. Scientific analysis revealed that two of the fragments were coloured with orpiment – a poisonous, pale yellow pigment containing arsenic, proving the importance of in-house analysis of the V&A collection.

The entire Dunhuang textile collection has been examined in detail by Professor Zhao Feng from The China National Silk Museum and will feature in a collaborative publication between The British Museum, The British Library, The Victoria and Albert Museum and The China National Silk Museum. This is due for publication in April 2007.

Thanks to the continued support of The Andrew W Mellon Foundation, the Stein textile collection has been catalogued, photographed and is now housed in improved storage conditions. The project has already excited a degree of external research interest and has attracted several visitors. The expected increase of interest in the collection due to the publicity generated by the Mellon project and the International Dunhuang Project has also necessitated conservation work on Stein's publication *Serindia*. This will enable access and enjoyment to Stein's own descriptions, his archaeological surveys of the areas and catalogues. Furthermore, it has been possible to pursue important scientific analysis which is usually costly and rarely executed within the core Museum budget. The results from the scientific analyses will hopefully provide vital clues to the origin and context of the collection, contributing to current discussions and pushing back the boundaries of our understanding of textiles from Silk Road sites.

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Storage of the Stein Loan Collection

Thórdís Baldursdóttir
Textile Conservator

A nine month project funded by The Andrew W Mellon Foundation was set up to improve the storage of the 600 objects in the V&A Stein textile collection. The objects had been stored in six drawers (1690 x 790 x 105mm) and on part of two shelves in the textile store, Far Eastern Collection Offices. A limited amount of extra space was allocated for the improvements. Some work had already been carried out as part of the project, and a large number of small flat textiles had been put in ready-made acid free card folders. Most of the other small objects were in transparent bags labelled with adhesive stickers. Various mounting techniques and conservation treatments have been used since the collection arrived at the V&A. Textiles had been sandwiched between two sheets of glass, Perspex® or glass and wood. Fragments had been adhered to card or net and stitched onto backing fabrics adhered to boards. A priority for improvement was a drawer storing 46 large flat textiles in 21 layers, making them very difficult to access. At this point almost all of the objects had already been removed from original Stein packaging (mostly envelopes and fabric bags) but a few very fragmented textiles were still kept in the original paper parcel wrappings.

The key objectives of the storage project were to:

- preserve the archaeological textile collection, where possible as found, although some of the objects had been treated at the Museum prior to this project
- provide safe, protective storage and remove and replace any unsuitable and potentially harmful storage and mounting materials
- improve access for study and safe handling within the Museum
- clearly label all objects and other material linked to the collection, to include the museum loan number, the original Stein site number and a photograph
- list the exact location of each textile.

The very limited space available for this large number of objects meant that it was necessary to consider the entire collection as a whole and select methods to make the best use of the space. This required careful examination and measurement of each object. This showed that it would be possible to store 271 fairly small three-dimensional textiles in Plastazote® foam (ethylene copolymer) lined trays (20mm or 40mm deep). The outline of each textile was taken on a Melinex® (transparent polyester film) sheet and then transferred on to paper. Where possible, objects from the same archaeological site were kept together, but the main objective was the optimal use of the space available. The diagram of each tray was scanned and Plastazote cut on the mount-cutting and box-making machine (Zund Plotting Systems). This was attached to Correx® boards using double sided tape (Tesa-4965). Heavy-weight Melinex sheets were cut to shape and placed under each object to act as a barrier between the textiles and the textured Correx and to make handling easier. Boxes, to keep the trays in, were made to measure from archival folding box board. Photographs of each layer and object numbers are attached to the box lids to identify the textiles in each drawer without the need for handling (Figure 1).

Photography by Thórdís Baldursdóttir

Figure 1. A storage drawer housing six boxes, each containing four Plastazote® trays

Larger three-dimensional objects, including many shoes, were placed on individual padded boards. The boards were made using a Correx base covered with Domette (a thick brushed cotton) and scoured Calico (plain woven cotton fabric). Where necessary, soft 3-D mounts were made to fit inside the objects for internal support.

It was necessary to make the best use of the depth of the drawers and find a solution that would make it possible to access and safely store large flat textiles. Most were placed in fabric-covered padded folders (Figure 2). Both sides of the folder were padded with thick Domette to support and hold the shape of the textile. For three-dimensional textiles, several layers of Domette were used to make a relief. All the folders were labelled with numbers and an image. Very large flat textiles were put on rigid, lightweight, fabric-covered boards, padded on both sides. A large fragmented silk embroidery, needing special attention because of its fragile condition and size, was placed on a lightly padded, rigid board, covered with a nylon net overlay stitched to one side of the board and attached with Velcro® (hook and loop fastening) to the other three sides (Figure 3). The fabric covered folders make it possible to store up to six layers in a drawer or on a shelf, allowing for easy access and the safe handling of both sides of the object.

Photography by Thórdís Baldursdóttir

Figure 2. Flat textiles in padded fabric-covered folders, labelled with photographs

Photography by Thórdís Baldursdóttir

Figure 3. A fragmented silk embroidery (LOAN:STEIN.343, Ch.00294) on a padded board with a net overlay

A decision was made to remove and replace most of the previous mounts, which were made of inappropriate and potentially harmful materials. The old glass was heavy and difficult to handle and removing it was also in line with current health and safety practice. Some of the Perspex was heavily scratched and many of the mounts had already been partly opened to gain access to the objects for photographing. The textiles were carefully removed from their mounts and put in Melinex sleeves and/or fabric-covered or card folders. This allowed the backs to be studied, revealing interesting details.

Special consideration was given to objects treated by Joan Joshua who worked with Stein and carried out documented treatments on the collection. It was therefore felt to be important to preserve examples of her work. The mounting technique Joan Joshua used was to adhere textiles to pure linen board using flour and water paste on thin strips of Japanese paper.[1] A few of these textiles were removed from the boards based on their condition and, in some cases, to gain access to the reverse. Textiles on boards were put into new folders and labelled with both object numbers and a photograph. Seven very fragmented textiles, still in original Stein paper parcels, were kept in their wrapping but given further support in new boxes or folders. Other original packing materials such as envelopes, fabric bags and paper wrappings are housed in folders together with corresponding objects. Alternatively, they were kept in a box, labelled and placed in Melinex sleeves for safe handling. A list was completed, stating the exact location of every object in the store.

The storage of and access to the collection has been improved considerably. The clear unified labelling enables objects to be easily located. Unsuitable storage and mounting materials have been replaced. The preventive nature of the new mounts and storage methods supports the shape and condition of the textiles and encourages careful handling without the need to touch the fragile objects. These improvements will hopefully result in further study and research into this important and diverse collection of Asian textiles.

Acknowledgements
I would like to thank Chris Gingell, Preservation Conservator, for his help and advice and Yueh-Siang Chang, Assistant Curator, Asian Department, for her assistance.

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Discoveries on a pair of Cassoni

Thomas Geissler
Furniture Conservation Intern

Photography by V&A Photographic Studio

Figure 1. Cassone 7708-1861

The Victoria and Albert Museum has a large collection of Medieval and Renaissance furniture. In preparation for the opening of the exhibition *At Home in Renaissance Italy* in October 2006, a pair of cassoni were returned to the Museum from a long term loan to the National Gallery, London (museum nos 7708-1861 (Figure 1) and 7709-1861). During their conservation some surprising discoveries were made.

The term *cassone* (large box) is used for decorated Italian chests of the fifteenth and sixteenth centuries. Their decoration changed from painted design in the fifteenth and early sixteenth centuries to carving (sometimes partially gilt) in the second half of the sixteenth century. Many cassoni, made in pairs with a central coat of arms, served as marriage chests.

No information has been found about either cassoni before their acquisition in 1861. Josephine von Henneberg ascribed both cassoni to the Sienese artist Bartolomeo Neroni known as Il Riccio (1500-1571). She suggested that they were made to celebrate the new title of Cosimo I de' Medici (1518-1574) as Duke of Florence and Siena.[1] On this basis they were dated between 1561, a year after Cosimo's official *entrata* into Siena, and 1569, when he became the Grand Duke of Tuscany. Her proposals were based on the carved panels and figures on both cassoni, as well as a drawing which may be a preparatory design for them.

The walnut-constructed and partly gilt cassoni have a central panel on the front, depicting a shield held by two cherubs. This panel is flanked by high relief panels on either side, carved with elaborate scenes of ancient Roman history. One cassone (7709-1861) shows Romulus studying the sky, ordering the construction of a new city and the founding of Rome. The second cassone (7708-1861) shows Romulus commanding the Sabine women to be carried off (Figure 2). The figures on the front corners represent prisoners and the end panels display mythical animals.

Photography by Thomas Geissler

Figure 2. Romulus commands the Sabine women to be carried off (7708-1861)

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The drawing, discovered by von Henneberg, depicts part of a cassone with similarities to both V&A cassoni.[1] The similarities of the decoration are remarkable: the curled scrolls in the heavy convex gadroon moulding, the division into three panels with the shield in the central panel and the rusticated quoins as well as the corner figures. Links to Cosimo I are found in the carved reliefs. The panels showing Romulus as the founder of Rome could refer to Cosimo I, founder of a state almost the size of ancient Etruria. Romulus is wearing a suit of armour similar to that worn by Cosimo I in a portrait by Giorgio Vasari (Palazzo Vecchio, Florence). One of the mythical animals on the end panels is identified as Capricorn, a zodiac sign adopted by Cosimo I as his impresa after extending his territory over twelve towns, including Siena in 1560. We find later representations show Capricorn with much enlarged wings, similar to that carved on the right-hand panel of cassone 7708-1861. The four prisoners, identified as ancient Dacian captives, had often been represented in the sixteenth century as symbols of the 'new barbarians' and could refer 'to actions taken by Cosimo'.[1]

Examination accompanying the conservation of the cassoni yielded some unexpected revelations:

- both cassoni consist of a lap-joined carcase with affixed carved elements attached by nails.[2] This construction seems unusual in comparison with other cassoni in the V&A collection
- the framing around the high relief panels show signs of alterations
- the relief panels and their surrounding friezes are attached to the carcase. The joints are concealed on the top edge with a clumsily designed strip of wood
- astragal and leaf mouldings cover the joints between the relief panels and the frieze on the front and the lateral sides
- the leaf mouldings underneath the panels do not appear to have been tailor-made for this piece. The carved middle element is not centred and small pieces of moulding are added on either end to increase its length
- the frieze around the relief panels shows fractured wood and uneven steps, caused by a plane. This is in contrast to the otherwise well executed work on the cassoni
- the bottom of the carved ornaments along the lid looks cut away, which suggests a later planing of its inner side
- the carcase and the inner side of the lid show the same slightly oval working marks of a plane and it is likely that they were treated at the same time
- there are no signs of a former apron on cassone 7709-1861, while an apron on 7708-1861 is nailed on the bottom supported by rectangular blocks from behind
- the cassoni are constructed in solid walnut (*Juglans spp.*) but, unusually, the longitudinal boards on the bottom are made of chestnut (*Castanea sativa*). Parts of the frieze, covered from the gadroon moulding are made of oak (*Quercus spp.*) as well as chestnut but the scroll on the left-hand side of cassone 7709-1861 is made of oak (Figure 3).

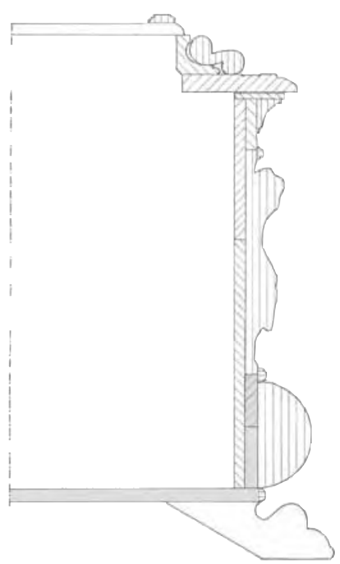

Figure 3. Sectional view of 7709-1861. Elements constructed in oak and chestnut are displayed in grey
Drawing by Thomas Geissler

All external surfaces have been obscured with a dark coating, which contains varied layers of stain, pigmented and dyed varnishes, wax layers and dirt. Both visual and microscopic examination of this surface coating showed oil gilding on gesso, some areas having a red mordant. The few traces of earlier gilding on the lid and the gadroon moulding, possibly oil gilding, were insufficient to indicate more about the original condition. Underneath the present gilding on the relief panels there was no evidence of earlier gilding or its removal. The dark toning had been deliberately added on top of the gilding, which remains bright and intact underneath. Most of the obscuring dark coating is likely to have been applied at one time, but some elements are varnished light brown whilst others appear dark brown or even black.

The conservation treatment included reattaching loose decorative elements and surface cleaning. Detached decorative elements were re-glued using Canadian fishglue. After gently vacuuming the surface to remove accumulated dust, it was cleaned with water and non-ionic detergent. After discussions with the curators it was decided not to lighten the dark appearance of the gilding or the walnut, as this would produce a patchy surface and reveal previous ill matched restorations.

In conclusion, I would like to propose that both cassoni have been restored and altered, possibly in the first half of the nineteenth century: two new carcases were constructed to carry the elements of a pair of sixteenth century cassoni (Figure 3). Possibly one long front board was cut into the three relief panels and was then applied as three pieces on the carcase, with a newly constructed frieze around them. The resulting joints on the top were concealed with a strip of wood, while the joints on the front and sides between the panels and the frieze were covered with mouldings. The original figures are attached to the front corners, while on the back corners scrolls are applied (probably as a substitute for lost figures). One scroll was constructed in oak during this treatment in the nineteenth century, while three other scrolls in walnut could have originated from another piece of furniture. At this time, there was probably only one apron surviving, which is now carried by cassone 7708-1861. The original detached lid was planed from the inner side, in the same manner as the newly constructed carcase. The gilded and dark-finished surface is part of this alteration in order to conceal the different ages of the materials and to tone down new gilding. It was also a common treatment in the nineteenth century to finish surfaces with dark coatings in order to produce a patinated appearance. Whether or not this pair of cassoni, as originally built, was designed by Bartolomeo Neroni for Cosimo I de' Medici as Duke of Florence and Siena remains unknown.

Acknowledgement
I am grateful to my colleagues in the Furniture Conservation Studio and the Furniture, Textiles and Fashion Department for their help and advice in writing this article.

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The Treatment of Two Coptic Tapestry Fragments

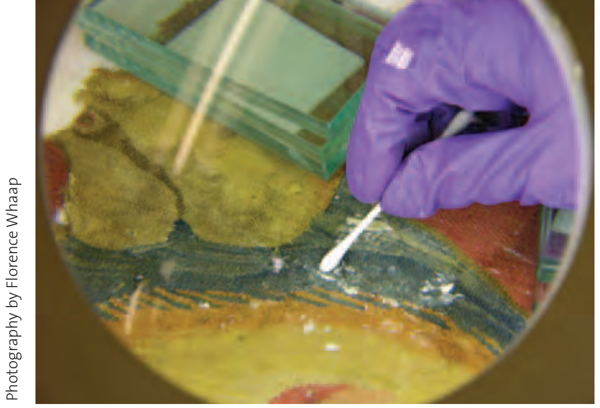
Florence Whaap
Textile Conservation Intern


Photography by V&A Photographic Studio
Figure 1. Fragment 267-1889 after treatment

Recently the Victoria and Albert Museum lent nine Coptic textiles to the Yorkshire Museum, York for the exhibition *Constantine The Great*. The exhibition celebrated the life of the Christian convert and Roman Emperor who ended centuries of persecution of Christians by establishing religious tolerance within the Empire. The Coptic Christian Church was founded in Egypt in AD 451 and is closely associated with Constantine's reign. Among the loaned textiles were two tapestry fragments (Museum no 267-1889, 161.5 x 49.5cm Figure 1), (268-1889, 37 x 37cm) from Akhmim, Egypt. The two fragments, which on acquisition had been given one museum number, may be part of the same hanging. They are woven in linen and wool and are of similar design and colour palette. The designs consist of bands of vegetation and geometric patterns, birds are also represented and a water lily can be identified on the larger fragment.

The fragments had raw, fraying edges and many holes causing general weakness. In some areas the borders were detaching. The fibres were desiccated and brittle, there was discolouration from oxidation and ingrained soiling/dust, the colours however, had remained strong. There was also adhesive residue visible on the front surfaces. This had come through from the reverse of the pieces which had both apparently been adhered to cardboard with a white painted surface. Though most of the cardboard had been removed, there was a great deal of adhesive residue on the reverse and patches of white paint and cardboard remained (Figure 2). The white paint was analysed by Lucia Burgio, Senior Object Analysis Scientist, using EDXRF with a Rohntec ArtTAX spectrometer. The result showed titanium to be the predominant element indicating that the white paint was probably made from titanium oxide, a pigment commercially available from the 1920s. This suggests that the fragments had been adhered to the painted cardboard after their acquisition. A positive iodine test and negative Biuret test confirmed the adhesive as a starch paste.


Photography by Florence Whaap
Figure 2. Deposit of paint and cardboard adhered to the reverse with starch paste


Photography by Florence Whaap
Figure 3. Removing swelled starch deposits with a damp swab

It was proposed that the fragments be wet-cleaned to eliminate potential degradation products; including soiling and the cardboard residues, to relax the fibres, increase flexibility, realign the weave and to improve the colours. The dyes were tested in a solution of the non-ionic detergent Dehypon LS45®. All the colours were found to be stable in both water and detergent solution. The paint and cardboard residues were removed prior to wet-cleaning. As the residues were embedded in the starch paste it was not possible to remove them with damp cotton wool swabs. A sample of starch paste was placed in a droplet of water to test how long it took to swell, as this would make it easier to release the paint, but it took more than a day. This technique was therefore discounted, the risk of keeping a desiccated archaeological textile wet for this length of time was far too great.

The possibility of using an enzyme was investigated. Following research and discussion with Professor Hal Erickson, University of Texas, and colleagues at the V&A it was decided to test the Albertina Kompresse®. This ready-to-use poultice system contains α-amylase enzymes from the Bacillus species in a methylcellulose gel[1]. The system is not buffered, relying instead on the natural acidity of the textile to provide the conditions for the enzyme to work. The gel is supplied in a dry form, embedded in a polypropylene fleece material. This is cut to size and the enzymes reactivated with water by the user. As the textile was going to be wet-cleaned a slightly damper poultice than usual was used in order to penetrate the thick layer of starch. Tests proved successful, the total time the damp poultice needed to be in place to swell the starch was between 20-30 minutes. As the poultice swelled the starch, both it and the paint could easily be removed using a damp cotton wool swab (Figure 3). The process, which was carried out under magnification, took a total of 40 hours to treat the reverse of both fragments. The starch on the surface of the textile was successfully removed releasing the majority of the paint residues, but starch embedded in the fibres remained. An enzyme bath could have been employed to remove these residues. However, the quantity of enzyme required was very difficult to calculate and the additive (Ca+) was considered undesirable.

The fragments were wet-cleaned in a dilute solution of Dehypon LS45; including rinsing, the total duration of the bath was 45 minutes. It was hoped that the low levels of enzyme residue, left in the fragments from the poulticing treatment, would be released into the detergent bath, and that they in turn would remove the remaining starch. The wet-cleaning did succeed in extracting much of the remaining starch. It also reduced the soiling, relaxed the fibres, removed the creasing and brightened the colours.

Enzyme Seminar Day

The above treatment raised the whole issue of the use of enzymes in conservation treatments. Professor Hal Erickson, who was visiting the UK in March 2006, very kindly offered to come to the V&A and give a one day, intensive seminar on the subject. The following is a brief overview of the day.

Enzymes are proteins (polypeptides) which catalyse reactions. Their monomers are amino acids joined by peptide linkages (amide). The combination of amino acids dictates the folding or shape of the enzymes. This pre-ordained functional shape is what gives them their high degree of specificity and efficiency, often referred to as the 'lock and key' model.

The enzymes most commonly employed in conservation are the hydrolases which include proteases, lipases or glucidases (α-amylase). The source can be animal (pancreatic extracts), vegetable (cereal), microbial, bacterial or fungal. The latter two are the least expensive but, for conservation purposes, those from the purer, microbial source are preferable.

Enzymes cannot function without being able to move and, therefore, water or high humidity is essential for their activation. Enzymes also require very specific conditions to operate. These include ion balance, pH, temperature and concentration. Purified water, as used in textile conservation, can cause the enzymes to 'unfold', deactivating them. To counter this, ions (Ca^{2+} or Mg^{2+}) need to be added, unless they are already extant in the object.

Enzymes are more soluble and therefore efficient at low concentrations. As it is usually almost impossible to quantify the amount of material to be removed, it is advisable to begin a treatment with a low enzyme concentration which can be increased if necessary.

Conservators are often concerned about enzyme residues remaining on objects. The conservation literature suggests that heat, 40°C-50°C, will denature enzymes. This is a misconception in most cases, as industrially manufactured enzymes are produced with robust disulfide bonds to protect them during storage and transportation. Other options such as an extreme adjustment of pH, the use of solvents and drying techniques are sometimes considered but these may well be harmful to the object. A more realistic approach is to inhibit the enzyme used by an incremental alteration to the pH or by introducing an enzyme-specific protein inhibitor. It should also be noted that water-soluble enzymes will generally readily flush away during washing.

At present there are no recorded negative effects from dry enzyme residues remaining on artefacts, other than the difficulty of reapplying starch paste in a treated area. In time enzymes will break down and oxidize, and there is a possibility this could cause slight browning. The use of enzymes is not risk free, the old adage 'like dissolves like' applies. Some enzymes act on peptide linkages. Ester linkages, which are very similar, may also be affected which may not be desirable. A small number of dyes may also undergo change, for example the glycoside ring of cochineal may be affected by α-amylase. The enzyme that carries the least risk, is most available and comes 'ready-to-use' is saliva. It is available in a purified, manufactured version but this tends to be expensive.

Enzymes are very specific and require exacting parameters for optimum results. Professor Erickson's final advice was to consider an enzyme treatment as a last resort. He also mentioned there has been some success amongst his students at swelling glues using propylene glycol for celluloses and urea for proteins, or a combination of both.

Acknowledgements
I am grateful to Professor Hal Erickson for his precious web assistance in the choice of treatment and for giving the seminar at the V&A, which was extremely useful and very much appreciated. I would also thank Lynda Hillyer, who entrusted me with the conservation of these fragments, and Elizabeth-Anne Haldane who shared her experience using the Albertina Kompresse®. Thanks are also due to Dr Lucia Burgio, to the textile conservation team and to Frances Hartog for assistance with this article.

Materials
Dehypon LS45®
http://conservationresources.com
Albertina Kompresse®
http://klug-conservation.com

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V&A Conservation Journal No.55

Surreal semi-synthetics

Elizabeth-Anne Haldane
Senior Textile Conservator

The V&A's major spring exhibition *Surreal Things: Surrealism and design* is the first to explore the influence of Surrealism on all aspects of design including theatre, interiors, fashion, film, architecture and advertising. *Surreal Things* features nearly 300 objects – furniture, paintings, sculpture, architecture, jewellery, ceramics, photography, graphics, film, fashion and textiles drawn from the V&A's collections and from public and private collections around the world. The exhibition focuses on the work of Surrealist artists and designers active before 1939 and follows their careers after the war.

The world of theatre and fashion is well represented: the exhibition begins with a selection of costume and set designs for Ballet Russes productions in the 1920s and early 1930s by the artists Giorgio de Chirico, Joan Miró and André Masson and ends with a stunning 'catwalk' of couture costumes (Figure 1). The witty fashion designs of Elsa Schiaparelli are featured, including the famous 'Tear' dress on which she collaborated with Salvador Dali (Cover image). Also on display are a number of costumes by Charles James including his influential 'pneumatic' satin evening jacket.

Prior to the exhibition, all the V&A's costume and textile exhibits arrived in the Textile Conservation Studio for treatment and mounting. They included seven ballet costumes, eleven couture costumes, six accessories and nine printed textiles. Several costumes required extensive conservation treatment and all of the costumes required mounting on mannequins for display. Two fibre-glass mannequins were specially commissioned to mimic the poses of ballet dancers as captured by contemporary photographers. The mannequin for the character of Fate from the 1932 ballet *Les Presages* leaps in the air and the mannequin for the Spinning Top from *Jeux d'enfants* actually spins on 'pointe' rotated from below by a motor (Front cover image). The knitted wool leotard worn by Fate has pale bulging 'eyes' stitched to the hood, which have a distinct resemblance to ping-pong balls cut in two. Brenda Keneghan, Senior Polymer Scientist, analysed the material using Fourier Transform Infrared Spectroscopy (FTIR). The results

Figure 1. S.860-1980 'The General' from *Le Bal* designed by Giorgio de Chirico, 1929

revealed that the eyes are made from cellulose nitrate, the first semi-synthetic plastic material. Many more semi-synthetics were to be found amongst the *Surreal Things* costumes, although they were not all as immediately obvious as Fate's eyes.

Alexander Parkes is credited with the invention of the first cellulose nitrate based plastic, which he called Parkesine. At the 1862 Great International Exhibition he exhibited a variety of Parkesine objects as diverse as combs, billiard balls, buttons, imitation tortoiseshell and false teeth. The material was made by treating cellulose with nitric and sulphuric acids to produce cellulose nitrate; plasticisers were then added so that the material could be moulded. In the following years, Hyatt in the USA developed Celluloid from cellulose nitrate plasticised with camphor and by the 1880s Celluloid was being used by the clothing industry to make detachable, easy to clean collars and cuffs.

Cellulose nitrate was also used to produce the first artificial fibres; it was dissolved in alcohol and ether to produce a solution of collodion, which was then squirted through a series of fine holes (in a 'spinneret') to produce long filaments that solidified in warm air. The filaments were then treated with ammonium hydrogen sulfide to convert them back to cellulose. During the 1890s Count de Chardonnet became the first successful manufacturer of this new fibre and named it Chardonnet silk. Once this process for creating artificial fibres was established, new methods were discovered for dissolving cellulose that did not involve nitration. The 'cuprammonium' process, by which cellulose was solubilised using copper sulfate, ammonia and caustic soda, was developed in 1890 but did not achieve commercial success until 1919 when a very fine yarn was developed making it possible for the fibre to compete with the viscose process, which was more economical. The viscose process was patented by Cross and Bevan in 1892. In this process cellulose was degraded with caustic soda then treated with carbon disulfide resulting in a viscose solution. The fibres were converted back to cellulose in a chemical bath. Cotton linters or purified pulp from trees is the most common source of the cellulose used in the production of regenerated cellulose fibres. These new methods replaced the Chardonnet process, slow and dangerous due to the explosive nature of cellulose nitrate.

Until the 1920s man-made fibres were commonly referred to as 'artificial silks'. The name 'rayon' was derived following a nationwide competition in the USA in 1925. It was initially used to describe all man-made fibres but is now used when referring to cuprammonium rayon and viscose rayon. These fibres are similar to each other because they are both converted back into cellulose. The other fibre developed during this period, cellulose acetate, often sold under the brand name 'Celanese', differs from the regenerated celluloses because it is not converted back into cellulose after processing. It is classified as a derivative of cellulose with a different chemical structure and properties.

Cross and Bevan also worked on the development of cellulose acetate in 1894. They developed a version known as triacetate, as three of the hydroxyl groups in each unit of the cellulose molecule have been substituted with acetate groups. Cellulose triacetate proved to be difficult and expensive to produce as it was only soluble in a few chemicals and these were toxic. It was not until the 1950s, when a more suitable solvent was found for triacetate, that the latter became commercially important. In 1906 scientists discovered that triacetate could be modified into a substance which could be dissolved in acetone, a readily available and less toxic solvent. This modified fibre is sometimes referred to as diacetate but it actually has an average of two and a half acetate groups per unit. During the years preceding the First World War cellulose acetate was developed as a fibre and also as a lacquer. In 1916 the British government sponsored two Swiss brothers, Henri and Camille Dreyfus, to open a factory producing cellulose acetate lacquer to coat the fabric wings of aircraft. At the end of the war they turned their attention to producing fibres and were manufacturing Celanese by 1921. Cellulose acetate was also developed for use in a 'plastic' form like celluloid but was not in production until the late 1920s.

The majority of the couture costumes in the exhibition date from the 1930s. By this time the production of these cellulose-based textile fibres was well established and the quality had improved as technology advanced. The regenerated cellulose fibres have similar properties to cotton but chemical modification during processing produces a change in the physical characteristics of the fibres. They are not as strong as cotton and have relatively poor wet strength but they all have excellent draping qualities, are soft to the touch and are shiny like silk. Manufacturing methods were also developed to produce a duller, less shiny fibre so that the product would have a wider range of end uses. The filament could be cut into small pieces and spun together to produce a 'staple' yarn, other methods included incorporating de-lustering agents into the fibre or applying 'finishes' to the fabric. The rayon fibres can be dyed with the same dyes that are used for cotton because they are all made from cellulose, but new dyes had to be developed to dye cellulose acetate fibres because of the difference in their chemical structure.

Elsa Schiaparelli and Charles James both worked with textile manufacturers to develop new fabrics for their couture garments and often endorsed products as well. Schiaparelli is said to have popularised the use of rayon, particularly through the use of interesting weaves that added texture to the fabric. She is also well known for her enthusiastic use of plastics to make jewellery, and as buttons and trimmings on her garments.

It is not always easy to tell if a fabric is man-made so the *Surreal Things* costumes that could possibly include man-made fibres were analysed. Existing records for these costumes generally stated that they were either made from silk or did not specify a fibre type. The aim of the testing was to provide accurate information for the curators and also to inform conservation treatment. Samples were analysed with FTIR microscopy by Brenda Keneghan. A number of objects were analysed by Emma Richardson (University of Southampton/V&A Collaborative PhD student) on portable, non-invasive Near Infrared Spectroscopy (NIR) equipment.[1] The results are shown in Table 1. A large proportion of the couture costumes tested incorporate some form of man-made material.

Table 1. Results of Material Analysis
Cellulose nitrate plastic • S.361&A-1985 'Fate' ballet costume, ball shaped eyes on hood, 1933 • T.36-1964 Schiaparelli 'Etruscan' dress zip fastener, 1935/6
Viscose rayon blended with silk • T.393-1974 Schiaparelli 'Tear' dress, 1938 • S.860-1980 'The General' ballet costume appliquè trim, 1929
Viscose rayon filament • T.335-1987 Schiaparelli 'Column' dress, 1938
Cuprammonium rayon blended with silk • T.46-1965 Schiaparelli 'Spine' dress, 1945 (also a close match for viscose rayon/silk blend) • T.46-1974 Madame Grès dress, 1971
Cuprammonium rayon weft with silk warp • T.335-1987 Schiaparelli 'Column' dress, 1938
Cellulose acetate fibre • T.385-1977 Charles James jacket, 1937
Cellulose acetate plastic • T.393-1974 Schiaparelli 'Tear' dress zip fastener, 1938 • T.394-1974 Schiaparelli 'Skeleton' dress zip fastener, 1938

Table 1. Results of material analysis.

It is interesting to see how many blended silk and rayon fabrics were found amongst the costumes including the 'Tear' dress (Cover image). In a blend, fibres are mixed together during the spinning process to produce a new yarn that benefits from the properties of both fibres. This is different from the fabric in the 'Column' dress where the weft is one fibre, cuprammonium rayon and the warp is silk. The Charles James jacket is made from cellulose acetate. This fabric, referred to as 'slipper satin', is smooth with a soft sheen that emphasises the three-dimensional qualities of the jacket. An interesting form of rayon, supporting the satin columns in the 'Column' dress, was found by Alice Cole, RCA/V&A Conservation student, during treatment (Figure 2). The columns are lined with a loose mesh fabric, the imprint of which can just be seen on the dress fabric. This mesh was probably made to imitate and improve upon horsehair, which was often incorporated into fabrics to stiffen them. The rayon fibre in the mesh looks like nylon fishing line but pre-dates nylon, the first truly synthetic fibre, which was launched onto the market in October 1938.

Photography by Richard Davis, V&A Photographic Studio

Figure 2. T.335-1987 'Column' dress by Elsa Schiaparelli, 1938

Elsa Schiaparelli was one of the first couturiers to use zip fasteners in her garments and both she and Charles James were paid by 'zipper' manufacturers to use and promote them. There are early versions of the zip but the design we know today was patented in 1913. Early zips were made of metal teeth but when the patent ran out in the early 1930s several companies began experimenting with producing plastic zips. Schiaparelli is known to have used different companies' zips depending on where her clothes were to be sold. In London she used zips from the Lightening Fastener Company of Great Britain, in Paris she used zips made by Éclair and for export to the USA, Hookless Fastener Company zips produced in the USA. Three of the Schiaparelli costumes have plastic zips. Two Éclair zips are made from cellulose acetate, one zip, which has no maker's mark, is made from cellulose nitrate (Figures 3-5). The costume with the unmarked zip has a label for Schiaparelli's Paris showroom so it is possible that this is an earlier zip by Éclair. It predates the other marked zips by two years but the design is similar to the 'Skeleton' dress zip suggesting that the company was experimenting with both materials and design. Alternatively it could have been made by another manufacturer. It is interesting to note that the cellulose nitrate zip still functions but the cellulose acetate zips are broken.

Surreal Things has provided an ideal opportunity to investigate exactly what these fabulous couture creations are made from and expand our knowledge of the V&A's collections. It is also particularly important to identify man-made fabrics prior to conservation treatment as they often cannot be treated in the same manner as natural materials. As Susannah Handley dramatically states: 'it was a risky business making couture garments from these untried chemical fabrics, as *Vogue's* editor Diana Vreeland found when she sent her Schiaparelli gown to the dry cleaners: it reverted to an oily sludge when it came into contact with the dry cleaning fluids and ended up in a bucket'.[2] Thankfully many other Schiaparelli costumes survived.

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Photography by Elizabeth-Anne Haldane

Figure 3. T.36-1964 'Etruscan' dress by Elsa Schiaparelli, 1935/6, cellulose nitrate zip

Photography by Elizabeth-Anne Haldane

Figure 4. T.394-1974 'Skeleton' dress by Elsa Schiaparelli, 1938, cellulose acetate 'Éclair' zip

Photography by Elizabeth-Anne Haldane

Figure 5. T.393-1974 'Tear' dress by Elsa Schiaparelli, 1938, cellulose acetate 'Éclair' zip

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Acknowledgements

With thanks to my colleagues in the Textile Conservation Studio who have worked on *Surreal Things: Surrealism and design* and to Brenda Keneghan and Emma Richardson, Science Section, and V&A curators, Ghislaine Wood, Alexander Klar, Sonnet Stanfill and Jenny Lister, and to Dilys Blum, Philadelphia Museum of Art.

Investigation of the patina on Bidri using advanced surface analysis techniques

Emma Beardmore, Visiting Researcher, Imperial College
Graham Martin, Head of Science Section
David McPhail, Department of Materials, Imperial College
Richard Chater, Department of Materials, Imperial College

Photography by Emma Beardmore

Figure 1. The Bidri box used for this experimental study

The name given to the Indian metalwork, Bidri, is derived from the city of Bidar, where it has been produced since at least the seventeenth century. It is composed of an alloy of zinc (~95%) and copper (~5%) and is heavily inlaid or overlaid with silver and possibly gold or brass to produce an intricate design before it is finally polished. The metalwork is unusual in that the Bidri alloy is patinated, forming a deep black surface that contrasts with the various metal inlays (Figure 1). Although there have been a few studies of Bidri[1,2,3] there has, as yet, been no full characterisation of the patina. The aim of this preliminary study of two expendable pieces of Bidri was to gather information about the patina using advanced surface analysis techniques. Literature studies provided evidence for the chemical processes undertaken to produce a matt black patina, which is unusual for a zinc based alloy. Patina thickness measurements were undertaken to determine its uniformity. The chemical composition of the patina and the zinc/copper alloy was also analysed. In addition, it was of interest to locate an individual who had workshop experience of Bidri.

As an initial indication of whether Bidri could indeed be a predominately zinc based alloy, the densities of two Bidri objects, acquired solely for the purpose of research, were determined. This simple test is useful as an initial screening procedure. Calculating their densities involved submerging the two objects in water for a short period of time. One of the test items, the Bidri disc, exhibited a white corrosion product on the surface as a result of this short exposure to water. However, the surface of the Bidri box inlayed with a white metal exhibited no notable difference in appearance although it had had the same exposure time to water. This highlighted a difference between the compositions of the two objects and/or a difference in the surface treatment; for example perhaps a waxy polish had been applied to the box, but not to the disc. The results of the density measurements found the Bidri box and disc to have mean densities of 6.98g cm^{-3} and 6.77g cm^{-3} respectively, which are comparable to zinc's density of 7.14g cm^{-3}, and sit within a 10% error margin.

Mapping the surface of the Bidri box using a Zygo white-light optical interferometer enabled the roughness of the patina to be seen. As shown in Figure 2, the patina is somewhat uneven, which is expected, considering that the Bidri is handmade. The difference in height between the white metal inlay and the matt black surface of the patina varied, however; the black patina tended to be about 2.5μm below the inlay. This technique also revealed small, neat, circular indents in the surface of the inlay. It was concluded that this could be where the metal had been hammered into the engravings.

EDXRF (energy dispersive X-ray fluorescence) is a non-destructive, non-intrusive technique that can be used to find the elemental composition of a sample. A Röhntec ArtTax EDXRF was used with an air path and a 30W molybdenum target X-ray tube. This procedure was employed on the two Bidri objects and the spectra produced revealed that they were both alloys of zinc and copper, and that the white

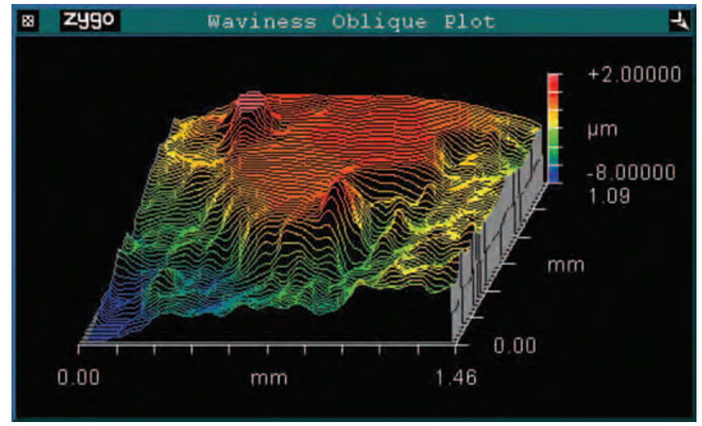

Figure 2. Surface mapping as produced by a Zygo interferometer, showing the rough surface of the patina with a central elevated inlay (red) which is relatively smooth and is about two to four microns above the surrounding patina

metal which had been inlayed on the surface of the Bidri box was silver. More unexpectedly, it was found that the Bidri box contained quantities of nickel and the disc showed small traces of arsenic on the patina.

In order to manipulate the quantitative data produced by EDXRF spectrometry, zinc and copper alloy standards were examined using this technique to produce calibration curves. The curves show the relationship between the abundance of an element (percent) in a sample, and the number of times it was detected using the EDXRF. This allowed an estimation to be made about the percentage composition of zinc and copper in the Bidri samples – without any sample surface preparation. It was found that the Bidri box was approximately 85% zinc and 4% copper, whilst the Bidri disc was in the magnitude of 90% zinc and 3% copper, which are near the expected values. It would appear that the EDXRF underestimates the abundance of zinc in the samples but does confirm that zinc is the major component and copper a significant trace element. More work is required to make the EDXRF more accurate.

A small disc was cut from the underside of the Bidri box to be viewed at high magnification using the scanning electron microscope (SEM). The general structure found was as expected for a metal alloy, however many linear features, about five microns in width, were observed on the surface of the patina (Figure 3). Operating the electron microscope enabled a technique called X-ray mapping to be used. This approach shows the elemental composition of a sample in more detail, showing the regions where each element is present at high concentrations. This technique confirmed again that the Bidri was a zinc and copper alloy, containing traces of silicon, carbon, oxygen and chlorine, but the imaging also revealed calcium traces (Figure 4) which were found in the linear features in much higher abundance than elsewhere on the patina suggesting a calcium rich deposit had been laid down during polishing or through scratching.

The techniques employed in the analysis of the Bidri were chosen to minimise any permanent effect. The most destructive technique employed, SIMS (Secondary Ion Mass Spectrometry), was used to examine the circular sample cut from the underside of the Bidri box. A focused ion beam (FIB) SIMS instrument (FEI-FIB200 SIMS) was used. This technique enabled the thickness of the patina to be found by using ion beam milling to create several small trenches (Figure 5), not visible to the naked eye, on the surface of the Bidri. The ion beam used, gallium, can be focused to a few tens of nanometres and its scan pattern controlled to produce a wide variety of geometries. By ion-milling a 'swimming pool' geometry a vertical cross-section is produced in the material, and this cross-section can be subsequently imaged using the same highly focused gallium ion beam. Both secondary ion and secondary electron images can be viewed. The great strength of this analytical approach is that the material processing and imaging are conducted in the same instrument; furthermore the position of the cross-section is totally under the control of the operator. In this example a patinated layer could be seen on top of the metal alloy with a reasonably uniform thickness of about 3 μm. SIMS also allowed a depth profile to be made of the patina. Depth profiling was used to find the elemental abundance at different depths.

The SIMS technique removes atoms from the surface, so by recording the elemental composition of the sample as a function of time, the variation of elements with depth can be found. It took three scans before the depth profile detected any elements, suggesting there may be some type of polish or layer of wax protecting the top of the patina. The depth profile also revealed that the proportions of zinc and copper increased with depth, and elements like calcium and sodium decreased with depth. This indicates that the calcium and sodium are surface contaminants.

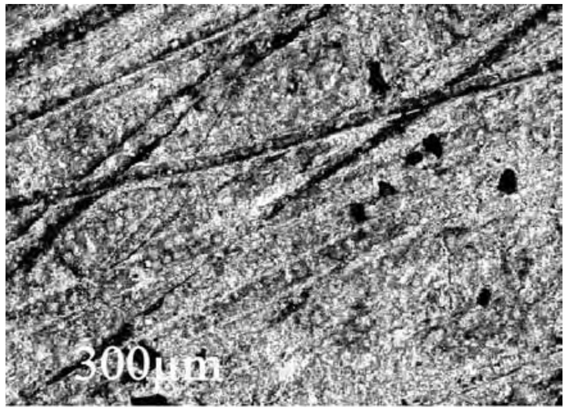

Figure 3. A backscattered electron image, produced at a magnification of 200 X showing linear features and the general structure of the patina. Darker shading is indicative of the lower atomic number elements that are present

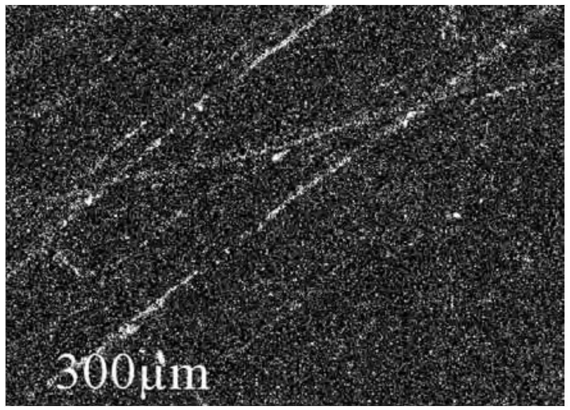

Figure 4. A backscattered electron image, produced at a magnification of 200 X, showing the abundance of calcium (shaded white) in the linear features

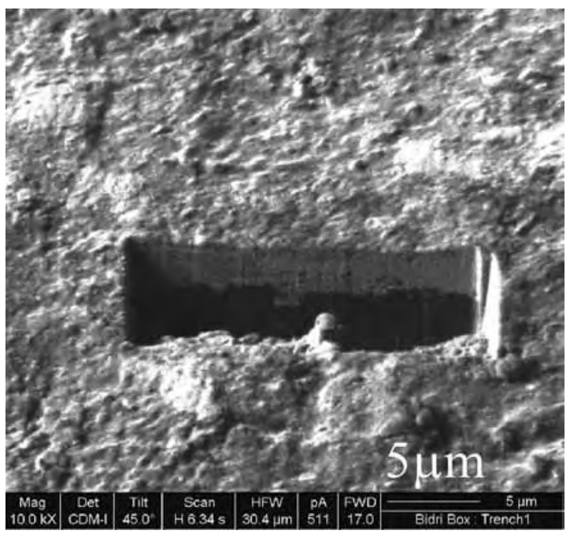

Figure 5. A Secondary Ion (SIM) image of the ion beam milled trench, viewed at a 45° tilt, showing the patinated layer on top of the metal. The trench milled was 15µm in length, 3µm in width and 5µm in depth

These initial experiments have been very useful but it is clear that the characterisation of Bidri is by no means complete. Several attempts were made at locating interested individuals with workshop experience of Bidri; however this yielded no successful results. A number of experimental advances have been made gathering more information about the patina of the Bidri as a material. However, there is still a mystery surrounding the deep black colour of the patina and the compound causing it. The project described here has demonstrated the potential of a variety of surface analysis techniques and further studies are planned during the period 2006/7 to further unravel the mystery of Bidri patina.

Acknowledgments
The authors are grateful to Magnus Lekstrom and David Collins for their contributions to the analyses and to Susan Stronge and Susan La Niece for their helpful advice and for donating the samples of Bidri used in this study.

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New Staff

Joanne Hackett
Textile Conservator

I originally studied Sculpture and Art History at The University of Lincoln, graduating in 1989 with a BA (Hons), before emigrating to the United States in 1990. I undertook three years of internships at the Fine Arts Museums of San Francisco and Colonial Williamsburg Foundation before entering the Winterthur/University of Delaware Program in Art Conservation. My training at Winterthur included further internships in Detroit, Liverpool and Boston. I graduated with an MS in Art Conservation in 1998 with a specialization in textile conservation.

After graduating I returned to the Fine Arts Museums of San Francisco, working on the collections there and for other institutions and private individuals in Northern California. I was fortunate to conserve such diverse items as a cosmonaut's space suit, painted Civil War flags and Kurt Cobain's T-shirts.

In 2004 I accepted the position of Associate Textile Conservator at the Indianapolis Museum of Art just as the museum was completing a major gallery expansion and renovation. The expansion included the creation of two dedicated textile galleries. I was responsible for the conservation and mounting of their inaugural exhibition of wedding dresses from around the world.

I am delighted to be back in my native country and to be working with my colleagues in the Textile Conservation Studio, some of whom I have known for a long time. Initially I will be working on costume items for *Surreal Things: Surrealism and design* and then on textiles for the Medieval and Renaissance Galleries.

Sarah Healey-Dilkes
Senior Sculpture Conservator

I graduated from City and Guilds of London Art School in 1990 after which I worked for two years in the Stone, Wall Paintings and Mosaics Section of the Conservation Department at the British Museum.

Since then I have been working independently, on a self employed basis for 12 years. During which time my work has ranged from projects reinstating stucco and decorative plasterwork schemes, to the conservation of Medieval and Victorian wall paintings, and to large-scale mortar repair work on an archaeological site in south west Turkey.

I have also worked as a conservator for numerous loan exhibitions of both historic and contemporary artworks, ranging from archaeological stone objects to installations at Tate Modern.

More recently I have been involved with the setting up and running of a workshop and my freelance work has been of a portable nature from both the private and public sector.

I am happy to join the expanded team of conservators in the Sculpture Conservation Studio, to share in the responsibility of preparing objects for the Dorothy and Michael Hintze Sculpture Galleries and Medieval and Renaissance Galleries, and also to be involved with the on-going conservation work for the loans and exhibition programme and maintain the permanent collection.

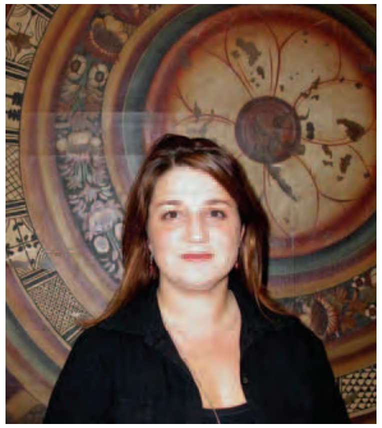
New Staff

Roisin Morris

Textile Conservator

My introduction to, and interest in, textile conservation began while studying for my undergraduate degree in Textile Design specialising in embroidery, at The National College of Art and Design, Dublin. In 1999 I began work with Cliodna Devitt, a private textile conservator in Dublin, before training at The Textile Conservation Centre. I graduated with an MA in Textile Conservation in 2003. After graduation I undertook the Historic Scotland/Scottish Conservation Bureau Internship based at The Burrell Collection, Glasgow. During this one year internship I also undertook two short placements elsewhere in Scotland with private and institution based conservators. In 2004 I joined The British Museum on a short contract to undertake work on two archaeological textile collections from Jordan and Sudan. Following this I moved to Denmark for a nine month contract with Langeland Museum Service, which services 16 small museums. This provided me with an interesting insight into working practices in Northern Europe. In December 2005 I began work for The National Museums of Scotland on the recently acquired Jean Muir collection, and a range of other objects including a seventeenth-century covenanting banner.

I joined the Furniture, Frames and Textiles Section in October 2006, based in the Textile Conservation Studio. I shall be involved in all aspects of the conservation of textile objects in preparation for forthcoming gallery projects, exhibitions and loans.



Éowyn Kerr

Samuel H Kress Fellow in the Conservation of Paintings

I will be with the V&A until October 2007 working with Nicola Costaras. The Samuel H Kress Foundation funds the development of the professional expertise of American art historians, curators and conservators working with European works of art. My Fellowship position is related to objects in the new Medieval and Renaissance Galleries, and is focused on the conservation of fifteenth-century Florentine cassoni and painted panels. In addition to assessment and treatment I have the opportunity to carry out related analytical and materials research on a number of the paintings.

For the past three years I have been living in Italy where I am involved with a university programme designing the course curriculum for introductory level conservation courses. I also work in Rome for a docent group giving in-situ lectures on conservation issues in the Vatican Museum and Villa Borghese collections. Whenever possible I take on contract work with a private paintings conservation studio to keep my hands moving, and stay active in the newly formed IIC Italy group. My formal training in conservation is through a MA programme at Buffalo State College in New York. I have worked for several years in private practice in my native city of Santa Fe, in Florence and Rome, as well as with the Renaissance collections at the North Carolina Museum of Art. I was also an intern at the V&A in 1998/1999. My positive experience during that period was a key factor in my decision to return to the Museum!

New Intern

Agnieszka Depta

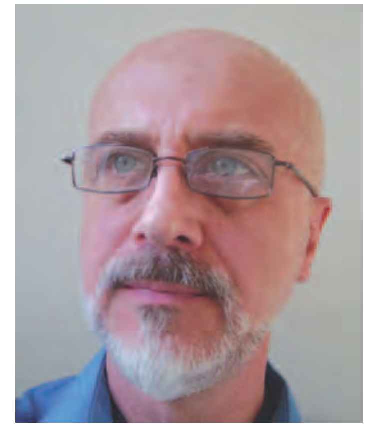
HLF/ICON Preventive Conservation Intern

In 2001 I graduated from the University of Wales, Aberystwyth after studying fine art, art history and film & TV, focusing on photography in my practical work. I then moved to London and worked in printing, reprographics and administration before taking the Camberwell PG Diploma in the conservation of paper-based objects in 2004/2005. While studying, I volunteered at the Museum of Domestic Design and Architecture and later at the Royal Institution. After graduating I spent two months on a work experience placement at the V&A based in the Paper and Book Conservation Studio, where I assisted with surveying the Renier Collection and also gaining invaluable practical experience in paper conservation. I then worked at Kew Gardens as a project conservator for a year before applying for this HLF/ICON internship.

During my six month internship I will be working with Valerie Blyth in the Science Section. I am hoping to acquire practical experience of preventive conservation and also gain an understanding of a wide variety of materials, either through shadowing members of staff or participating in suitable projects. Particular areas of interest are: pest management, monitoring and control of the environment, packing for transport or storage, display and materials testing. Thus far, I have been assisting within the area of insect pest management and have started learning about OCEAN (object centred environmental analysis network).

The V&A is a great place to work, with an abundance of resources, and I am hoping to make the most of it in such a short space of time.

RCA/V&A Conservation



Chris Egerton

In-Post MA for Conservation Professionals – Conservation of Musical Instruments

I originate from Lancashire and my early working life was based in structural engineering. Later on I moved into applied science occupations, namely plastics and adhesive technology, and metallurgy. Making and playing guitars was my favourite hobby.

When I returned, in the early 1980s, from monastic life in India I studied musical instrument technology at the London College of Furniture, specialising in the lute family and early guitars. After graduating, I established myself as an independent luthier, later diversifying into the restoration of antique furniture and the design and construction of furniture, frames and other wooden artefacts.

For the last six years I have concentrated exclusively on restoration and conservation of musical instruments and, because more important pieces were coming to my workshop, I felt the need to develop my conservation skills and knowledge to the highest standards. I was delighted to discover that I could study part-time with the RCA/V&A whilst still operating my business.

Despite being occupied with my business and college studies I still have time for recreation and leisure and some of my current interests include: playing a variety of musical instruments, horticulture, cycling, Zen calligraphy and complaining to my local Council.