

V&A

The Quarterly Publication of
the Victoria & Albert Museum
Conservation Department

Conservation Journal



April 1999 No 31
ISSN 0967-2273

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Science and Information Section

Victoria Hobbs

Lyndsey Morgan

Editorial

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The Arts of the Sikh Kingdoms

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Secret of Damascus Steel ?

Ranjit Singh: The Lion of the Punjab

Science Surgery

The Function of a "Fetish" Figure

The Artificial Patination of Bronze Sculpture

New Staff

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The cover shows *Maharaja Gulab Singh of Jammu and Kashmir*, c.1846, Museum No. IS.194-1951. Size of object without frame: 26.2 cm x 20.7 cm
Photography by V&A Photographic Studios

Editorial – Accreditation

Jonathan Ashley-Smith
Head of Conservation

Towards the end of 1998 I was one of a small group engaged in a prolonged debate on the subject of “Future Challenges for Conservation”. The organisers, English Heritage, will be publishing the main part of the discussion and the conclusions of the group. The core group was composed of UK participants and although both the whole world and the distant future were discussed, the conclusions inevitably centred on local matters and possible actions in the immediate future.

One obvious weakness of the UK Conservation profession is that it is represented by a number of different bodies with different aims and diverse standards. These have been recently drawn closer together by the “Conservation Forum”. However, a forum is not a cohesive body with a single voice and set of standards. The group felt that there should be a rapid move to form a single professional body. The long awaited move towards a system of accreditation for conservators was felt to be a strong focus for unification. It was automatically assumed that accreditation was a good thing.

In the part of my soul that reflects my long involvement with Conservation, I automatically think it must be “a good thing”. There are many different routes to a specified level of knowledge and skill. An academic qualification is only a part (and possibly not a necessary part) of reaching that level. It is somewhat arrogant to assume that all the products of a particular training scheme will develop to a universally accepted standard. I have paid my £200 so that I may be assessed by my peers in the hope that I will be evaluated as competent.

In the part of my soul that has espoused a short-term managerial outlook and with the arrogance that automatically goes with a permanent job in a National Museum, it is less obvious that accreditation is useful. In the short term, it will make no difference to our relationship with internal clients whether 0%, 50% or 100% of Conservation staff are accredited. In the short term we are likely to recruit or contract what we see as the best person to do a job, using criteria other than accreditation to evaluate competence. For some while to

come, when somebody leaves, the elite label “worked at the V&A” is likely to carry more weight than any systematic peer-reviewed evaluation.

However in the longer run it is possible to imagine a situation where accreditation does genuinely discriminate the competent from the incompetent, rather than just those who choose to join and those who do not.

It is also possible to imagine that this will not occur unless major employers begin to use it as a criterion for selection long before it becomes an absolute measure for discrimination.

Accreditation for Conservators – What Do We think?

Alison Richmond

Course Tutor, RCA/V&A Joint Course in Conservation

At the end of October 1998, the United Kingdom Institute for Conservation invited its members to apply for Fast-Track Accreditation. The Institute for Paper Conservation is also planning to launch its own fast-track scheme this Spring. Both precede the Joint Accreditation Scheme (UKIC, IPC and Society of Archivists) which is currently in the consultation phase and due to be introduced in January 2000.

To stimulate interest and provide a forum for discussion, we invited Jane Henderson, a member of the UKIC Accreditation Working Group, and now a consultant to the Joint Accreditation Committee, to come and talk to us in early November. To a get an impression of the response of conservators here at the V&A, I talked to members of staff who were eligible for Fast Track about their views on accreditation. I also counted how many of those eligible intended to apply (out of 40 eligible 31 said “yes”; 6 said “no”; and 3 were undecided).

Almost everyone I interviewed acknowledged the benefits of accreditation. High on the list of immediate benefits was protecting the public by providing a mechanism for challenging wrong decisions or incompetent work. Positive outcomes in the longer term included raising the status and reputation of the profession and adding support in negotiations for higher pay. Accreditation could also support us in other aspects of being a professional; for example, in taking an ethical stance which may conflict with other requirements and offering the possibility of applying for personal liability insurance. One conservator highlighted the soundness of the competence-based principles of the proposed schemes. “This route demonstrates that you can do it, no matter how many degrees you have. It establishes our credentials and will lead to a unified profession.”

People felt that it was important that all conservators take part, both those in public institutions and private businesses. When asked about accreditation for V&A conservators, most believe that “as employees of a national museum it is our duty to take part. Moreover, we have an obligation to help direct the process. We have the time and resources to do so (although we might have to fight for them!)” It is also a personal responsibility which has to do with an individual’s career development.

From the point of view of other professionals working in conservation (for example scientists, but there are many others) who already have accredited (chartered)

status, there are a number of issues. These include potential conflict of interest, the financial burden of paying for two schemes, and the competency of conservation bodies to judge other professions.

People also recognised that any scheme will have its problems. “...It is inevitable that people will be accredited who shouldn’t be... In such a small profession it will be difficult to deal with those who do not come up to the expected level.” “There will be a lot to learn from Fast-Track. For example, it is very difficult to come up with statements that can be related to all areas of conservation and there will be more work to do to make the criteria more focused.”

Some expressed their concerns. These fell into two main areas: the response of the Museum as a corporate body, and the future of accreditation once Fast-Track is completed.

While Jonathan Ashley-Smith, the Head of Conservation, has given his personal approval and resources have been made available for staff to act as sponsors, the V&A does not, as yet, have a policy on accreditation. Many felt it was important for the Museum to make its position clear as soon as possible for a number of reasons. Firstly, as the Conservation Department of a national museum, we are in the spotlight. “How can we make statements like ‘we are at the cutting edge of conservation’ or ‘we are a centre of excellence’ if we can’t back it up with something concrete?” Secondly, there is a danger of establishing a two-tiered system if, once accreditation is established, the Museum employs contract or permanent staff who are not accredited. Lastly, for a full-blown accreditation scheme to work “...the Museum must offer more than vague support. The process of accreditation must be built into the management/staff appraisal system... There needs to be a pro-active approach to preparing for accreditation.”

Other concerns centred on the future and specifically on the projected costs for candidates. While nobody is happy at having to pay £200 for Fast-Track - one conservator felt that the Museum should pay as a gesture of support - most feel that it is a sacrifice that must be made. Some younger conservators already feel that even current charges for Fast-Track would be prohibitive. If we assume that most senior conservators will have gone for Fast-Track, that will leave mostly younger people, employed at the lower end of the financial scale, to apply for accreditation. How will they afford the costs of accreditation which are currently being projected at around £600, when they may already have substantial debts incurred by primary training and internships? There is a real danger that the system will exclude the people who need it most. If this happens who will carry the scheme forward into the future?

The Arts of the Sikh Kingdoms

Susan Stronge

Curator of the exhibition, Indian and South East Asian Collection

This V&A exhibition, shown from 25 March to 25 July 1999, marked one of the most important anniversaries in Sikh history: the creation in March 1699 of a new order called the *Khalsa*, or ‘the pure’. Millions of Sikhs all over the world today are still identified by the visual symbols adopted 300 years ago, including the uncut hair that men cover with a turban, as well as by standard surnames, *Kaur* or ‘princess’ for women, and *Singh* or ‘lion’ for men, introduced at the same time.

An exhibition with a religious theme might seem the obvious choice for this seminal anniversary, but was ruled out by Sikhism’s rejection of religious iconography. There is no Sikh sculpture, and the holy book has a sanctified status making it a wholly inappropriate exhibit. There are no contemporary portraits of the ten Sikh Gurus, and the predominantly 19th century depictions of them vary in quality.

Thus, a different theme was chosen, and the historic V&A collections, inevitably the core of the exhibition, led naturally to the cosmopolitan court of the first Sikh Maharaja of the Panjab, Ranjit Singh (r. 1801-39). The court was the most magnificent in the subcontinent at the time, and was also characterised by its religious tolerance, with Hindus, Muslims, Sikhs and Europeans all holding high office. This rich diversity meant an unusual approach had to be taken in presenting the wide range of material. It is almost impossible to define an exclusively ‘Sikh’ art - the maharaja’s famous golden throne, for example, was made by a Muslim, and even paintings of Sikh subjects could be the work of Hindu, Muslim or Sikh artists. The exhibition therefore tells the fascinating, but surprisingly little-known story of the cultural history of the Sikhs through works of art.

The opening section briefly explains Sikhism (through miniatures, 19th century photographs of the Golden Temple, illustrated manuscripts and

coins) and then explores the artistic heritage of the region now divided between India and Pakistan: the great Mughal tradition centred on Lahore, and the vividly distinctive schools of painting in the Hindu kingdoms of the Panjab Hills. The comprehensive view of Ranjit Singh’s court which follows includes paintings of leading personalities, some of the maharaja’s most treasured possessions (including spectacular jewels), and pieces from the Sikh armoury, including the idiosyncratic turban helmets. Ranjit Singh hired former Napoleonic generals to reorganise his army on European lines, and they commissioned paintings from local artists as well as shawls from the weavers of Kashmir, part of the Sikh kingdom from 1819.

After the great ruler’s death, a decade of upheaval and war culminated in the British annexation of the Panjab in 1849. The boy maharaja, Dalip Singh, was deposed and came to England where he was painted by Winterhalter and photographed by the Royal Family.

Despite the problems suffered by the region, the arts of the Panjab survived. Throughout the first half of the 19th century the Lahore court had patronised silk weavers, embroiderers, metalworkers and wood carvers at their various centres, and provided a market for the work of artists from all over the Panjab. After annexation, the rulers of the smaller remaining Sikh kingdoms, notably Patiala, ensured the survival of these traditions into the 20th century.

Part of this first international exhibition on the arts of the Sikhs will be shown at San Francisco’s Asian Art Museum from 22 September 1999 - 9 January 2000.

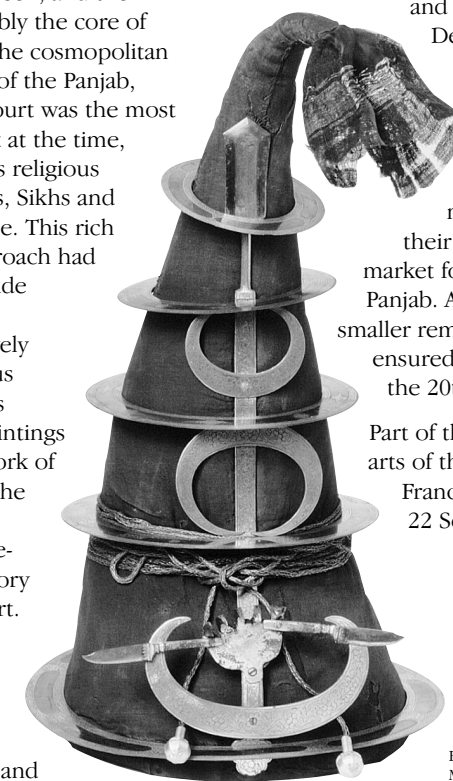


Figure 1 *Dastar Bungar* (Quoit Turban), Museum No. 3462 (IS) approx 43 cm tall x 25 cm diameter

Photography by V&A Photographic Studios

The Arts of the Sikh Kingdoms – The Conservation Co-ordinator's View

Mike Wheeler

Senior Paper Conservator, Paper Conservation

The Arts of the Sikh Kingdoms combines examples of Sikh art from the collections at the V&A with loans from Europe, North America, India and Pakistan. During the preparations for this exhibition it has been necessary to look critically at information provided by our lenders, as it was not possible for a conservator to examine all of the objects prior to the loan being agreed. Are the requested objects in a fit state to travel to the V&A and to continue on to other venues? How do standards vary from one institution to another?

It had been hoped that one member of the conservation team would be able to visit the lenders in India and Pakistan to ascertain the condition of all of the objects and carry out some preliminary documentation on behalf of the V&A, prior to the proposed dates of shipping. A further advantage of this would have been to eliminate any objects which might be put at risk by transport to the UK and the USA. In the event, it has been necessary to rely solely on the information supplied to us by the lenders themselves and by observations made by the exhibitions curator who had seen many of the objects originally proposed on a previous visit to India and Pakistan. Terms and conditions of loans are still being finalised with some of the institutions in India and Pakistan as I write this, and discussions are underway which may result in a selected number of objects from this exhibition being sent to India in 2000 for an exhibition in New Delhi. A slightly smaller version of the exhibition held at the V&A will travel to the Asian Art Museum in San Francisco in August 1999 with a possibility of extending the tour to include the Royal Ontario Museum in Toronto, Canada.

This exhibition has been challenging due to the variety of objects selected, and due to the practical and political complexities involved in borrowing from institutions in India. The packing and crating of objects in India is being handled by Star Packaging, who have previously worked with travelling exhibitions mounted by the British Council. Initially the V&A had hoped to assist with the packing and crating of objects by providing

both packing cases and technical assistance. In the event it has proved necessary to appoint an agent in India to help handle this side of things.

As the Conservation Co-ordinator I was especially concerned about the possibility of insect infestation arising from bringing material from another country which had not been examined by a conservator prior to shipment. It will be important to speedily identify and treat any pest infestation on the arrival of crates at the V&A without delaying the installation schedule. One category of material particularly at risk is textiles. These will be frozen for three days on arrival at the museum. All categories of loan objects arriving in the museum, together with any packing materials will be inspected on arrival by a conservator for signs of infestation. The condition reports provided by the lenders will be used to check the condition of objects arriving at the museum in the usual way, these will be supplemented wherever necessary by our own condition report forms to give any additional information thought necessary for the tour.

Objects with slightly differing relative humidity (RH) and temperature requirements have necessitated the provision of microclimates. This is a result of the slightly differing environmental conditions specified by lending institutions. *Art Sorb*™ cassettes containing silica gel have been incorporated in three of the display cases, which have slightly varying RH requirements, and where the contents are particularly susceptible to changes in dimension as a result of fluctuations in RH. Monitoring of the environmental conditions will be carried out during the exhibition. Data loggers placed at object level will act as a means of checking on the effectiveness of the climate control systems incorporated into the present air conditioning system.

Whatever the complexities presented by this unique exhibition, the high quality of the objects selected from the V&A collection together with those borrowed from other museums around the world, have made this exhibition a very exciting project to be involved with.

The Indian Vase Carpet Fragment: Decisions and Discussions Prior to Conservation

Val Blyth

Senior Textile Conservator, Textile Conservation

The Victoria & Albert Museum acquired a rare and beautiful carpet fragment in 1930. Museum records describe the carpet as a fine Mughal carpet thought to have come from the Amber Palace near Jaipur. The carpet was made in Lahore for the apartments at Amber built for the Raja Jai Singh I between 1628 and 1658. The carpet belongs to the finest class of Lahore carpets woven during the development of Mughal art, the period of Emperor Shah Jahan. Later records describe the carpet as "unquestionably of the utmost value to designers and students." (see figure 1)

There was a lengthy negotiation period when the carpet was inspected on a number of occasions by the head of studio, Lynda Hillyer, and myself to establish an initial outline of the work required and the likely costs. A full condition report was made which determined that six months work including solvent cleaning and a full conservation treatment of the carpet was considered essential.

A considerable amount of time was devoted to discussing ways in which this lovely object could be made ready for loan; the outcome being that the conservation of this carpet was not possible within the existing work programme of the

textiles studio for the American exhibition. The decision not to lend was not made lightly. Ideally we would have liked to have approved the loan and carried out the necessary conservation work on this important museum object. The carpet was, however illustrated and included in the exhibition catalogue². It was described as "Fragment of a carpet with pattern of lattice and flowers incorporating vases. Northern India, Kashmir or Lahore, ca. 1650."

When the carpet was requested a second time for an exhibition at the V&A, and as a rotation object for the Nehru gallery, the previous condition report was extremely useful.

Condition before final selection for forthcoming Sikh Exhibition

The carpet was at first sight in fairly good condition with a strong design and very bright colours. Closer inspection of the carpet however revealed that the overall condition was in fact quite poor. There were loose warps on both the front and back of the fragment, which had sprung away from the pile. Every time the carpet was moved the amount of fibre shed from the wool indicated that the carpet was brittle and would not be able to withstand repeated handling. This was a major reason for not allowing the carpet to go on loan, as the carpet

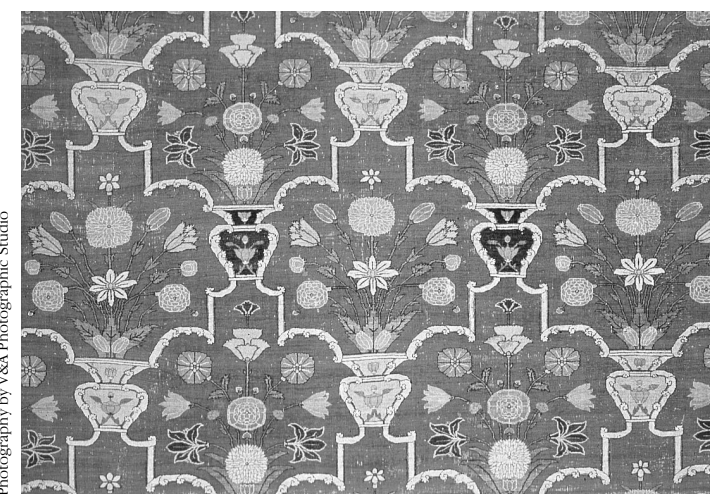


Figure 1 Detail of Indian carpet showing repeat pattern of tiles containing vases of flowers. Mid 17th century, Kashmir or Lahore. Museum No. IM.67-1930 Repeat size 75 cm x 66cm

Introduction

This Indian carpet fragment was initially requested for a major exhibition of carpets called "Flowers Under Foot" at the Metropolitan Museum of Art in New York. This exhibition of Indian carpets was held last year to celebrate 50 years of Indian independence. A loan request for a large textile can cause consternation as the conservation work required to make the object fit for display will be considerable; as was the case for this carpet.

Photography by V&A Photographic Studio

would not survive the repeated rolling and unrolling required for a loan exhibition.

There were numerous worn areas and a substantial number of holes. The cut edges were weak and frayed. There were several stained areas and the fragment was dirty. There was evidence of paint remains on the edges and several areas of painted warps. This large carpet fragment had been cut down from a much larger carpet, which presumably would have had a border, now entirely missing. Further inspection also revealed that there were several repairs made from cut pieces from another part of the original larger carpet.

Description of carpet weaving technique

The design is a repeating pattern of trellis with vases and plants. Size of repeat: 75cm x 66cm, (29"x 26"). This design description was made by Mr Tattersall who, along with Kendrick in 1922, produced one of the first comprehensive books on carpets as well as making the analysis of this carpet weaving technique³. Further work done on the technique was carried out by May Beattie who referred to a group of carpets of similar construction as "vase technique"⁴. The vase technique refers to a structural design, not necessarily to a figurative design even though this is also the pattern in this case. There are some differences in the actual technical analysis of this fragment and the group to which Beattie refers but there are also many similarities most notably the cotton and silk wefts and the densely packed knots (see figure 2).

There are three passes of weft after each row of knots. The first and third are of cotton, which is quite tightly woven, the second or middle weft is of a sinuous pass of silk thus dividing the warps into a definite upper and lower layer. Over time the worn surfaces of the carpet show characteristic parallel warps when the second weft of silk breaks and the two planes spring apart. It is obvious that the two planes of warp allow a carpet to be densely knotted but the fine second warp, which is prone to breaking, means that there is an inherent weakness in the structure.

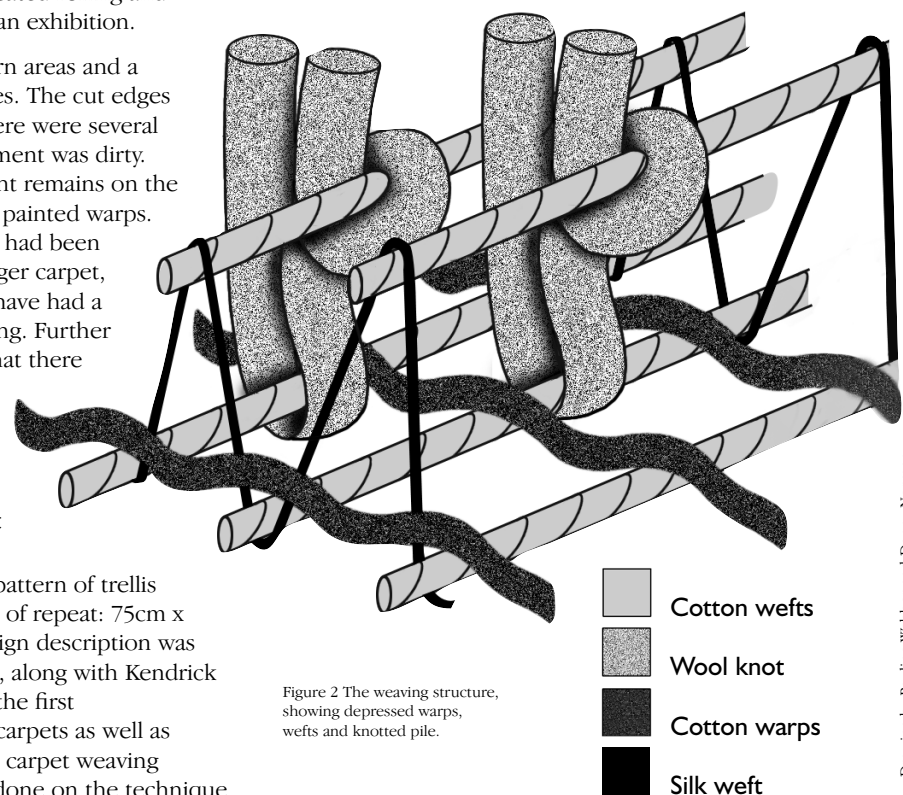


Figure 2 The weaving structure, showing depressed warps, wefts and knotted pile.

Drawing by Pauline Webber and Danny Norman

Technical Analysis 1930	Technical Analysis 1998	Comments 1998
Measurements: 11'4 x 6'4	Measurements: top edge 194cm, lower edge 195cm. Left-hand side 355.5cm, right-hand side 348cm	The fragment is irregular in shape
Warp: white cotton, 8 ply, 31 to 1", two levels	Warp: on two levels, one set depressed. Ivory cotton 56Z	17 to 18 warps per 1cm on both levels
Weft: two x two fold shoots of red cotton, separated by one sinuous crimson silk shoot, almost hidden at the back by the knots	Weft: two passes of cotton with one of silk in between	All three separate the rows of knots
Knots: Wool, senna type, about 260 to the square inch	Knots: Pashima Wool Pile, knot is asymmetrical	Very worn, almost down to the collar of the knots in many places
Colour: eight, crimson ground, white, light blue-green, light crimson, ochre and purple	Colour: slight degree of fading to the eye, otherwise good	No colour measurement taken
Sides and ends missing	No end finishes present	Cut edges

Table 1: Comparison of carpet structure in 1930 and 1998

Conservation treatment

The original condition report and estimate of time required for conservation allowed for the carpet to be given a full treatment including solvent cleaning at a facility outside the museum. A variety of methods for display were discussed including a sloping board with the fragment attached by Velcro on three sides or a conventional wooden batten secured to the wall with Velcro used on the top edge only.

The actual conservation treatment has varied slightly from this outline plan.

Several tests were carried out in the studio using a suction table where white spirit was applied with a brush locally to the stains. There was a slight reduction in the intensity of the stains but complete removal proved impossible. There was also no appreciable difference in the visual appearance of the wool pile. It was therefore decided not to go ahead with the scheduled solvent cleaning treatment at The Textile Conservation Studios at Hampton Court, where a larger suction table may be hired for such treatments. The carpet received a thorough surface clean using a variable suction vacuum cleaner with small attachments. This removed a considerable amount of surface dirt and dust and more ingrained particulate soiling.

A detailed diagram was made of the damaged areas which helped in the decision-making for either a full linen scrim support or patch repairs. The sprung warps on the reverse of the rug were considerable and had to be realigned before any further work could be carried out. The repairs were carried out using a curved needle and a laid couching thread of polyester. Once this was completed, the decision was made to use support patches. Samples of cotton rep were dyed to match the ground colour of the carpet and the best match used to dye sufficient material for the proposed patches. The cotton rep was chosen because the ribbed appearance of this weft faced fabric looks well behind worn areas of the carpet. The patches were placed behind areas of weakness where there was partial loss of warp or weft and pile loss. Patches were also placed behind other areas where there were gaps tears or holes.



Figure 3 Edge repaired with blanket stitching to dyed linen tape which forms a rolled edge to protect the frayed edge.

Using the same dye recipe as for the rep, linen tape was also dyed for use around all the cut edges of the fragment. When applied to the edge with a small blanket stitch this formed a gentle rolled edge which protected the raw edges and stopped further unravelling or pile loss. The carpet was then lined with curtain lining incorporating a little fullness in the fabric to avoid any puckering on the rug whilst hanging. As there proved to be insufficient space in the exhibition to have the carpet on a sloping board it was decided that the carpet would have to hang vertically. VelcroTM was sewn on to tapes which were stitched along the top edges and a little way down the side edges to give the carpet

more support when hanging in the exhibition. (see figure 3)

Comparison of estimated time with actual time taken for the repairs

The original estimate was based on someone working full time over a six month period on a contract. I carried out the work as my main project for 1998 from February through to November. The carpet was not worked on all the time but ran concurrently with other projects in the section. The conservation took approximately 500 hours. Whilst the conservation work carried out on the carpet enabled it to hang vertically for this exhibition, it is not a long term solution for display as a gentle slope or flat on a plinth would be preferable. The conservation of one major object can take a very long time.

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Should a Conservation Treatment Reveal the Secret of Damascus Steel?

Sophy Wills

Metalwork Conservator, Metalwork Conservation

Simon Metcalf

Senior Metalwork Conservator, Metalwork Conservation

This article discusses the treatment of the head of a Mughal *tabarzin* (saddle axe), Museum No. 400-1875, dating from 1739-1753 and possibly made in Lahore. It will appear in the V&A exhibition *The Arts of the Sikh Kingdoms*¹. Made of damascus steel, it is decorated with raised ribs, low relief chiselled patterns and inscriptions.

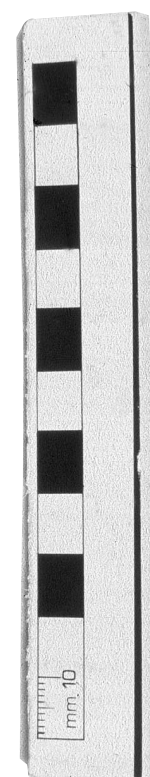
This type of steel has been known in Europe by many names, most commonly as damascus steel, or more accurately as watered crucible steel. From India and the Middle East the words *wootz*, *pulad*, and *bulat* have also been used (the term *wootz* will be used during this article). *Wootz* has been prized throughout history as a high quality blade steel. It is thought to have originated in the Indian sub-continent early in the first millennium AD, but opinions differ as to the exact method of manufacture^(2,3). It is a cast, high-carbon steel, which has then been skilfully forged to retain unusually large crystals of cementite (iron carbide) segregated in rows in a pearlite (iron carbide and iron) matrix. It is the unique crystal structure which gives *wootz* both its highly prized

mechanical properties (hardness and toughness) and its famed patterned surface. This swirling grain pattern was enhanced on the finished blade by the use of a weak acid etchant.

Initial assessment revealed that the axehead was in poor condition (see figure 1). Of immediate concern were patches of active iron corrosion. In addition the surfaces of the blade were covered with disfiguring scratches, the result of heavy over-polishing. A patch with a very faint watered pattern, together with the form of the axe, indicated that the object was made from *wootz*. The feasibility of revealing the original watered surface was raised, and so the object was brought to the Metalwork Conservation studio for further investigation.



1. Mus No. 400-1875 The head of the *tabarzin* before conservation



During the removal of corrosion products, evidence of the high quality of the object emerged. Microscopic examination revealed regular hatching of the steel on most of the raised ribs and decorative areas on the sides and blunt end of the axe, which would have provided a key for overlaid gold which originally covered these areas (very small residues of gold could be seen). Additionally, an inscription was found to be a dedication of the axe to Safdar-e Jang ('war hero' in Persian), who was a governor of Lucknow and the Avadh district⁴.

Revealing the watered pattern of the *wootz* would involve the use of a weak acid to etch the surface. To help decide whether or not to carry out the treatment, the V&A Museum Conservation Department Ethics Checklist⁵ was used. This guides the conservator through the different factors to be considered before treatment of an object, by a series of sixteen questions. Question C: "Do I need to consult the following: clients, peers, other specialists?" seemed the best starting point. The consultation process included V&A curators, Sikh military experts, senior conservators from the V&A, and specialists from other museums. All discussions covered the issues raised by the Ethics Checklist.

To summarise these discussions: the main reasons NOT to attempt the treatment were

- The object was fundamentally stable, although damaged by heavy scratching and wear, and therefore this interventive treatment could be said to be unnecessary, since it would not improve the stability of the object.
- The polishing of the surface of the blade to a bright finish (and associated heavy polishing scratches) represents historical damage, and should be left as a record of the history of the object.
- There is always a risk of failure with any treatment. More polishing would reverse the treatment, but this would involve the removal of an unacceptable amount of original surface material.

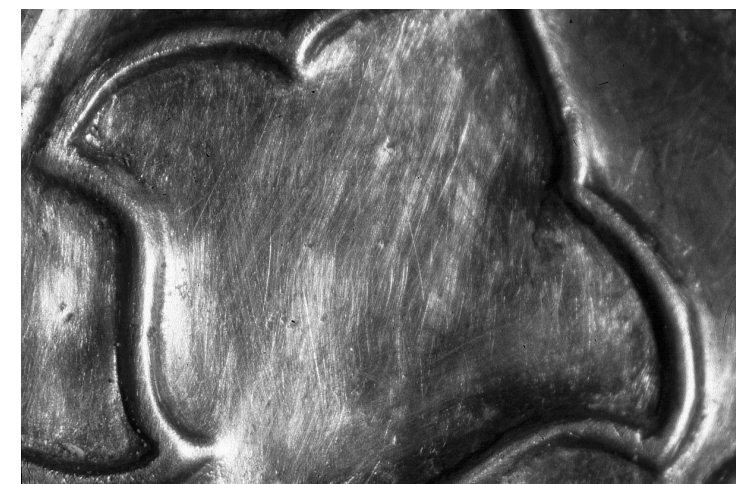
Against this, we felt that the watering pattern should be revealed because

- The intrinsic value of this object to its original owners lay as much in the material from which it was made (*wootz*) as in its form. Because the watering was not visible, the axe was not 'readable' as the high status

object it was, and so to return the surface to its intended finish would increase understanding of it.

- The bright polished surface is now considered a bad old conservation treatment, and etching would be a reversal of this treatment.
- Risk of failure alone should not be a deciding factor, and as much skill and experience as possible would be acquired prior to treatment.

At length, with the agreement of all V&A staff concerned, and with a generally positive consensus of opinion from outside the V&A, we decided to go ahead with the treatment.



2.a Detail of the axehead before etching, showing heavy polishing scratches.



2.b Detail of the axehead after etching, showing watering pattern.

Fortunately, a piece of *wootz* was available for testing purposes. We had hoped to uncover original recipes for the etchant (some sources referred to a substance called *zaghb*⁶). However, research failed to find specific details, and so the modern etchants nitric acid and ferric chloride were chosen for testing. These chemicals are used to etch ferrous samples for metallurgical analysis⁷ and are also used by modern blade smiths. Extensive tests were conducted to develop the treatment methodology, including:

- how to prepare the metal surface;
- whether to apply the etchant by poultice or swab application;
- how long to apply the etchant;
- whether to remove the etchant by dilution (running water) or by neutralisation (a solution of sodium bicarbonate in water);
- whether to immediately apply a protective layer (microcrystalline wax), or to allow to air-dry.

Photography by Sophie Willis



Figure 3. Detail of the axehead after conservation showing hatching of the raised ribs.

As a result of the tests, dilute nitric acid was chosen as the etchant. It was apparent that the best results were obtained when the surface was highly polished, thoroughly degreased and wetted prior to application of the etchant. It was decided not to polish however, since one aim was to try to preserve the existing polishing scratches as historical evidence.

- The handle of the axe was covered with multiple layers of cling film, and the axe blade was hand-held at an angle to facilitate movement of the etchant over the blade.

- The degreased surface of one side of the blade was wetted with Industrial Methylated Spirits.
- A solution of 3% (v/v) aqueous solution of nitric acid was applied with swabs over the surface, changing the swabs frequently (approximately every ten seconds).
- Changes in appearance were closely monitored. After approximately one minute the application of etchant was stopped.
- Running water was washed over the surface for several minutes to remove all acid.
- The surface was then de-watered using acetone, dried using a hot air gun, and a coating of microcrystalline wax immediately applied.
- The same procedure was followed for the other face of the blade.

NB. Because of the design of the axe, with raised rib decoration, it was possible to avoid acid contact with gilded areas. If this had not been the case, the gilded areas would have been protected with a commercial acid-resist product.

As can be seen in figure 2b and figure 4, the etching process was successful; the watering pattern is clearly visible once again over the blade of the axe. It was found that very little of the surface had been removed; although the watering pattern effectively disguises the heavy polishing scratches (see figure 2), under microscopic examination in raking light, they are still clearly visible. Similarly, the hatching on the originally gilded areas was unaffected (see

figure 3). We are therefore confident that little of the technical or historical evidence has been compromised.

One point emerging from the consultation process, the tests and the treatment itself, was that success in revealing the watered pattern relies on the quality and structure of the steel as well as on the technique used. Thus, the quality of pattern will be likely to vary with each piece of *wootz*, and not all crucible steel will have a watered pattern.

Finally, it should be emphasised that this was not a routine treatment. All museum objects are unique and present unique challenges in their conservation and presentation. Before repeating this treatment on another object, it would be necessary to repeat the preceding period of research, broad consultation, and discussion.

Acknowledgements

We would like to thank: S Stronge, curator of *The Arts of the Sikh Kingdoms*; P Craddock, Department of Scientific Research, The British Museum; D Edge, Armourer to The Wallace Collection; J Jackson, Armourer to the Royal Collection; A S Melikian-Chirvani, Research Director CNRS Paris; A Madra; A North, Metalwork Curator V&A; P Singh; O Untracht; A Williams, Metallurgist.

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Photography by V&A Photographic studio



4. Mus No. 400-1875 The head of the *tabarzin* after conservation

Ranjit Singh: The Lion of the Punjab

Nigel Bamforth

Furniture Conservator, Furniture and Woodwork Conservation

During the preparation for *The Arts of the Sikh Kingdom* it was decided that the architectural model of Ranjit Singh's tomb was to be displayed. An examination of the object was made, and a decision taken that only three of the façades would be exhibited, as the other components are not contiguous.

History

Architectural models were made in India throughout the nineteenth century, often for display at national and international exhibitions. This model replicates the imposing tomb, or *samaobi*, built to commemorate the 'Lion of the Punjab', Maharaja Ranjit Singh Located in Lahore, the mausoleum was designed in a mixture of Hindu and Muslim architectural styles. Completed in 1851, the exterior was faced in *chunam*, a lime plaster polished to resemble marble; on either side of the central doorway (north front), two life-sized reliefs stand guard over the royal shrine. The interior decoration was an exotic eastern style; convex mirrors reflecting light on the walls and ceilings, illuminating the Muslim and Hindu painted scenes. This model was previously displayed at the 'New Museum' of the Indian Museum in London when it opened in 1858, but, sadly, was severely damaged in a fire at the Museum Annexe in 1885, although it had previously been on display at the Indian Museum in 1880.

Conservation

A detailed condition assessment was made in the Furniture Conservation studio to reveal the extent of the damaged timber, as well as discoloration resulting from the application of a darkening surface coating which had accumulated surface dirt. We have to assume that this impregnation and darkening of the timber was done to achieve a more uniform colour over the object. The polychromed panels also suffered discoloration from soot, leaving the images less distinct. However, it is fortunate that the burnt material is confined to the lower areas where it is charred and friable, leaving most of the object generally in a stable state.

The treatment of the model covered two differing areas; the architectural model and the painted panels. Fourier Transform Infra Red spectroscopy tests were carried out by Science Section to try and identify the substance previously used to impregnate the timber. It had been suggested that linseed oil was possibly present, but ultimately the tests revealed that it was shellac which had been used. Solvent tests were also carried out, and ultimately the use of a 20% solution of Industrial Methylated Sprits in de-ionised water was the most effective. This was applied on cotton swabs to remove the surface grime and restore the polychrome outline surrounding the low relief carving. Treatment of

the burnt and charred timber required a consolidant that would be flexible, whilst allowing for changes in environment when on exhibition and later on loan. A 10% solution of Butvar B98 in a mixture of 60% IMS and 40% toluene was selected, and this was applied with a sable brush until the required saturation was achieved.

The two polychromed panels which are nailed into recesses on either side of the central archway also required attention. Advice was sought from both Nicola Costaras, Senior Paintings Conservator, and Mike Wheeler, Senior Paper Conservator. There was considerable flaking and lifting of pigments on both panels, as well as a build up of dirt and soot, especially on the proper right panel. This panel was also split. Attention was given first to the flaking and lifting material. This was mainly consolidated with 10% Aquazol™ in de-ionised water, although the most unstable flakes were adhered with a more viscous solution of methyl cellulose, applied with a sable brush. The split timber was glued with Helix™ animal glue and held in place. The polychromed surface was now stable enough to gently clean with saliva applied with cotton wool swabs. The soot particles proved more difficult to release from the surface, so a solvent solution of 5% tri-ammonium citrate in de-ionised water was applied with a cotton wool swab, then rinsed with de-ionised water. This removed about 20% of the blackened surface, making the panels visually acceptable.



Photography by Nigel Bamforth

The central element of the main façade after conservation

Surface layer: chalk (carbonate) and white lead
Middle layer: zinc and white lead
Ground: chalk(carbonate) and white lead.

Samples of the rust coloured pigment were also taken for analysis. This colour was composed of numerous pigments, presented in a crystal-like form; orange, white (opaque), black, pale yellow. The pigments are perhaps vermilion with traces of ochre. Further XRF tests would help to identify the pigments.

Decorative carvings, both in ivory and in timber were missing from above the doorways. It was decided to manufacture replacement for these carvings, as their loss impaired the overall aesthetic impact of the object, The carvings were cast in Tirantis 'pigmented' clear casting polyester resin 405 710 and then adhered in place.

Although it is still quite evident that the model has had fire damage, it is now stable and suitable for exhibition, as part of the powerful and turbulent history of the Sikh nation.

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Figure 1. View of the main façade of the model of Ranjit Singh's tomb. Museum No. 944 (IS) 126cm x 41cm



Photography by Nigel Bamforth

Figure 2. Detail of one of the polychromed panels during conservation

Analysis of the polychromed panels was undertaken by Hannah Eastwood, Conservation Scientist, to try to gain an understanding of the materials used in their construction. Small samples of the white ground were taken; these revealed the application of three layers of pigments, with an extender of carbonate:



The Golden Throne

Museum No 2518 (I.S.)

The magnificent throne, formerly used by HM the Maharaja Ranjit Singh, can be viewed in The Nehru Gallery of Indian Art, 1550-1900 (room 41). It is embossed sheet gold over a wood and resin skeleton and was made by Hafiz Muhammad of Multan around 1818.

Nearly twenty years ago a request was received to assay the gold content of the decorative sheet. With much trepidation a small sample of the metal was removed for atomic absorption analysis from the underside of the throne. The analysis showed the sheet metal to be pure gold. The 'bloom' that appeared on the surface of the sheet gold that prompted the analysis, was attributed to a lacquer applied in the 1960's.

With the advances in analytical chemistry that have been made over the intervening period it is now possible to undertake this type of analysis without the removal of any material from the object. This technique of analysis is called energy dispersive x-ray fluorescence spectroscopy – or EDXRF for short.

Display case collaboration

A collaborative project on display cases has been established between the V&A, the Opificio delle Pietre dure e Laboratori di Restauro, Florence and Laboratorio Museotecnico Goppion S.R.L., Milan. This research will focus in turn on the various aspects of display cases – security, environment, display, maintenance, construction, business issues, integration, services.

It is unusual for a museum to regard display cases as assets in their own right and there are no audit trails for these large, expensive pieces of equipment. The V&A has display cases from the late nineteenth century through to modern day purchases, constructed from different materials and selected for aesthetic or security reasons. The Museum currently has in the region of 4000 cases. This is a replacement cost in the region of £20 million (current market value) and such an investment surely warrants a maintenance programme similar to an air-handling plant: that is a regular sequence of checks on their performance. We are now looking at devising a planned maintenance scheme for display cases.

Preliminary results, from a limited number of museums, shows that a planned maintenance and cleaning programme of the interior of display cases is generally absent. Their external surface is usually cleaned daily, depending on staff availability, yet their interior is cleaned only when the object contained inside is removed for ordinary maintenance, for loan, or when dust is really evident! An understanding of the effect the cleaning agents can have on objects appears to be missing. An investigation of cleaning materials currently in use in museums is underway. A more detailed article on our findings will be presented later in the year.

Award for innovation

The 1998 Jerwood Award for Research and Innovation has been won by David Ford of the V&A's Science and Information Section and Stuart Adams of Queen Mary and Westfield College.

The collaboration has resulted in a cost-effective method for monitoring and analysing particulate matter in museums and other cultural properties. The package consists of glass slides (for deployment) and a gloss meter (for interpreting the slides). This kit enables museums to choose to carry out the work independently or use the service provided.

The award ceremony was held in the Foreign & Commonwealth Office, London, last December. At the ceremony Loyd Grossman, a commissioner for the Museums and Galleries Commission (MGC), commented that "in the UK we enjoy the highest standards of Conservation in the world and the winners are living proof of the talent, expertise, and dedication displayed".

The initial study, which resulted in this collaboration, was published in an earlier edition of the Conservation Journal (No 22 p19-21). The team will continue to expand the research into new areas.



THE JERWOOD FOUNDATION

See our Science website accessible from URL: <http://www.vam.ac.uk/science/vandatemp/index.htm>.

The Function of a "Fetish" Figure

Victoria Hobbs

RCA/V&A Conservation Course (with the Horniman Museum), MA Student, Ethnographic Materials

The title of this paper refers to a *nkisi* power, or "fetish", figure (Museum No. 13.33) that has been conserved prior to being included in the re-display of ethnographic artefacts at the Horniman Museum. The object is from the Congo in central Africa; it was accessioned in to the collection in 1913 but was probably made sometime during the 1800's. The purpose of this paper is to discuss what the object was used for, what its various components are, and to question whether, as part of the museum's collection, it has lost some of its meaning, which in turn may affect the intervention of the conservator.

Although such objects are frequently called "fetish" figures, referring to the fact that they were believed to have magical powers or that excessive devotion was paid to them, this is an entirely European term and evolved from a condescending misinterpretation of African civilisation. Locally-produced objects were sought by Europeans as souvenirs and curios of what was viewed as the 'primitive barbarity of Africans'. Picture postcards were also available depicting ceremonies and customs, which promoted the theory

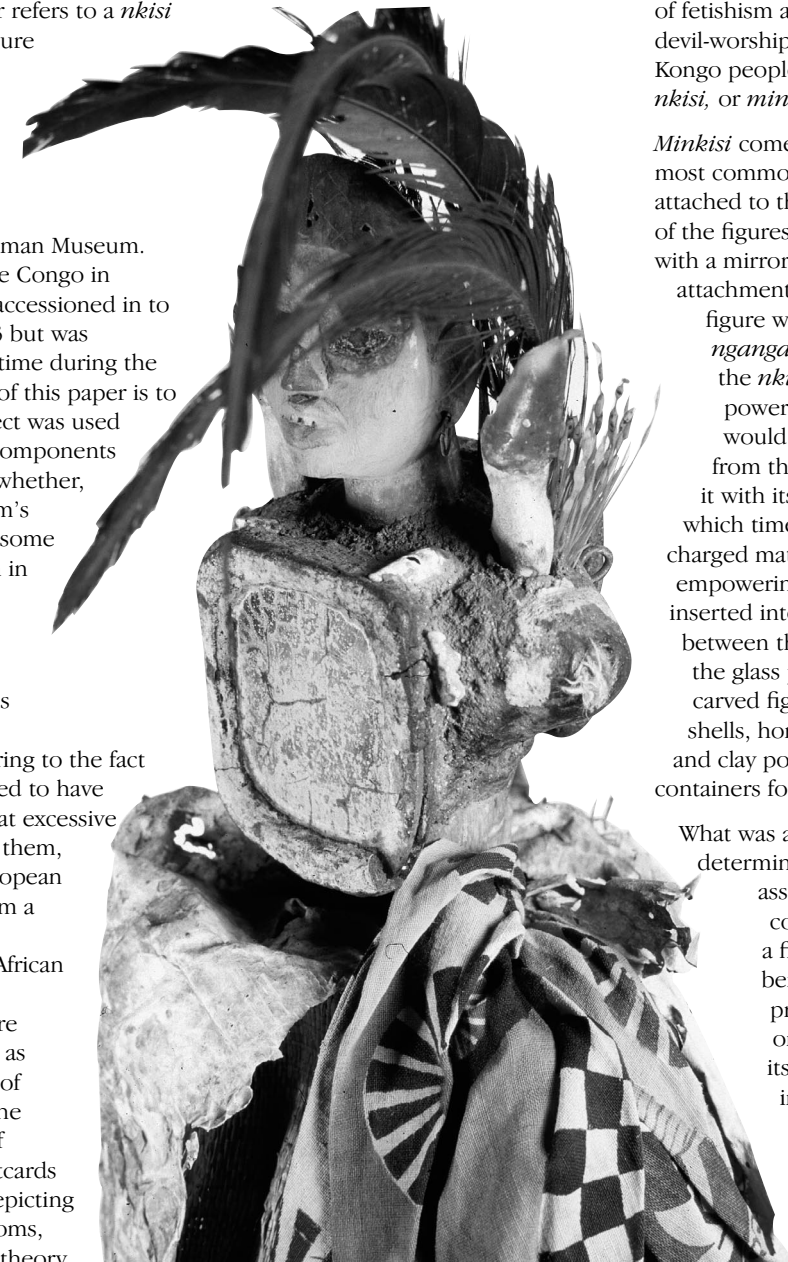


Figure 1. *Nkisi* figure. Museum Number 13.33.

of fetishism and terms such as idolatry, devil-worship and evil-doing. The Kongo people refer to such figures as *nkisi*, or *minkisi* in the plural.

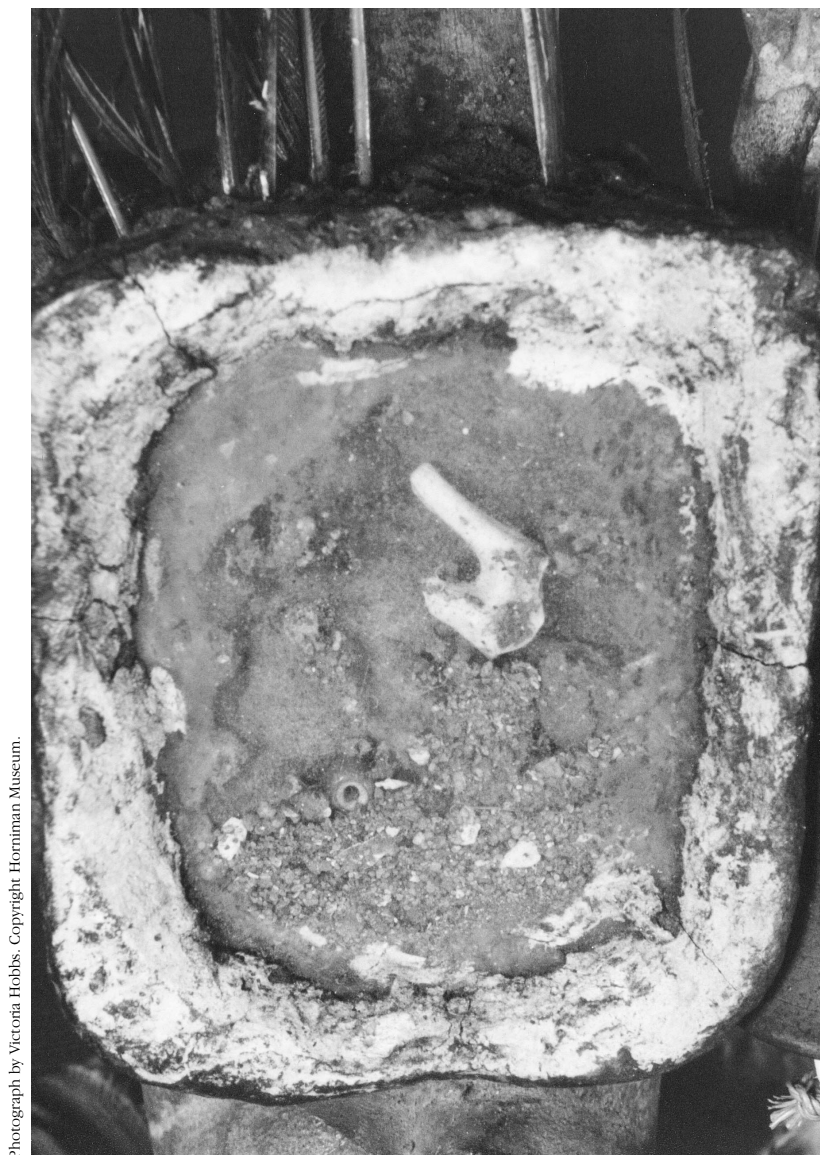
Minkisi come in various forms. The most common feature is a pack attached to the back or the abdomen of the figures which is usually covered with a mirror. It is this pack, and other attachments, which provide the figure with its function. It was the *nganga*, or priest, who operated the *nkisi* and ministered its powers to others¹. The priest would order a wooden figure from the carver and then endow it with its power during a ritual at which time medicines or magically-charged materials were attached. The empowering substances could be inserted into cavities on the head or between the legs, as well as behind the glass plates. In addition to carved figures, objects including shells, horns, cloth-bags, gourds and clay pots were used as containers for this material².

What was attached to the figure was determined by the powers to be associated with it. The *nkisi* could be empowered to be a figure of ill-omen or of benevolence which protected against sickness or dangerous spirits. With its attachments the figure is imbued with an empowering spirit also known as *nkisi*. *Nkisi* is conceived as a power emanating from the unseen world of the

dead, an omniscient force which is otherwise inaccessible to human perception³. In being persuaded into taking up residence in a particular contained space, it can then be manipulated by the *nganga*.

When a client required the use of the *nkisi*, a further ceremony was performed by the priest. An appropriately empowered figure was selected, and through chanting, singing and dancing, the *nkisi* spirit would be called upon to act. Clients could also add small packets containing hair, fingernail clippings, shreds of clothing or other relics to remind the *nkisi* of the particular problem or of the person to curse or protect. Figures could also be anointed with the blood of chickens which were sacrificed as gifts to the *nkisi*. This was thought to make the *nkisi* aware of the violence that could be expected of it. The purpose of the mirrored glass was not only to seal the medicinal pack but also to reflect back the gaze of the viewer, completely concealing what lies behind. The mirror symbolises the *nkisi* spirit's ability to see the human world and the inability of humans to view the underworld. The glitter of the mirror was also believed to frighten witches and evil spirits away.

Behind the glass plate on the back of the Horniman figure (Museum No. 13.33,) are red glass beads, a small bone or tooth, and granular material which is possibly grave soil or gunpowder. Value was often given to foreign imported materials such as mirrors, gunpowder, cartridges and nails (Figure 2). The Horniman figure has many attachments. These include feathers, hooves, grass-seeds, bells, textile, skin, woven raffia fibre, shells and teeth. The feathers link the figure to the violence of the sky; winds, rain, thunder, lightning, and fire, and to the diseases of the upper body, head, neck and chest. The shells are durable – houses of creatures that were once alive, and are synonyms for long life.



Photograph by Victoria Hobbs. Copyright Horniman Museum.

Figure 2. Detail rear view of nkisi figure showing contents. Museum Number 13.33.

The teeth are probably human teeth and suggest the ability of the *nkisi* to attack its victim. The bells are associated with chiefship all over central Africa and indicate the power and authority of the figure. Bells were also put on dogs and symbolise the *nkisi*'s ability to hunt its victim.

Textiles that were attached to the figures were often strips from the client's clothing, and personalised the request. A further underlying idea of

the attached feathers and strips of cloth or skin was that they would flutter during the dance that was part of the ritual, which would help to suggest spirit possession. Raffia cloth was formerly used as currency and one of the reasons it was attached was to identify a thief. If someone had money stolen and the thief was unknown, a raffia cloth was attached and the *nkisi* would know whom to seek out and punish. Such cloths were also attached

to hide the nakedness of the figure as it was considered among the greatest insults to stare at the buttocks of *minkisi*. Skin or leather that was attached was often the skin of animals that served as the diviners' familiars.

Nkisi figures are complex objects that offer an endless variety of interpretations within a certain framework of ideas. However, no definitive reading can be made of such figures, as many of them are undocumented. The rituals for which they were constructed are no longer performed. Therefore, most of the ritual – the words, songs, gestures, costumes and the state of mind of the client – are no longer accessible to us. All that survives are the mute objects – some now damaged by the process of collection and storage. Some figures may have been altered because they were thought to have been indecent and not suitable for public viewing. Many other figures had their attachments removed by collectors who were more interested in the pure form of the carved figure. This preference for the sculpted figure was an impoverishment of the figure in itself. The *nkisi* figures were never intended for art or public display in a museum. The intention was to create a visual effect in the context of ritual use, heightened by songs, drumming, and dancing. Information for the storage of the *nkisi* after the ceremony, which would have been provided by the priest, has also been lost. Some were intended to be kept in a specific kind of basket, or in the roof of the client's house. Such information was often not recorded when the object was collected.

This loss of meaning and altered context restricts interpretation of the object, and the function may not be fully understood. Conservators of ethnographic objects, unless they themselves are from an anthropological background, or do their own research, are very much guided by the curator as to the likely

history of an object and how it should ultimately look after treatment. Once given that information it is very often a case of minimum intervention when it comes to conserving an object. For example, although this object has few surfaces or materials that would merit wet cleaning, this was not considered because of the fact that libations such as the chicken's blood or other substances may have been poured over the figure and now form part of the history of the object and should not be removed. It is important to have respect for the original function of the object, and as it may not at first be obvious what that was, research and curatorial collaboration are essential.

Acknowledgements

With thanks to Louise Bacon, Head of Collections Conservation and Care, and Anthony Shelton, Keeper of Anthropology, at the Horniman Museum.

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The Artificial Patination of Bronze Sculpture

Lyndsey Morgan

RCA/V&A Conservation Course, MPhil student

Prior to undertaking this MPhil research project I was a sculpture conservator at the Tate Gallery, where I became interested in the colouring of bronze sculpture. Whilst at the Tate I had seen examples of sculptures on which patinas were changing and degrading but it was difficult to determine the causes as so little research has been published on this subject. The aim of the project is to find out about the chemicals and techniques used in artificial patination and then, more importantly, to discover what happens chemically at the surface when they are applied.

Artificial patinas are applied to bronze using chemical solutions which react with the surface to form a thin layer of coloured corrosion products. Patinas can be transparent or opaque and are sometimes applied in a number of layers to produce widely varied effects. Patination has been used as a decorative technique on metals by many different cultures for thousands of years. However, the development of patination as we now know it on bronze sculpture probably began around the time of the Renaissance when it was primarily used as a means of conferring the appearance of

antiquity on a sculpture. Traditionally, therefore, sculpture has been patinated in varying shades of browns and greens in imitation of the colours which form naturally on bronze exposed to the elements.

The techniques for colouring bronze expanded in the late nineteenth century to encompass a wider range of colours and surface finishes. During the twentieth century the trend has been to move away from the more traditional colorations and to develop a new language of colour on the surface of bronze for a modern

generation of sculptors. It is now possible to colour bronze chemically in a huge range of shades.

The artist's involvement in the choice of patina for their sculpture varies. Some artists leave the decision to the patineur in the foundry whereas others supervise the process closely or even learn to patinate themselves. There is no doubt, however, that the colour of a sculpture is an integral part of its artistic intention. It is known that artists such as Barbara Hepworth and Henry Moore were very specific about the contrast and arrangement of patina on their sculpture. It is less easy to gain information as to how the sculptor felt about the ageing of the patinated surface over time. If a sculpture is displayed outdoors it will inevitably tend towards natural brown and green corrosion products. Sculpture conservators sometimes consider Restoration to the artist's original concept when a sculpture has been badly damaged, but this can be difficult or impossible to attempt where insufficient documentation about colour and pattern exists. I therefore also wanted to address the problem of accurate visual documentation in my research in order to find out what techniques were available to enhance those presently in use.

The approach I have used is to investigate the chemical recipes and techniques used in patination through a diverse range of sources. This began with the published literature and was followed by a series of interviews with patineurs in foundries around Britain. This was undertaken with Kirstie Reid, another research student on the Conservation Course, who is studying modern methods of patination from an artist's point of view. We were also able to interview some of the older generation of patineurs who were no longer practising but had worked with established artists. This has helped to give us an insight into the development of foundry practice and

patination techniques in the later half of this century.

In gathering this information I was aiming to acquire enough knowledge to attempt simple patination of bronze myself. Initially I was able to get useful practical advice from Richard Rome at the RCA sculpture school where I made use of the well equipped patination room funded by The Gabo Trust for Sculpture Conservation. I also attended a very interesting summer school about patination methods led by Andrew Lacey at AMTeC.

During the summer last year I took part in the re-patination of a large outdoor bronze by Barbara Hepworth which is owned by the Tate. The sculpture had been badly damaged in

a storm whilst on display at the Yorkshire Sculpture Park. Prior to this it had acquired a patina from years of outdoor exposure which was a uniform green colour. The necessity for welding to take place to repair the damage meant that this patina would need to be removed in a number of areas. Because of the difficulty involved with getting an exact match with the outdoor patina using artificial patination methods, the decision was taken to re-patinate the work completely using as a guide colour photographs taken in the 1960s when the sculpture was newly patinated. The photographs revealed that the original patina had been a combination of clearly defined brown and green areas which were applied to highlight the



Figure 1. Bronze samples being cast in the foundry of the RCA Sculpture School.

Photography by Lyndsey Morgan



Photography by Frank Thurston

Figure 2. Lyndsey Morgan patinating bronze samples in the patination room at the RCA Sculpture School.

contours and inner and outer spaces of the work. During my work there I learned a great deal about the day-to-day activities in a foundry and was able to learn the techniques of patination more thoroughly. I found the collaboration with the foundry on this project to be very valuable and felt that I could approach the problem from a more informed standpoint as a result of my research.

After this I was had a range of bronze samples cast at the RCA foundry (Figure 1) so that I could begin patinating them using rigorously documented methods (Figure 2). This included recording the process of patination in detail whilst documenting the temperature of the metal, the pH of the patinating solutions, and the relative humidity and temperature of the patination room. These samples will be subjected to various analytical techniques to investigate which are most appropriate for characterising patinated surfaces.

Although a great deal of research has been carried out on “natural” patination processes on outdoor bronze and archaeological bronze, there seems to be almost none relating to these artificial patinas. I am lucky to have had access to staff and equipment at Imperial College through the Conservation Course. So far, the preliminary results of the first analyses using x-ray diffraction have been interesting and unexpected. I hope to confirm and expand on these results using the technique of Scanning Electron Microscopy (SEM) with an Energy Dispersive Spectrometer (EDS)

I was also able to learn the techniques for taking metal sections with Anna Bennett of Conservation Technical Services. I hope to use this technique to investigate the morphology of patina layers and to see whether it is possible to distinguish different patination chemicals and application methods.

Finally, a second cast of textured bronze samples has been made in order that I can patinate them using a range of common patination techniques. The purpose of this is not so much for analysis as to provide a set of visual reference standards which can be built upon over time. This will be transferred to an image database via calibrated scanning so that it can be used in sculpture conservation departments as an aid in the documentation of bronze surfaces. I hope that the combination of these methods will lead to the beginnings of a greater understanding of patinas on all types of bronze objects and ultimately to take steps towards the analysis of unknown patinas.

Acknowledgement

The MPhil research project described in this article is generously supported by a grant from the Gabo Trust.

V&A New Staff



Tim Carpenter

Information Systems Manager, Conservation Administration

After gaining an HND in Practical Archaeology from Bournemouth University in 1988 I worked for the Oxford Archaeological Unit. In 1990, I joined the Museum of London's Department of Urban Archaeology working on rescue digs within the City of London. However, the insecurity of the profession prompted me to leave archaeology and seek more stable employment.

Two months later, I gained employment as a Contracts Manager for the Training and Enterprise Council in Reading (TVE). At TVE I had to adapt from the methodical and scholarly environment of Archaeology to the working practices of a multi-million pound business. However, this environment did give me the opportunity to develop my IT and information management skills. My role was to manage and develop Training Programmes within very specific Government guidelines. In 1997 TVE promoted me to Planning and Systems Executive, a more strategic role.

I was delighted to be given the opportunity to work for the V&A and I feel that my career path has come full circle. There are many exiting new challenges here and I know that there is a lot that my new role and colleagues can teach me. I look forward to working with you to maintain and develop systems and solutions that will assist the Conservation Department in carrying out a very demanding work schedule.

As for Archaeology, I now have to be satisfied with heckling the *Time Team* from my armchair. A less 'hands on' pursuit, but with far better job security.



Pascale Regnault

Book Conservator (one-year contract)
Book Conservation Section

My career started with a two and a half-year apprenticeship in bookbinding in Munich, my hometown. I then came to London to do a one-year course in Bookbinding (design) at the London College of Printing, followed by a Paper Conservation (library and archive specialism) Course at Camberwell College of Art. During that time I completed a fieldwork placement in the Book Conservation Studio at the V&A.

After college I got a job in the Conservation Department at the Bodleian Library, Oxford. After an initial tour through the various workshops, I settled in the Book Conservation studio as an assistant to the Duke Humfrey Project. This was set up specifically to deal with the holdings of the oldest Reading Room at the Bodeian, and encompassed all aspects of conservation, first aid, full treatment, preventive conservation and public relations. When my former supervisor left I was put in charge of the project.

I left the Bodleian after six and a half years to join the Deutsches Historisches Museum in Berlin where I mainly worked on exhibitions and 19th and 20th C. book material. It was very exciting to be involved in displays concerning very recent German history and to observe some of the incredible changes taking place in and around Berlin. Unfortunately my 2-year contract there ended and looking for further work I was offered a contract here at the V&A. This is a great opportunity to work on the holdings of the National Art Library, and to be involved in research and training. I hope to learn about the history of the collections, and also to meet other staff across the museum.

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Paper*

Sandra Grantham (PhD)
Magdalena Kozera (PhD)
Cecilia Rönnerstam (MA)
Shiho Sasaki (MA)

Textiles*

Elizabeth-Anne Haidane (MA)
Heather Porter (MA)

Computer Visualisation

Nicholas Frayling (PhD)
Angela Geary (MPhil)
Thanasis Velios (MPhil)
Risk Assessment
William Lindsay (PhD)

Sculpture*

Metaxia Ventikou (MA)
Social History Objects
Laura Davies
(With Museum of London)
20th Century Materials
Francesca Cappitelli (MPhil)
Fotini Koussiaki (MPhil)
(with Tate Gallery)
Silvia Valussi (MPhil)

Science*

Paul Cadman (MPhil)
Pedro Gaspar (MPhil)
Ethnographic Materials
Victoria Hobbs (MA)
(With Horniman Museum)

*denotes discipline,
not necessarily the V&A
Conservation Department
Section

Internships

Furniture

Henriette Stuchtey
Genoveva Romero

Paintings

Gaia Girad
Katharina Kardorf

Books

Maria Beltran de Gebara

Paper

Ester Fried