

MATERIALS USED FOR THE MANUSCRIPTS OF CENTRAL ASIA AND THE SUBCONTINENT

*Kanwal Khalid**

Abstract

Artists of the world use different styles and materials to express their creativity. All these are employed to get an end product, which is to show not only their skill level but to communicate thoughts, ideas and concepts. But this is not possible without some kind of medium. As compared to today, our previous generation of artists were very conscious regarding the durability of the artefacts they produced. They wanted their art pieces to last for centuries and due to this reason, a lot of attention was given to the preparation of these materials and special methods were evolved to get the best results. Availability of hundreds of years old art pieces, is an evidence to their success.

A lot has been written about miniature paintings and manuscripts that were produced during different eras but not much detail are available about the materials used by the artists. Present research is focused on those materials of miniatures and manuscripts with specific emphasis on the 18th and 19th century productions. Some myths are explored by employing modern day scientific methodology to prove their credibility.

Keywords: Medium, material, miniature painting, durability, methods, manuscripts, employing, scientific

The continent of Asia has produced arts and cultures of high merit over the centuries. Different regimes came and contributed to the beauty of this region. Two such regions are Central Asia and the Subcontinent that has strong trade, cultural and artistic ties since hundred of years.

* Dr. Kanwal Khalid presently serves College of Fine Arts, University of the Punjab, Lahore as Associate Professor.

Aryans, the inhabitants of Central Asia, were no strangers to the Dravidians of the Subcontinent. They faced each other as hostile enemies and then the Aryans blended with the locals. This interaction encouraged caravan trade between the two regions. In later centuries, the early Muslims were dependent on Central Asian horses because India was not the land to breed good horse.

Sultanate rulers of the 13th century established the first Muslim culture in the Subcontinent, which was a combination of many other cultures. The poets, artists and artisans from Central Asia played an important role in this regard.

In 1526 Babur from Farghana established the Mughal Empire that ruled the Subcontinent for more than 300 years. Akbar had first ambassador from Bukhara, Hodzha Altamysh in 1572 and this was again a period of lots of exchanges between India and Central Asia. For the construction of Taj Mahal, Shah Jahan invited famous artists and artisans from all over the world including Central Asia. Great miniature masters Muhammad Murad and Muhammad Nadir Smarkandi also worked for Mughal ateliers because the miniature school of Central Asia was established long before the Mughal School and it was natural that it influenced the Indian painting. However, several decades later, it in turn, got influenced by the Mughal miniature. There was fruitful process of mutual enrichment and renewal.¹ Thus the relationship of the two regions was fluid and they were sharing lots of techniques and knowledge among themselves.

Artists, all over the world, choose different mediums to express their creativity. Every region has particular styles and materials that are being employed to create many expressions of arts. Miniature paintings and Calligraphic arts have their own specific requirements. The artists of previous generations did not buy their materials but prepared them on their own. The basic thought behind the making was to develop such pigments that would last centuries. They came up with innumerable materials, which could fulfil their requirement. As a result to their findings, the art works, which they produced hundred of years ago, look absolutely wonderful, even today.

A lot has been written about the manuscripts that were produced during different eras in Central Asia and the Subcontinent (Fig. 1) but not much detail is available about the materials used by the *Khatat* (Calligraphist) and *Musawwar* (Miniaturists). Artists of the previous generations were a firm believer of using papers and inks that were supposed to last centuries and for that they employed different methods, many of them were based on organic

¹ J. N. Roy and B. B. Kumar, (Ed.s). *India and Central Asia Contemporary to Classical Periods*. Delhi: Astha Baharati Publishers, 2007: 50-56. Retrieved from www.asthabharati.org

materials and these old masters were able to get the desired results. Evidence is the innumerable manuscripts scattered all around the world in different libraries, museums and private collections, which are matchless in quality and the inks and pigments used are as good as if they were prepared yesterday.



Fig 1: (Bihar-i-Danish ('The Romance of Jahandar Sultan and Bahravar Banu'), Mughal, late 17th/early 18th century, Lahore)

Present research is focused on the materials used for the manuscripts. Some myths are explored by employing modern day methodology to prove their credibility. Professor Dr Abdul Qayyum, Ph.D in Chemistry provided the expertise to verify the facts and corrected the fiction. I shared some of the traditional methods with him and he either confirmed or rejected the centuries old belief by analysing them scientifically.

Materials used for manuscripts are quite different and many of the artists were making their own but unfortunately there is no proper record available about them. The artists of that time never believed in writing them down. Mostly they relied on their memory and transferred them verbally to coming generations. In later years this verbal connection broke down and we lost precious information about the preparation of paper and pigments used.²

² Some of the information, for the current research, is gathered through the interviews of senior miniaturist Mr. Salah ul Din, the curator/director of Faqir Khana Museum Lahore Faqir Saif ul Din, Prof. Dr. Abdul Qayyum Mirza, a Ph.D. in chemistry and Khalid Saeed Butt, Retired Professor College of Art & Design, Punjab University Lahore. I am really grateful to them for their guidance.

Significance of Calligraphic arts was immense. The arts of the book began with the selection of paper, the best kinds of which were prepared from silk combings (Samarkand was particularly famous for its production), and embraced the work of calligraphers, illuminators, miniature painters, and binders. Rulers and commoners, both were great patrons and admirers of arts. Many art forms were explored under the patronage of the kings who tried to select the best artists but they were also very conscious about the material that was used in the art works. Abul' Fazal, who was very close to the great Mughal king Akbar, writes, "The works of all painters are weekly laid before his majesty by *Daroghas* and the clerks; he then confers reward according to excellence of workmanship, or increases the monthly salaries."³ During the peak days of Akbar's rule, his atelier held more than three hundred artist. This is how Abul' Fazal narrates those times, "More than a hundred individuals have become masters of the art, whilst the number of those who are middling, is very large. This is very true of especially Hindus; their pictures surpass our conception of things. Few, indeed, in the whole world are found equal to them."⁴ Abul' Fazal also revealed that the prices of the material, used for manuscripts, were also decided by the king himself.⁵

We do come across some written material about the arts and the artists but not much was recorded about the materials and their preparation methods that were adopted by these masters. Most of the information was passed on orally but after the conquest of the British, due to their extremely discouraging attitude towards native arts, much of the indigenous knowledge and wisdom was lost. The main problem was of competition between England and Russia in Central Asia. Russian offense to Kazakhstan and British offence to India. In both cases, it was the local population that suffered the most. Indigenous arts were rejected. They went to such extent that the style of miniature painting was even ridiculed. B. H. Baden Powell was one of the main opponent of traditional styles and this is what he writes, "The actual work of drawing, the perspective, the method of delineation, and the style of producing 'effects' are as rule inferior; and this will surely be admitted when we have once reflected that the mere minuteness and delicacy of handling which many native works exhibit, and which occur in rendering the separate hairs of a beard, or the pearls on a tiny necklace, are a species of mechanical power intrinsically of a low order."⁶ In the same report, he writes, "No native artist has any idea of using eyes."⁷ Under the

³ Annemarie Schimmel, Stuart Cary Welch. *Anvari's Divan: A Pocket Book for Akbar*. New York: The Metropolitan Museum of Art, 1983: 37

⁴ Ibid., 37.

⁵ Ibid., 46.

⁶ B. H. Baden Powell, *Hand-Book of the Manufacturers and Arts of the Punjab*, Vol. II. Lahore: Punjab Printing Company, 1872: 341

⁷ Ibid., 344.

circumstances innumerable methods were lost forever that were used for the making of materials for the manuscripts including the inks and the pigments.

Preparation of Inks and the Pigments

Today almost every kind of ink is available in the market but this was not the case till mid 19th century and all the materials were prepared at individual level. Even today there are artists who prefer to make their own materials using methods and techniques that are hundreds of years old. They believe that the shine and everlasting quality can only be maintained through these processes. According to the old generation, modern colours lack the variety and freshness of the self-prepared colours. It was an essential part of their training as painters. “The artists, whether local or émigré, always depended upon the material and pigments which were available to them locally. They were proficient in preparation of these materials, i.e. paper, brushes, colours, etc. only then they were groomed as artists and Naqqash.”⁸

These artists used different methods and ingredients to prepare their pigments and apart from some common materials, usually the technique varied from person to person. These techniques were very well guarded from rivals and they were never shared with anyone except for the son or some favourite disciple who had spent years in apprenticeship. This was a very discouraging attitude of the seniors and it affected the young artists. By the end of the 19th century, most of these techniques and methods were lost because the artists passed away without transferring them to any one. Seniors tried not to share their knowledge and experience and this was the attitude of the whole society. As a result many art forms and techniques are lost in time.

By the beginning of the 20th century, a few people realized the folly of this attitude and they began documenting the ingredients and methods of making inks and paints. One such book was published in 1902 and it was titled as *Rasala-i-Raushnai* (Magazine of Inks). It has three hundred methods of making different inks. Detailed study of the book revealed the amazing processes of preparing toners that are both laborious and fascinating. Some of them have been included in current research. These were the methods that were practiced by the artists of the region and since Central Asia and the Subcontinent has deep relationship since centuries, so it was very natural that the calligraphist and the artists shared these techniques.

Most of the ingredients of these inks and pigments are organic and inorganic. Flowers, cow's urine, metals, minerals, fruits, vegetables and different herbs were used. Chemicals were also added. Some toners were obtained by the burning of different essence and gathering up their soot.

⁸ R. P. Srivastava, *Punjab Painting*. New Delhi: Hans Raj Gupta & Sons, 1983: 63

There has always been an impression that precious and semi precious stones were used in the making of particular pigments. To some extent it is true and stones like *Lajward* (Lapis lazuli) were used but another dimension of this belief was this that some colours were so expensive to make, that they were sold at the price of gold.

As was mentioned earlier every artist had a unique method of his own to prepare the required inks. These are very basic techniques for making the inks used by the artists and may be the methods are not very sophisticated but the local artists have been practicing them for centuries. According to the painters and calligraphers of the past, every ink and pigment was supposed to survive under the running water and it was a common saying that pages of the book can be withered but the ink cannot be washed away even if it is put in a sea.

Some methods and materials used for making the colours are part of this research.

Blue Colour

One source of getting this colour was *Neel*, a plant available all over India. Artists extracted blue colour from it. But *Sang-i-Lajward* (Lapis lazuli) was an excellent source to get the blue colour. This stone was imported from Afghanistan, Russia and China. (Fig. 2) No one can imagine the variety of hues and tones of blue it could produce when viewed in raw shape. Lapis lazuli is basically a mineral that has the hardness measured 2.5 or 3, which is easy to grind.



Fig. 2: Lapis Lazuli (Raw Form)

“*Naqqash* and calligraphers ground the lumps of Lapis lazuli and burnt it on fire. After the burning it was grinded one more time and was converted

into fine powder. Wax, in melted form with olive oil, was added to this powder. Now soap like bars were obtained, which were put in warm water in a cup and they were rubbed with fingers. Initially the water would become black and was thrown away. Then a beautiful blue colour would appear, which was one of the most expensive pigments. After sometime this bar was shifted to another cup but the best and purest colour had already been obtained. The colour produced in the second cup was inferior in quality. After some more rubbing, the bar was shifted to a third cup. All the colours after the first attempt are low in quality but the stone will keep on producing blue. The first colour is beautiful and long lasting. At the same time it is very expensive and was sold almost at the price of gold. But the problem was that smoke could destroy it. Europeans colour manufacturers, after many experiments are able to produce artificial Lapis lazuli that is far cheaper and smoke does not affect it.”⁹

Many hues and tones of blue like *Lajward* (sky blue), *Kaboodi* (azure) and *Susani* (lilac) could be obtained by mixing other chemicals and natural ingredients in this basic colour.¹⁰ (Fig. 3)



Fig. 3: (The Timurids and the Turkmen: Central Asia, 1370-c. 1500)

⁹ Muhammad Abdul Aziz Mohtamam, (Ed.). *Rasal-i-Raushnai*. Printers: Khadam ul Taleem, Punjab Lahore, 1902: 74, 75.

¹⁰ Ibid., 75

Turquoise Blue

To get this colour, *Burada* (sawdust) of pure *Tanba* or Copper *Waraq* (leaf) was put in *Naushadar* (Sal ammoniac or Aluminium Chloride) and *Sirka* (vinegar or Acetic Acid) that was half of the weight. This mixture was again placed in a damp place. After two weeks some of the copper will turn into *Zangar* (Verdigris or Copper Acetate). It was taken out and poured on *Kaghaz-i-Jazib* (absorbing paper) on a funnel and then cleansed with drops of pure water to get rid of the effect of vinegar. End result is a beautiful turquoise colour, which could be used after adding any gum.¹¹

Red Colour

There were many sources to get this colour but one of the best is *Shingaraf* (a by product of Cinnabar). (Fig. 4)



Fig. 4: Shingaraf (Cinnabar) (Raw Form)

“To get a good red colour, mineral *Shangaraf* is used that can be obtained by mixing *Gandhak* (Sulphur) and *Para* (Mercury). It is pulverized in rainwater. After the grinding of three hours, yellow water is distilled and thrown away. Whole process is repeated till the yellow water is removed completely from the mixture. The material left as a residue is dried and later on used by adding some good glue.”¹² (Fig. 5)

¹¹ Ibid., 76, 77.

¹² Ibid., 69.



Fig. 5: Radha and Krishna with Gopis, 18th c. Pahari.

According to Professor Dr. Abdul Qayyum, Hydro Choleric Acid and heating is also required to get vermilion colour. Otherwise a simple mixture of Sulphur and Mercury will produce Mercuric Sulphate, which is very dark in colour.¹³

In another method lemon essence (Citric Acid), lump of *Misri* (sugar) and mineral *Shingaraf* of the best quality are pulverized (grounded) and it is ready to be used after adding gum Arabic.¹⁴

Cinnabar is not the only material to obtain red colour. “In the suburbs of Bengal there are culinary herbs called ‘*Poen Ka Saag*’. It produces a fruit that is the size of Bar (a local fruit), which is full of red juice. This juice is employed as henna and if we add some citric, it can be used as ink or colour as well. But its quality is not persistent.¹⁵

Sindur (Lead Oxide)¹⁶ and *Geru* (red chalk or brick dust or red earth) also give the warm red tone that tends towards orange. After grinding and cleaning *Sindur*, *Garu* gum is added and the colour is ready for use.¹⁷

Green Colour

There were many ways of obtaining this colour but the key ingredient was *Tanba* (Copper). Some Copper pieces are put in water. After a few days

¹³ Interview Prof. Dr. Abdul Qayyum

¹⁴ Ed. Aziz Mohtamam, *Rasal-i-Raushnai*, 69.

¹⁵ *Ibid.*, 71-72.

¹⁶ Retrieved from <https://pubchem.ncbi.nlm.nih.gov/compound/16685188>

¹⁷ Ed. Aziz Mohtamam, *Rasal-i-Raushnai*, 79.

a green substance (Copper Oxide) would appear in water that was purified and used as a pigment. Another method was to put Copper in curd and after a few days a greenish substance could be extracted. The thick green layer on the old ships was also grounded and used as a green pigment (Copper Oxide).¹⁸

To get a good green colour, Copper has to be left in water for many days but if we add curd, it will speed up the process and green will appear in a short time. Copper Sulphate is an excellent shade of green that can be obtained by mixing Copper and Sulphuric Acid.¹⁹

Yellow Colour

Yellow colour had played a very important role in Indian art since ancient times, but in 19th century Sikh and Lahore paintings, its use was extensive. There were many ways of getting it. One was the urine of the cow that ate the flowers of *Sarson* (Mustard Sesame).²⁰

R. P. Srivastava has written that the cow fed on mangoes alone is used to get a particular colored urine that was put on fire and after the evaporation; the substance at the base of the utensil was purified²¹ and used as yellow colour in paintings and manuscripts.

There are some very interesting methods of getting different shades of yellow written in the *Rasala-i-Raushnai*. One of them includes *Kashmiri Saffron*, mixed thoroughly in water and later on used by adding some good gum.

The flowers of *Har Singhar* (a tree with yellowish flowers) are soaked in the water. After thickening and filtering, bright yellow colour is achieved to be used after adding the glue.

Grinded *Haldi* (Turmeric) with gum also produce a good yellow colour but it loses its tone if kept in the sun. The addition of Lime Water (Calcium Hydroxide) in Turmeric will give brown colour.²²

If iron is kept in the open with some moisture in the atmosphere, Iron Oxide will appear on it, which is a very fresh yellow. Zinc Chromate and Lead Chromate also give rich shades of yellow colour.²³

Golden Colour

Perhaps the most difficult colour to get was golden on paper. The method was very difficult, time consuming and expensive. Different painters

¹⁸ Interview Mr. Salah ul Din

¹⁹ Interview Prof. Dr. Abdul Qayyum

²⁰ Interview Mr. Salah ul Din

²¹ Srivastava, *Punjab Painting*, 73

²² Ed. Aziz Mohtamam, *Rasala-i-Raushnai*, 72-73

²³ Interview Prof. Dr. Abdul Qayyum

used different methods but one particular process, which the senior miniaturists of Lahore Salah ul Din, has been practicing is written below.²⁴

Common gold was buried in the slow fire of cow dug for hours. This process melted away all the impurities and a piece of *Kundan* (pure gold) was left behind. Gold in this form is very soft and brittle. It was put in the thin skin of the deer and hammered thoroughly till that thick lump turns into a very thin sheet called *Waraq* (leaf).

To grind the gold *Waraq* (leaf), clay bowl was used. The inner sides of this bowl were covered with glue and the thin leaf of gold was rubbed on it until turned into a very fine powder that could be used on the paper. But before its application on the paper, *Saffron* (Zairian) or *Sandur* (Red Lead) or *Mhendi* (Henna) was applied on the paper, mixed with some very good glue to give a base for the gold. The gold applied in this manner would stick to the paper for ages. (Fig. 6)



Fig. 6: 9th or 10th century Qur'an to which this folio once belonged has often been given a Maghribi attribution.

Due to these base colours, the use of gold can be brought down to the minimum and it also gives a yellow or reddish glow to the gold. This glow depended on the base colour because *Saffron* gives yellow shade and Red Lead is reddish in tone.

All these colours were basically transparent but due to the addition of Zinc Oxide, they would become opaque.

²⁴ Interview Mr. Salah ul Din

For preparation of the pigments white clay pots were always recommended because they were good in quality and could bear all the heating and grinding.

Interaction with the European nations in Central Asia and the Subcontinent brought many changes in art and its material. For the first time there were ready-made colours available in the market. Famous company Winsor & Newton introduced colour sticks that were rubbed on stone and powder was obtained. This powder colour was applied on the paper by adding water to it. Later on cakes and tubes were introduced in the market and the concept of preparing colours at home was discarded but even today there are a few dedicated artists who still prefer to prepare their own colours.

Discovering of so many methods and techniques of making the pigments and inks used in paintings and manuscripts is highly significant. It can open up new avenues in the colour and ink making industry if combined with technology of the modern day.

Bibliography

- Ali, Amjad. [1967]: *The Trail of the Paint*. Article in *The Pakistan Quarterly* Vol. XV, No 1-2.
- Anand, Mulk Raj. [1973]: *Album of Indian Painting*. Bombay
- Aziz, Muhammad Abdul Mohtamam. [1902]: *Rasal-i-Raushnai*. Lahore.
- Beach, Milo Cleveland.[1980]: *Paintings of the Mughals*. Washington.
- Berni, Zi-ud-Din. [1969]: *Tarikh-e-Firoze Shahi*. Calcutta: 1862. Translated by Dr. Mueen-ul-Haq, Lahore.
- Canby, Sheila R. [1997]: *Persian Painting* (Reprinted). London.
- Fabri, Charles L. [1961] : *Cultural Forum* Vol. IV, No. 1
- Gardner, Alexander.[1989]: *Soldiers & Travellers*. London
- Gowing, Sir Lawrance. [1983]: *A History of Art*. London
- Masson. [1942]: *Journeys in Balochistan, Afganistan & the Punjab*. London
- Powell, B. H. Baden.[1872]: *Hand-Book of the Manufacturers and Arts of the Punjab*, Vol. II Laho-re: Punjab Printing Company.
- Schimmel, Annemarie.[1983]: Welc-h, Stuart Cary, *Anvari's Divan: A Pocket Book for Akbar* New York: The Metropolitan Museum of Art.
- Srivastava, R. P. [1983]: *Punjab Painting*, New Delhi: Hans Raj Gupta & Sons.
- Muhammad Abdul Aziz Mohtamam. [1902]: *Rasal-i-Raushnai*, Printers: Khadam ul Taleem, Punjab Lahore.
- J. N. Roy and B. B. Kumar, [2007]: *India and Central Asia Contemporary to Classical Periods*. Delhi: Astha Baharati Publishers.