

Conservation newsheet 1: The conservation of two Indian manuscripts

The National Archives of Scotland (NAS) has a rich and varied collection from many countries and cultures including Chinese, Islamic and Indian. This paper presents the analysis and conservation of two Indian manuscripts which relate to Mirza Muhammad Akbar Shah, who was heir apparent to the throne of Delhi. He reigned as Mu'in al Din Akbar the penultimate Mogul emperor.

The manuscripts are known as 'Firman' (decrees) and were created for the Crown Prince to present to the Scottish Colonel David Ochterlony between 1803-6. The manuscripts are written in Farsee (Persian) and the translation of these important documents is currently being undertaken by the School of Oriental and African Studies, London (SOAS).



NAS ref. GD1/375/3/3/1



NAS ref. GD1/375/3/3/2

Description

Each manuscript is comprised of a single sheet of 'laid' handmade Indian paper. As was customary, the sheets have been highly burnished by constant rubbing with an agate or other smooth stone. This process was repeated between the application of gold and pigment to achieve a very smooth sheen.

The carbon black ink text is orientated to the left of the page with three smaller areas of text along the right side, arranged at angles to the main body of text. The text within the small box at the bottom right of each manuscript has been translated as 'Identical to original', suggesting that the original resided in India with Akbar, and Ochterlony took two copies back to Scotland.

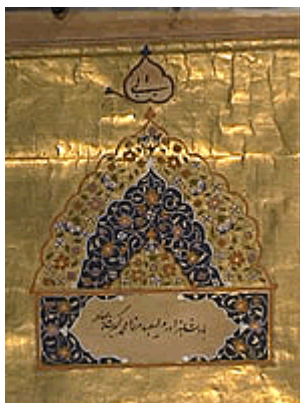
Gold has been applied in sheets onto a painterly gum layer and finished at the edges with gold paint (hal). The 'paint' would have been made by placing gold leaf into a porcelain dish with honey and glue, and grinding with the base of the hand for many hours. The powder would then be washed/strained and allowed to dry. It would be applied with animal glue and humectants. The gold designs within the vignettes have been further embellished by small perforations, which Indian artists used to add sparkle to the burnished gold.

Analysis

The coloured pigments used in the vignettes and borders were thought to be inorganic minerals which were commonly used in Indian paintings of the period. The manuscripts were analysed to confirm the materials used in their construction and identify any previous repairs prior to conservation treatment. Multi Spectral Imaging (MuSIS®) analysis was carried out in partnership with Historic Scotland. This non-destructive analysis requires no sampling of the original manuscript, but utilises different wavelengths and records the absorption or reflectance of the materials in visible, ultra violet, infra red and false colour infra red light sources (a spectral range of 320nm to 1550nm).

False colour infra red photography employs a film that is sensitive to both electromagnetic radiations both in the visible band and infrared region. The dyes in the film do not correspond to those of the object so the pigments of the original object appear as signature colours. The shifts in colour are very specific and can be used to distinguish between pigments which appear identical in visible light. This process has been used sparingly in the analysis of artefacts since the 1960's as the film is very sensitive and unmanageable.

MuSIS has developed this principle and incorporates the qualities of the false colour photography film into a digital format, so that the colour changes can be easily viewed on a screen. Identification can then be made against a chart of known colours.



Visible light



False colour – the blue shifts to a strong red, red to a yellow

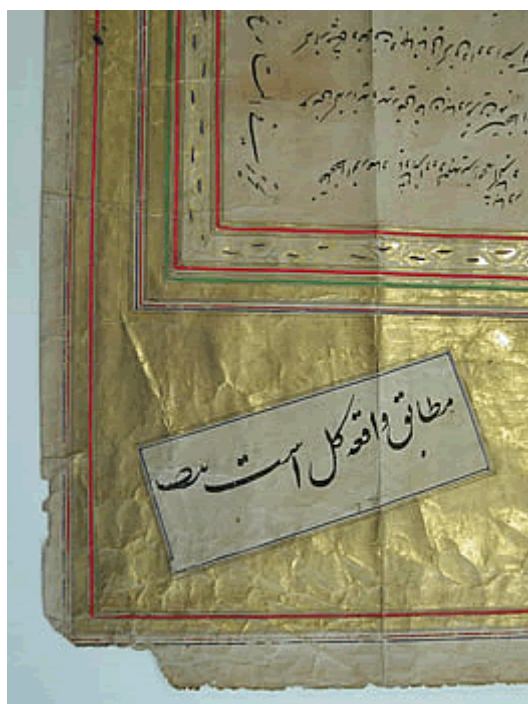


Infra red – green foliage absorbs, blue reflects.

The analysis carried out on the NAS manuscripts ultimately identified 2 different reds, namely vermilion and red lead. The deep blue areas, which constitute the main body of each vignette and borderlines, are lapis lazuli. The green was more difficult to identify. The green within the leaves/foilage and borderlines absorbed very strongly in infrared. Malachite, verdigris and indigo/orpiment in combination all strongly absorb so a positive identification could not be made with infrared. Since green in manuscripts 1 and 2 appears blue in false colour. Indigo shifts to a red tone in false colour. Verdigris and malachite both shift to blue in false colour. The appearance of the green in visible light (leaf green) infers verdigris, rather than the opacity and subtlety of malachite.

Condition

The manuscripts were received to the NAS collection within poor unglazed frames. Poor storage and handling prior to framing contributed to overall undulations, creasing and substantial areas of tearing and loss. One of the manuscripts had been especially damaged with losses primarily on the left side with the appearance of vermin attack. When the manuscripts were framed, the left edge was 'masked' by the addition of gilded poor quality paper inserted behind the object. The overall auto-oxidation, acidity and embrittlement of each sheet contributed to tears and losses where the paper 'shattered'. The objects could not be handled, and had no internal strength.



Detail of the extent of the shattered bottom edge and creasing manuscript 1.



Main text of manuscript 1 – vermin attack evident at right edge

Treatment

The two manuscripts were treated in conjunction. Firstly they were surface cleaned on the back with chemical sponge and grated staedtler mars eraser. The front of each sheet was lightly brushed taking care not to disrupt media/gold.

In order to reduce planar distortions and improve inter-fibre bonding, the manuscript was humidified in a goretex chamber monitored at 80% relative humidity) for only a fifteen minute period. The manuscripts were monitored throughout, and then transferred to blotting paper, between thin bondina to prevent 'catching'. This was then weighted lightly under perspex. The blotting paper was changed after 30 minutes. Felts were not used for the first pressings as it was felt that the support was too fragile and brittle to be pressed without full support beneath. The first humidification was very successful bringing the object into plane without pressing out all character. Following one week under weights the gold and pigments were unaltered. There was slight improvement in flexibility of the sheet.

Edge tears and creases were repaired using thin kozo (5.5gsm) and gampi Japanese tissues with minimal dry wheat starch paste on the verso. The papers were applied according to the grain direction of the sheet and small repairs were weighted locally. Following all repairs, it was necessary to re-humidify the whole sheet, as even the smallest additional gampi repairs had introduced slight tensions. The sheet was returned

to the humidity chamber for 30 minutes and placed between blotters under perspex and light weights overnight.

Losses were infilled with British hard wove brown paper which has been designed to replicate Indian papers. High quality handmade papers similar to those made in the Indian subcontinent during the early 19th century are hard to source. Two sheets of paper were sprayed out and laminated with very thin wheat starch paste to create the correct thickness of infill paper. This laminate was pressed between felts in the hard bed press overnight. Hard wove brown is a mix of 'Abakar' (manilla) and cotton, unsized, and hollander beaten to get a hard finish. The infills were then needle cut and attached with wheat starch paste.

The infills were retouched with Rembrandt Artists quality watercolours with the addition of gum arabic. The infills were not retouched or prepared with shell gold. This was researched as a possibility, but the left edge required a gold 'edge' before a paper perimeter to match the other three edges of the sheet. This would have appeared optically incongruous and coupled with the difficulty of application it was decided not to use gold in the treatment of the manuscripts. The manuscripts were window mounted in 100% rag museum board.



Manuscripts following treatment

The digital images of the manuscripts can be accessed through virtual volumes in the search rooms of NAS.