The studio practices of painters of the Mughal ateliers

Anita Chowdry
Artist and illustrator

Abstract
This paper summarizes an artist's exploration of the studio practices of painters and craftsmen in the royal ateliers of Mughal India, the influences that fed their work, and their influence on subsequent developments in the painter's craft. This paper outlines the historical context of the Mughal ateliers and details methods and materials used by artists in these ateliers as evidenced by primary sources and confirmed by the practices of present-day artists following such traditions.

During the last sixty years scholarship has focused on the study and analysis of the vast corpus of paintings created in the 16th and 17th century imperial workshops and which are now held in the collections of major international institutions. This paper explores important less commonly examined aspects of the historical context which includes the role and function of the ateliers and the impact of the patronage of the imperial court. This paper offers an empirical and practical resource for professionals interested in the subject of Mughal studies.

Introduction
This paper is the summary of an artist's exploration of the studio and workshops of painters and craftsmen who worked in the royal ateliers of Mughal India, the influences that fed their work, and their influence on subsequent developments in the painter's craft. Over the last sixty years much scholarship has been devoted to the study and analysis of the vast corpus of paintings created in the imperial workshops. This paper explores less commonly examined aspects of the historical context which includes the role and function of the ateliers and the impact of the patronage of the imperial court.

Historical context: patronage and the institution of the royal library

The Mughals of India were originally Turkic-Mongol princes descended from Timur, and they brought with them the traditions and cultural achievements of the Timurid line. Within their courts, astronomers, mathematicians, poets, calligraphers, and craftsmen were employed. Their patronage of the arts and sciences, and their taste for European and Middle Eastern manuscripts, were instrumental in the development of a new genre of painting that would become known as the Mughal style.

The Mughal court was one of the most enlightened and sophisticated courts in the world, and the artists who worked there were among the finest in the Islamic world. The Mughal court was also one of the most productive in terms of the creation of manuscripts and other works of art. The Mughal court was the first to truly appreciate the beauty and significance of the book as an object, and the artists who worked there were among the finest in the Islamic world.

Master calligraphers enjoyed the highest status in the hierarchy of artists, followed closely by the most skilled painters and craftsmen. There were various groups of master painters who assisted in the production of the famous Mughal manuscripts and paintings, such as the famous paintings of the works of the Mughal court.

Continuous shifts in political power often led to changes in the patronage of the arts, and the Mughal court was no exception. The Mughal court was the first to truly appreciate the beauty and significance of the book as an object, and the artists who worked there were among the finest in the Islamic world.

Conclusion
In conclusion, this paper offers an empirical and practical resource for professionals interested in the subject of Mughal studies. It provides an overview of the historical context of the Mughal ateliers and details methods and materials used by artists in these ateliers as evidenced by primary sources and confirmed by the practices of present-day artists following such traditions.
Artists and their working methods

Hereditary craftsmen

Since the late 1930s, a few hereditary craftsmen in India have come to the attention of scholars. These scholars were aware that the craftsperson's expertise was a treasure of knowledge passed on from generation to generation.

Doctor Moti Chandra, curator at the Prince of Wales Museum in Bombay, met Ustad Ram Prasad of Benares in the early 1940s. Already an old man, Ram Prasad was bise to the traditions that had developed in the ateliers of the Great Mughals and his family lineage could be traced back to the 18th century. Moti Chandra spent over a year with the painter, who painstakingly delved into his memory for all the technical processes he knew. Chandran's publication based on this research, The Technique of Mughal Painting, published in 1949, has since been viewed as a valuable technical resource to curators and conservators working with Indian collections.

In the early 1980s, Ved Pal Sharma, a Juipur artist who was back to painting the traditional Mughal courts, became known to Naveen Patnaik of the National Trust for Art and Cultural Heritage and Professor Stuart Carey Welsh of Harvard University. He was the focus of Welsh's introduction to A Second Paradise, Indian court life, 1900 - 1947, published in 1985. During his lifetime Ved Pal Sharma, known as Bannu, generously shared his knowledge with the many students and painters who came to him, and is still remembered with reverence as a great guru or master.

The training of a painter

Formative contact with miniature painting as a disciple of Bannu, adorned the author of this book the unique experience opportunity to experience what it might have been like to be the apprentice of a master painter in the royal ateliers of the past. The remainder of the paper discusses various processes learned in the craft of painting and the nature and use of painter's materials, reflecting on that experience with reference to information derived from primary sources of the Mughal courts.

Bannu never sold the imparting of his craft with financial transactions. Within the long tradition of this art, payment for training is a modern concept. To be accepted as a pupil was an honor bestowed by the master and the process of disseminating his expertise was an unstructured, organic affair, as it is in the relationship between parent and child. Apprentices studied their masters carefully, holding them in veneration, while undertaking many years of tutelage, before presuming to seek an individual identity. The author spent many long hours sitting quietly, watching Bannu paint. Sometimes he would make a small brush drawing of a figure for his pupil, who would repeat it endlessly, seeking to emulate exactly the hand of the master. Over an extended period, the craft is conveyed to the pupil through constant practice, ultimately forming an intuitive process. Along the way the student also learned which materials to use and how to prepare them - both integral aspects of the learning process.

Where the master trained his own sons or daughters, they would assume the relationship of master and pupil. Historically, children of artists in the imperial ateliers who were trained up as royal painters were referred to as Khanqah or 'orn in the house'. Emperor Jahangir, ruler of the Mughal Empire from 1605 until his death in 1627, took great pride in his painters. He mentions one of his favourites, Abu I Hassan, in his memoirs Tirbuz – 1 - Jahangir, Ghisis day Abu I Hasan, the painter, who has been honoured with the title of Nasir ud zaman (wonder of the ages), drew the picture of my ascension from the front price to the Jahangir Namah, and brought it to me. As it was worthy of all praise, he received endless favours. His work was perfect, and his picture is one of the masterpieces of the age, his father, Age Rizzi of Herat, at the time I was prince, joined my service. Abu I Hassan was a Khanqah of my court. My connection was based on having reared him. From his earliest years up to the present time I have always looked after him, and he is my black servant of old age. This passage highlights the centrality of the patron's support in the creative development of an artist and thus of the development of Mughal painting.

Drawing and the brush

A good hand in drawing has always been the most important skill for a painter. Brush drawing is executed with a fine brush and water-based pigments - usually based on a ground of lamp black. Like masters of the past, Bannu insisted on continuous practice by his pupils, and demonstrated specific exercises, such as drawing unbroken spirals, in order to develop brush control. The brushes produced by craftsmen in Jaipur today are very close to those used by miniature painters in the past. They are made of the tail hairs of the cheetahs of India, which are mounted on slender bamboo handles. They are distinguished by being slightly curved, very soft, full at the base and ending in a needle-sharp tip. The softness and the curvature of the brush allows for a great deal of agility in drawing, while the thick base of the hairs acts as a reservoir for the pigment, enabling long passages of work without the need to reload the brush and so interrupt fluency of line. There are strong similarities between calligraphy and brush drawing, a fact which is embodied in technical terminology - the Persian term qalam can mean either a painter's brush or a calligrapher's reed pen.

'Siyah qalam', meaning 'black pen', is a specific genre of monochrome brush drawing which has been admitted since the earliest development of painting for manuscripts and albums. The genre allows the artist to give full reign to the display of exquisite draughtsmanship, mastery of the brush and virtuoso shading techniques.

Shading, known as 'pardesh', is an important aspect of drawing, requiring much skill and practice to master. Chandran (1949) lists seven methods of parde, which include stippling, parallel lines, and their variations. The technique is used principally to soften, enliven and give body to the line. Variations of parde may range from thick to thin, from subtle to heavy, from the subtle growth of hair on the temples and beard, or the undulating surfaces of rocks. In the period of Akbar and Jahangir these techniques were also used experimentally to explore the prevailing European techniques of chiaroscuro and modeling. Another innovation under Akbar's patronage was the practice of drawing directly from life, particularly for portraits and studies of animals. This demonstrates the influence of the European prints which both Akbar and Jahangir admired and collected, and their interest in illusionary realism, which was a departure from the iconic imagery of Iranian and Indian tradition. An emanon though masterful drawing of Akbar in the British Library is supposedly posthumous, but to the eye of an artist, the sensitive spontaneity of the drawing suggests that it was taken directly from life.

The tracing of drawings and designs was a part of the workaday business of the atelier. A tracing or durbah was originally executed on translucent goldbeater's parchment, then the lines were pricked with a needle so that the image could be transferred by pricking. There is evidence of the repeated use of master's drawings in the preparation of manuscripts. Susan Stronge's examination of the Minto Album at the Victoria and Albert museum (ViKa) revealed a number of examples of this practice (2002).

Colouring and painting

In the highly structured Mughal ateliers there was frequently a division of labor in the creation of manuscript paintings. Master painters would plan the composition and do the initial drawing or 'ske', and the wede would then be passed to a younger painter for colouring. The Akbar Namah follows at the ViKa are inscribed by the librarian or scribe with the names of both the senior artist and the colourist (Stronge 2002, 55).

Fresh water mussel shells are the traditional receptacles for individual pigments in India. Depictions of artists surrounded by shells containing different colours can be seen in Mughal manuscripts. Finely ground pigments are tempered with water and a binding of gum Arabic in the shell, and are well mixed with a finger until the proper consistency for painting is reached.

Once a good flowing consistency has been achieved, the colour is applied in broad strokes using a firm, blunt
tipped brush—those currently used in Jaipur are made of mungnose tail. When the colours are dry they are burnished, using polished stones shaped to the artist’s preference. The burnishing at this stage is usually done from the wrong side of the paper, with the painted side face down on a clean sheet of glass or polished marble. This is to avoid scratching the paint, and it also prevents over-burnishing, which can produce a displeasing shine. The next stage is working up the modeling and detailing on top of the base colours, and the redefinition of the lines of the initial drawing, using pigments that are complimentary to the body colours. The techniques used for handling the details are the same as those described for drawing. For the execution of particularly refined passages such as faces and hair, the work is handed back to the master. Other details like flowers and passages of illuminated decoration may be given over to specialists in those areas. The final stages include the application of pearls, which are put in as little impasto points of white pigment, with a fine blunt brush, and hilkari or gold and silver, which is discussed in more detail below.

Figures 1, 2 & 3 show a detail of the mythical bird of Iranian literature, the Simarg. These images were copied from a painting in the British Museum, ‘The assembled animals complain to the noses of their mistreatment at the hands of man...’ attributed to Miskia c.1600, RM 1920, 9-17-05. The figures demonstrate the stages of constructing a painting.

Painting surfaces

Paper

The preferred surface for manuscript and album pages was paper. The earliest centre of papermaking outside China was at Samargand, followed by others in Iran (Levcoy 2000). The fine paper used for Moghal manuscripts in the 18th and 19th centuries was either imported from Iran or made and prepared in the new mills set up at various locations within the Moghal Empire, such as Shillot, Kashmir, and Ahmedabad.

Paper was generally made of flax or hemp fibers, often recycled from old textiles or fishing nets. The paper underwent several processes in preparation for the folios of manuscripts—drying, sizing, polishing and gold-spattering—and therefore needed to have a very stable construction as well as beauty. The author examined a small piece of Moghal paper and found that there is nothing comparable in modern day production. It is remarkably thin—not more than 80µm—with an exceptionally strong internal sizing which allows it to be wetted without pilling, and it has a silky smooth surface, further refined by applications of sizing and burnishing. Inherent strength enabled papers of the period to be easily laminated and pasted with whose starch paste for the production of manuscripts and album pages, and the glassy smooth surface enabled the execution of exceptionally fine brushwork and the optimum burnishing of applied gold. Paper was a valuable commodity, and therefore was used as economically as possible. When piecing together elements of a folio—pieces cut out for borders, for example—never have wasteful mattes at the corners; studio studies and apprentices’ practice pages were washed, reused and overpainted. Stocks of paper were handed down as heirlooms in artists’ families. Ranna owned a collection built up over more than a century, which he passed on to his sons.

As the imperial workshops began to break up by the reign of Aurangzeb (1658-1707) the quality of paper manufacture began to deteriorate. Paintings and manuscripts executed during the 18th century in regional Moghal schools such as Lucknow are generally less refined both in material preparation and in execution, and developments in the Jaipur schools of the 18th century put more emphasis on larger paintings intended for display than on manuscript pages. Consequently there was less demand for ultra-fine work and therefore less incentive for papermakers to produce exceptionally fine paper. By the early 19th century the introduction of paper from Europe by officers of the East India Company had further impact on the production of paper in India. It was supplied to the local artists they commissioned to produce paintings in what is now known as the ‘Company School’ style. Paradoxically, according to Ranna, this also aided continuing local patronage of indigenous paper makers by businessmen who were orthodox Hindus or Jains, because they mistrusted the sizing of the imported papers, purported to contain animal products such as gelatin. Ranna’s collection contained sheets that had been creased longitudinally to form columns for accounts, and had the seals of government institutions. This paper, though heavier than Moghal paper, possesses the same internal strength that allows it to be laminated to make the pasteboard or waist that was favored by Jaipur artists. What it lacks in surface refinement is rectified by assiduous burnishing with a smooth stone followed by the application of a thin base coat of finely ground charcoal mixed with gum arabic, and then further burnished to produce the desired glassy painting surface. The chalk base does not seem to appear in Moghal painting, and is most likely a localized solution.

Painting on cloth

A significant creation of Humayan’s period in Kabul is a large painting called Princes of the House of Timur; now in the British Museum. It is a dynastic scene portraying the illustrious lineage of Humayun, and is thought to be painted either by Mir Sayyid Ali or Abd Allah Samad. The formal composition is asymmetrical and restrained, and is obviously intended for display. What is interesting about it is its dimensions—roughly 108 cm square—and the fact that it is painted on woven cotton cloth, which has been attached together to achieve this size. Very few paintings on textile surfaces survive from this period. There may be a precedent indicated by an earlier smaller painting from Tabriz dated c.1540 and attributed to Mir Sayyid Ali, which is painted onto woven textile laminated onto paper. The painting techniques, pigments and bindings employed in making the Princes of the House of Timur appear to be similar to those developed for works on paper, with no particular adaptations for working on cloth, except for a rather loose stippling on the green background. What appears to be red ochre shows underneath the gold sky.

The most significant body of painting on cloth from the early Moghal period in Akbar’s Hamra Nawab, held by the V&A. It is a vast undertaking of some 1400 folios, each measuring approximately 67 by 51 cm. It is thought that they were intended to be held up to illustrate storytelling sessions. The Hamra Nawab is believed to have been produced at various locations in the Moghal Empire, including Akbar’s new city, Fatehpur Sikri, during the 1650s and 1750s. At this time the imperial atelier employed over a hundred artists and craftsmen, many of whom came from Western India, bringing with them their own painting traditions, predominantly religious manuscript painting. In addition to manuscripts, large storytelling scrolls painted on cotton cloth known as phal had long been produced in Western India to illustrate the narratives of peripatetic storytellers, and a tradition of religious wall hangings or polpat painted on woven cotton had developed with the Vaishnavite cult of devotion to Lord Krishna.
Colours

Pigments in Mughal paintings

A classic range of mineral colours with the addition of one or two organic colours were used in the Safavid ateliers, often in their purest form, with a few judicious mixtures to create clear secondary colours such as mauves, pinks and mottled shades of green. A similar range of pigments were used in the Mughal ateliers.

In 2001 analysis of pigments present in three Mughal paintings at the Victoria Albert Museum by Ramon microscopy identified the following colours: emerald, white lead, vermilion, red lead, verdigris, indigo, carbon and luteous (the colouring matter in Lapis lazuli) (Brown et al 2001, unpublished). With the addition of lac, malmalite, Indian yellow, ochres, gold and silver, these colours form the palette that was at the disposal of Mughal craftsmen by the latter 16th century, some of which continue to be used by artisans today.

Innovations in the use of colour are visually evident from paintings of the Mughal period. Masters like Bichitr and Gowar Khan, who trained in the eclectic Mughal household and served Akbar, Jahangir and Shah Jahan, experimented with subtle colour mixes and atmospheric effects which may have relied on the addition of a range of indigenous organic and earth colours. As an elite centre of art in a geographically vast and varied empire with extensive trading links, the Mughal atelier had access to the finest raw materials available at the time. Perhaps this may explain the cryptic comment in Abul Fazl's account: 'Much progress was made in the commodities required by painters, and the correct prices of such articles were carefully examined. The mixture of colours has especially been improved' (Allami in Blochmann 1927, 117).

Treatises and traditions

As an integral part of their training, painters had to know about the properties and preparation of each colour. In practice much of the pigments preparation would be the preserve of specialists. A few contemporary treatises have been written down. A Persian treatise of 1656 by Qali Ahmad Calaghgin and Patshus: A Treatise by Qali Ahmad, Son of Mir Munsif contains a detailed collection of recipes. These include the preparation of black ink using lampblack, alum, gallnut, gum and ‘the weight of your own’; instructions on how to select, grind and wash lapis lazuli, and how to dilute gold – i.e. how to gild it to a powder suitable for use as a pigment (Mitrowsky 1959).

Bansu had in his repertoire a detailed knowledge of how to prepare a whole range of mineral and organic colours, some of them startlingly similar to the methods in the old treatise, and some quite different. It must be noted that the treatise are not always completely reliable. This may be the case for a number of reasons. For example the authors may not have actually undertaken the process they described, writing recipes from observations or from other written sources. If they were craftsmen they might simply not have wished to reveal their secrets in full, or if the text had been translated, the translator might have misunderstood wording for a process. If one is a practicing craftsman, one can sometimes infer what is feasible and what is not, but it is only by trying out the processes and by discussion with other practitioners that one can determine the efficacy of a recipe.

Selected observations on pigments

The range of pigments in the family palette of Shamsi Bannu include most of the classic mineral substances, unless one would expect, and also a number of colours that have not been identified in Mughal paintings, but which do appear in regional and Rajput paintings of the 18th and 19th centuries.

An area of confusion lies in the naming of colours. Indian craftsmen use a variety of names for the same pigment, which might include a word derived from Sanskrit, one from Persian, and one in a localized vernacular. They may also use a generic term which suggests a particular pigment, but which is used to cover several substances of similar colours. Transliteration into Latin can add to the confusion.

Of the reds, the classic mineral colours are cinnabar and red lead, both of which are culturally significant in India. Cinnabar red is the equivalent of European vermillion, mercuric sulphide, known locally by its Sanskrit name loghos, or the Persian derivation shaghur. It is sometimes confused with red lead, known in India as sindoor. Sindoor is a sacred colour to Hindus, used in temples to annotate images of gods and also as an important part of the marriage ceremony. In traditional Hindu society a married woman will always wear a smear of sindoor in the parting of her hair and as a tilak or mark on her forehead. The preferred shade for a woman is a bright red, whereas the sindoor used in temples and for painting veers towards orange. From inquiries made of older family members, the author believes that the original sindoor worn by the mothers of the family was in fact mercury-based cinnabar or loghos, chosen for its ancient philosophical connotations. The alchemy of sublimation, a process carried out since medieval times, was used to combine mercury and sulphur to produce pure powdered artificial cinnabar. Mercurius ammoniacus, the male principle, and sulphur represents Putvati, the female principle. The process of sublimation represents the divine sexual union of Shiva and Putvati, hence its significant associations with marriage. Loghos was traditionally used in Ayurvedic medicine. Used as a pigment, the crystallized lumps of purple sublimate are thoroughly ground to a powder in a mortar and pestle until the resulting powder is brilliant red.**

The principal blue used in Indian painting apart from lapis lazuli is indigo, known as zard - an organic dye derived from various species of Indigofera. The production of indigo was
an important part of the Mughal economy. It yielded a high quality dye that was utilized by the flourishing textile industry. It also has a long history of use as a painter’s pigment. It has cooler, greener tones than the lapis blues, and its mass colour is very deep. It was used for mixed shades as well as on its own – for example the areas of green foliage in the Nizami Namiz paintings are mixtures of indigo and orpiment. Indigo was also used at various strengths to dye paper for the margins of manuscripts, and made a stunning base for gold ornamentation. Like crimson, it achieves a high sheen when burnished.

The rich green shades achieved with mixtures of indigo and yellow are very different in character from the pure green pigments that were used, all of which contain some form of copper. Malachite gives a soft, copper-carbonated and Verdigris (manufactured copper acetate) appear most commonly in Indo-Persian painting. Their cool greens often occur in the works made for Jahan and Shah Jahan. Verdigris had long been known to be a problematic substance. There is a general preference for malachite, which has the added advantage of being relatively non-toxic and easy to grind and clean. However, malachite requires a great deal of finesse in handling, as it is a very heavy and opaque pigment, properties it shares with lapis lazuli. When the prepared paint is left to dry in the shell, it tends to flow up the lapis Agate. This can also happen when it dries on the surface of a painting, which is why there is a tendency for areas of malachite to flake off (Similarly lapis lazuli tends to rub off as a powder). The natural instinct is to add more gum to the pigment, but this adulates the binding gum, the colour. Bearing all this in mind, one has to admire the technical achievement of Jahan’s painters and colourists, who were able to spread translucent washes of malachite over an entire background with great efficiency.

Traditional yellows are yellow ochre (sumul), orpiment (karnil) and Indian yellow, the latter known variously as poer, gaugli and Moryd. Production of Indian yellow ceased by the early 20th century, and the chemical substitutes used since still go by the names that were used for the original. The most common substitutes is chrome yellow, though the colour is harsh by comparison. True brilliant yellow is semi-transparent, warm toned, and seems to possess a light of its own. Much mystery surrounded the source of this colour and its origins. Analyses of colours in the V&A Indian collection found no evidence of its use before 1850. By the 18th century it was extensively used in Rajasthan, and in the 19th century it was being imported to Britain as fine-sized balls, to be processed into watercolours and oils by Whisson & Newton. In 1883 an article by T.N. Malherbi in the Journal of the Society of Arts reported that it was produced near a small town in Bilhar called Moughy by a small group of cowherds who were reviled by the rest of their community because of the pitable state in which their cows were kept. The animals were emaciated as a result of a limited diet of mango leaves that caused them to produce deep coloured urine. The urine was collected and reduced over a fire, then the precipitate was moulded into balls and dried, before being taken to Calcutta for export. The outcome to Indian sensibilities resulted in a ban on its production in 1908 (Malherbi in Roy, 1994).

**Gold and Silver**

An important commodity used in painting was gold. Bullian filled the Mughal treasury from military campaigns and foreign trade. Indian craftsmen had long mastered the art of purifying gold to well near 24 carats. In the Art of Alhazen considerable space is devoted to this subject. The techniques of purifying gold for Mughal currency and jewellery also featured the crafts of painting and illumination. The purity of the soft metal allowed it to be processed for fluid brushwork and a high burnished sheen. Almost all paintings were embellished with gold and set in gold painted borders. The margins of the pages were lavishly illuminated or sprinkled with gold in the Persian manner (gum arabic).

Today a leading workshop for the preparation of gold and silver pigments or kohl is that of Shamsi Patel. His home and workshops are installed in the historic artisans’ quarters of the old city of Jaipur. Visiting him is like stepping into a harem or workshop from long ago. His goldbeater starts work early in the morning, and the neighborhood resonates with a symphony of tapp, tapping as they hammer incessantly. They each have a small leather-covered book with pages of goldbeater’s parchment made from the viscera of goats. A small piece of gold or silver foil is placed between each pair of pages, and the whole book is beaten with a mallet for hours until each piece of foil has spread out to fill the page. The resulting leaf of metal is then cut into quaters, which are individually reinserted between the parchment pages, and beaten out again. The finished gold and silver leaf is packaged between layers of tissue, tied up with thread into bundles of ten.

This hand-beaten leaf is remarkably fine, and lends itself readily to grinding. Shamsi undertakes this labour-intensive process himself. A viscous layer of gum and honey is spread onto a large plate or shell, to which the leaves of gold are added, one at a time. Each leaf is rubbed into the gum and honey mixture until it has completely broken up, before another one is introduced. It has to be done this way, otherwise the gold leaves will compact together and become impossible to grind. Up to a hundred leaves can be used in a single grinding session. The resulting sludge of gold, gum and honey is then rubbed with some pressure for a further two hours to reduce the gold to the finest particles. After this the honey and gum must be completely washed out using several changes of water, until one is left with a suspension of gold particles in pure water. This is strained through two or three layers of muslin and then left to settle. After several hours the excess water is poured off, and the remaining gold solution is allowed to dry out. The finished product is a compacted gold powder, which requires the addition of the required amount of gum Arabic to make it into gold paint.

When gold ilikhi is applied, it dries to a dull mustard colour. In order to release its brilliance, it must be burnished with a smooth stone such as agate. The burnishing of gold is generally done directly onto its surface, though one is advised to take the precaution of starting with a piece of glass paper over the gold so as to avoid scratching before the particles have been flattened. When working directly on the gold, the burnishing stone is slightly lubricated with lanolin from the bitige of the artist’s nose. When the gold has been burnished it can be pricked with a blunt needle to add texture.

**Lapis Lazuli**

Preparing lapis lazuli pigment or luzzurd, which was used extensively in Iran and Mughal painting, is notoriously difficult. Buxton himself had little knowledge of the process, presumably because it ceased to be used down the line of his forebears. The well-known 15th century Italian treatise of Cennino d’Andrea Cennini has confounded generations of artists and academics with a famously convoluted and unusable recipe (Thompson 1950, 37-39). David Margallides, a painting conservator, artist and researcher based in Britain, has undertaken several decades of work analysing the qualities of lapis as a pigment and its preparation (publication pending). He has demonstrated that the most important factor in producing colours of the purity and intensity found in Safavid painting is in the selection of the right quality of the sulphur-rich, blue mineral lapis lazuli which occurs in lapis lazuli, with as few inclusions of calcite, quartz, or pyrite as possible. This quality is rare, and historically it has come from Sar e Sang in the Kohola Valley in Badakshan, Afghanistan. This region was part of the traditional Timurid lands, and the ateliers of the Timurids, Safavids and Mughal rulers would have had easy access to the costly mineral.

Qadi Abulma’s recipe for washing and grinding lapis emphasizes the importance of the quality of the raw stone; ‘the best stones are those which have the best colours and are luminous. The purifying consists of breaking the stone into fine pieces, while those of good colours are separated from those of poor colours. Each kind is ground in a separate mortar and sifted in a flour sieve and then washed in the (boiled) soap.’ (Minesky 1959). He goes on to describe a process of repeated washing and filtering of the pigment, which is not dissimilar to the treatment for most mineral pigments except for the use of lye (Minesky 1959). The separation of the blue from the green is significant, producing the range of shades from deep to pale blue found in contemporary paintings. As a rule they were not modified by the addition of white pigment.

There are slight variations on this process that are still practiced in Turkey and Iran. Qadi Ahmad includes in his treatise a method for diluting gold and suggests using only gum to break up the leaf, but the basic principles of grinding and cleaning are the same (Minesky 1959). The author has tried several methods, and has also followed suggestions in some European treatises that the process can be undertaken more efficiently with the use of a mortar and pestle or groined glass and muslin. Unfortunately the pigments that wear off the tools in the process irretrievably adulterate the gold. One concludes that the only viable tool for grinding gold is a bare hand.
Using gold, silver and lapis lazuli for borders and illuminations

The art of illumination and border decoration is intimately associated with manuscripts, ranking second to calligraphy in the hierarchy of the arts of the book. Specialist practitioners were in demand at the Imperial Moghul court, and the Indian masters of the craft were welcomed. Illuminators or Mughals brought with them the Islamic repertoire of design and a body of specialized technical knowledge, which they passed on to their pupils. The fine decoration of imperial books and albums was important in emphasizing the royal splendor of their patrons. Akbar, Jahangir and Shah Jahan were active in developing a uniquely Moghul style of illumination based on Iranian tradition. It is only in recent years that scholars in the West have begun to study more closely the borders and the-verso of Moghul paintings, which contain collections of exquisitely decorated calligraphy. The art of illumination continued in India into the 18th and 19th centuries, particularly favoured by the Nawabs of Lucknow, who could be considered the inheritors of Moghul courtly culture.

The formal illuminations that adorn the opening pages and chapter headings of books were undersigned by sophisticated geometry and drafted using a specific grammar of decorative elements. Islamic treatise like stylistic elements of painting under seven headings, called 'the seven principles of painting'. For example, 'Balans' refers to formal intertwining design or Arabesques, 'Khatu' refers to Chinese elements like unshaded, stylized clouds and dragons, 'Parang' means European elements. 'Rami' refers to Islamic or Byzantine elements. This builds an interesting pattern of the eclecticism of Islamic decorative art.

The author has made a number of studies to recreate a formal shamsa, an illuminated sunburst placed on the opening page of a royal manuscript. This example is based on designs in manuscripts made in Mashad during the late 16th century for Shah Tahmasb's nephew, Sultan Ibrahim Mirza, using real lapis lazuli and gold as opposed to modern substitute pigments. The author has come to draw some illuminating conclusions about the way in which working methods were dictated by properties of the materials employed.

The logical method of colouring would be to block in the areas of blue and then work the polychrome and gold designs on top. However, this does not work with lapis lazuli as it will not burnish flat like other pigments, and it will not easily accept detailed work on its surface. Gold paint in particular will sing right into it. The other areas of the design have a background of unburnished gold, decorated with designs in burnished gold, one of the endless subtleties of this genre of work. Further nuances were achieved by modifying the colour of the gold with the addition of varying amounts of silver. It is not uncommon to see lavishly decorated borders patinated with several shades of gold. Pure silver was also used, which in most cases will have oxidised and turned black. The only solution to the problem of colouring a formal illumination with lapis lazuli and gold is to work in a series of steps that are the opposite of those described above for colouring pictures.


del. 85 and 88 respectively.


19. The visual reference used for this design is in Simpson 1997, p 32.

References


4. Reflecting the eclectic Moghul roots of miniature painting and the major influences that shaped it, frequently one finds a doubling up of terms, drawn from different language and religious groups. For example, a Hindu master of Indian origin was referred to as Guru and his apprentice was a shaksa, whereas Isel was utilised for a Muslim master of Central Asian origin and an apprentice was a chela.

5. A good reproduction of this is in McAuley 1983, Plate 5.


7. Catalogue OA1910.III.12-08. There is a reproduction and information about it in Casbey 1993, pp 82 – 85.

8. Stronge 2002, Chapter 1 contains a detailed background to the V& A folios.


10. Okada, A (1929). Indian Miniatures of the Moghul Court focuses on the works and artistry of individual painters. Chapters on Bichitr and Gowardhan begin on pp 165 and 186 respectively.


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The Syriac Book

Caroline Checkley-Scott
Head of Collections Care, The John Rylands Library.

Abstract

From the earliest times, ancient churches of the Middle East have preserved their traditions of worship, literature, architecture and culture. Traditions in bookbinding techniques have been passed on from generation to generation, century to century.

Very little codicological information on Syriac manuscripts and book production has been published (March 2002, Merian 1990). The study of techniques and materials used to construct early books can perhaps reveal cultural links not evident by other means, and can provide the conservator with the necessary tools to preserve books in their care.

The information provided in this paper is based on the results of fifteen years of study and conservation of early Christian manuscripts, with particular reference to the Syriac book. This article will describe the features of the Syriac book, including sewing, board preparation, text block attachment, lining, eldsembling, covering and decoration as observed by the author. It will also make suggestions regarding long term preservation by highlighting the inherent weaknesses of this particular structure.

This paper is an introduction to the Syriac book, using Or.4053 at the British Library to illustrate the key areas. It forms part of a larger body of research by the author which aims to compare the bindings in different collections from different periods and hopes to answer questions surrounding the cultural influences on book production as a whole. The exhibition entitled Served previously on display in the British Library aims to show how at the heart of all three religions, Judaism, Christianity and Islam there is a book of divine revelation which identifies God, provides moral teaching and spiritual guidance. It may be worth investigating what role Syriac books played in the development of the sacred book.

Introduction

Syriac is a dialect of Aramaic, spoken in the principality of Edessa, which corresponds to present day northern Syria and Iraq, and southern Turkey. It was the language spoken by Jesus. Modern Aramaic is spoken today as a first language by a number of scattered communities, and is an official language of Iraq. Early Christianity spread eastwards largely in the language of Syriac, much in the same way as it spread west through Greek and Latin.

Why is the preservation of Syriac books important? Significant centres for book production were established in these areas. Sebastian Brock, Syriac scholar, states that early collections like those at Derr al-Sultan, are important not just for those concerned with Syriac literature, but for everyone with an interest in Biblical studies, the writings of the Church Fathers, the history in general of Antiquity, and the transmission of Greek philosophy, medicine and science to the Arab world (Brock, 2007).

Some Syriac translations of Greek texts preserve writings of Greek text now lost. It is also accepted that the study of techniques and materials used to construct early books can perhaps reveal cultural links not evident by other means.

The lands

Syria is situated with the Mediterranean on one side, the desert and the Euphrates on the other and is often called the meeting place of the east and the west. Syria was both a frontier and battleground, with Crusader castles and Mameluke mosques built by Byzantine churches. Damascus, the capital city, is one of the great caravan cities and religious centres in the Middle East, with its mosques, Saladin’s tomb and the magnificent Umayyad Mosque. The mountain villages of Syria make it a truly remarkable place to visit. In at least one of these, Aramean, the language spoken by Jesus, is still spoken.

In ancient times Antioch was the third city of the Roman Empire, and it was here that the Disciples were first called Christians. From the fourth century onwards, Antioch came after Rome and Alexandria as the third patriarchal See. As Christantinople rose in power, so the influence of Antioch began to wane, and this was further weakened by the Nestorian and Monophysite schisms. Antioch was one of the leading places in the early development of Christian theology.