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Kanwal Khalid [*]

Traditional Methods of Pigment Making, Black and White, Used for Calligraphy and Miniature Painting

Abstract

Miniature is a traditional painting style of the Subcontinent. Artists of great talent have explored it and created masterpieces. This art form was encouraged by the Ghaznavids, Ghorids and Sultanate kings and reached its peak during the Mughal Period.

Large ateliers were patronized by the rulers. These ateliers consisted of not only the painters but also the paper makers, pigment makers and binders were an integral part of the set up. Among these, the role that was played by the pigment makers was of high value. They utilized organic and inorganic ingredients, ancient methods and techniques to produce colours that were meant to last forever. Present research is focused on the materials and methods employed for the production of two pigments black and white, which were used for calligraphy, painting and illumination.[1]

Introduction

Subcontinent has thrived with the artistic activities since thousands of years. Beginning from prehistoric cave art, it moved towards Mehr Garh and the great Indus Valley where we see art and architecture of high value. Arrival of Aryans and development of Hindu mat added colours and the masterpieces produced by the followers of the Jain and Buddhist sect are marvels of their times.

During all these eras painting was an essential expression of the creators. It was seen on the pottery of Indus Valley Civilization, Hindu temples, in the caves of Ajanta, Ellora and Bagh and later on, in the beautiful manuscripts of the Jains. This strong tradition of painting was further strengthened by the arrival of Muslims from 11th century onwards who brought the style of miniature painting with them.

Miniature is the customary painting style associated to the Muslim ruling areas. This tradition was adopted in the Subcontinent but here the local idiom played a very important role and a versatile school of Indian Miniature Painting evolved. Artists of great talent explored it and created masterpieces, which are hanging in the museums that have been memorizing art lovers all around the world for decades. This art form flourished during the Ghaznavid, Ghorid and Sultanate

[*] Dr Kanwal Khalid, Associate Professor, College of Art & Design, University of the Punjab, Lahore.

period and reached its peak in Mughal Period. In later centuries it's lyricism and aesthetics persisted in the Rjhasthani and Pahari paintings.

Large ateliers were patronized by the rulers and artists enjoyed love and appreciation of royalty and public alike. Kings were the main patrons of art and we come across frequent references that show their level of interest. In the late 16th century this is what Abul' Fazal (courtier and historian) tells about Akbar's daily routine, "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."[2] Akbar's atelier was huge and it housed almost a hundred masters and the rest were recruits who had no formal artistic background but were trained under the supervision of these masters. They were Indians and many of them belonged to the city of Lahore. Abul' Fazal writes, "More than a hundred painters 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."[3]

These ateliers consisted of not only the painters but also the paper makers, pigment makers and binders who were integral part of the set up. Among these, the role that was played by the pigment makers was of high value. They used organic and inorganic materials, ancient methods and techniques to produce colours that were meant to last forever. Akbar was the one who decided about the material available for the artists and correct prices of the articles were carefully asserted.[4] Current research is focused on the materials and methods employed for the production of two pigments black and white, which were used for calligraphy, painting and illumination.

In present times almost every colour is available in the market, which the artists can buy and use but even in these modern days there are painters who prefer to make their own colours using methods and techniques that are hundreds of years old. They believe that the shine and everlasting quality of the colours can only be maintained through these processes. According to the senior miniature painters of Lahore, modern pigments lack the variety and freshness of the self-prepared colours. It was an essential part of their training as painters. "The artists in the Punjab and Phulkian region, 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*."[5]

These artists had different methods to make their pigments and apart from some common materials, usually the technique varied from person to person. These techniques were very well guarded from rival painters and they were never shared with anyone except for the son or some favourite student who had spent years in apprenticeship. This was a very discouraging attitude of the senior painters and it affected the young artists. By the end of the 19th century, many of these techniques and pigments were lost because the artists passed away without transferring them. The senior artists tried not to share their knowledge and experience with anyone.

This was the attitude of the whole society. As a result to that innumerable art forms and techniques are lost in time. Muhammad Latif gives one such example when he writes, "With regard to *Kashi* work at Lahore, it may be mentioned here that there lived in 1876, in that town, an artist in the work named Muhammad Bakhsh. He was ninety-seven years of age and with him the secret of Kashi work probably died, for he steadily refused to take pupils."[6]

By the beginning of the 20th century, a few people realized the folly of this attitude and they started 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 documented more then three hundred methods of making different inks and pigments used for calligraphy and painting. Another magazine that had the methods of colour making was published in 1926. Both the books were published in Lahore.

The detailed study of these books revealed the amazing processes of making inks and colours that are both laborious and fascinating. A very interesting observation was made that some of the methods lacked conviction and they seemed more of myths rather than reality. This intrigued me, so a research was undertaken with the help of present day artists and Chemistry experts to explore the possibilities of some of these methods and reject the make beliefs that were written.

In both the books the ingredients are organic and inorganic. Flowers, cow's urine, metals, minerals, fruits, vegetables and different herbs were used as the basis. Chemicals were also added. Some colours were obtained by burning different essence and gathering up their soot.

There has always been an impression that precious and semi precious stones were used to make particular pigments. To some extend 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 prepare that they were sold at the price of gold.

As was mentioned earlier every painter has a unique method of his own to prepare the required colour. Some common methods and materials used for obtaining black and white colours are written below. These are very basic techniques used by the artists of Lahore. Maybe the methods are not very sophisticated but the local artists have been practicing them for centuries and got wonderful results in the form of masterpieces consisting of calligraphies, illuminations and miniature paintings.

White Colour

The most important colour used in miniature painting is white, because it is mixed in almost every colour to get lighter hues and tones. It was also used to make the colours appear opaque. The commonly used method to obtain this colour was to burn *Jist* (Zinc) and a small clay plate was placed in the path of its smoke. The fine layer of *Jist* deposits accumulated on this clay plate that would be removed to get a fine powder (Zinc Oxide), which was used for painting. The gum of *Kikar* (Acacia tree) was added as binding material for this and in many other colours.

Sometime *Choona* (Lime) and *Chalk* (Calcium Carbonate) were also used as white colour.[7]

Some time artists would add gum in Zinc Oxide, put it in a plate and left it in the sun to dry. It was covered with thin muslin to avoid dust. After a few days it was dried and hardened. This hard piece of Zinc Oxide is then broken into smaller pieces and preserved in small bags made from cloth (*Potli*). Later on artist would scratch some powder, add water in it and use this white colour on the *Wasli* (a specially prepared paper for miniature painting). This process was called priming and it was to prepare the surface of the paper for painting. The coat of this white colour was so thin that one could see the tracing underneath.[8]

In another method the *Burada* (sawdust) or *Waraq* (leaf) of *Sisa* (Lead) are soaked in *Sirka* (vinegar, Acetic acid) in pots. They are put in a damp place for a few days. Dissolved *Sufaida* (white lead) will start gathering up at the base of the pot. It is taken out daily, cleaned with pure water, gum is added and white colour is ready to be used.[9]

The reason to use sawdust or leaf of lead is that it was easier to get a chemical reaction if lead is broken into smaller pieces. A big piece of lead will take a long time to dissolve due to its bigger surface area. When vinegar (Acetic acid) is added, this mixture is put in a damp place. Acetic acid is a weak acid and it takes a long time to react. If we put it in a dry place, the acid will evaporate very quickly and there will be no chemical reaction. To avoid the evaporation it is kept in a cool damp place. After ten or fifteen days, *Sufaida* (Lead Acetic) settles at the base of the pot. It is washed with pure water to get rid of vinegar because the presence of acid could destroy the paper when applied as pigment.[10] Then the pieces of *Jist* (Zinc) in *Gandhak ka Tezab* (Sulphuric Acid) are added. When Zinc dissolves and settles at the bottom, it is taken out, cleaned with water and used for calligraphy, illumination or painting.[11] Pigment achieved through this method is Zinc Sulphate.

Phitkari (Alum) is put in an Iron pot and burned. When transformed into small crystals, it is grounded thoroughly and used by adding some good gum.[12]

Phitkari (Aluminium Sulphate) has 24 molecules of water in it. If we heat it for a little while, 6 water molecules will evaporate and we will have Aluminum Sulphate in semi crystalline form. Later on these crystals are grounded and a white pigment with lustre and shine is obtained. But if we heat it for a long time, it will become a white powder like chalk because all the water molecules would evaporate due to prolonged heating. This white powder will have no shine when used on the paper.[13] That is why old artists preferred Aluminium Sulphate in crystal form.

Traditionally it is said that the paste of grounded pearls were used to apply as white colour but some artists don't agree to that because pearls are very hard and difficult to grind. But there is a possibility that if grounded thoroughly, a fine powder could be obtained that can be used as white colour on paper. There is another possibility that a half cut small pearl was actually pasted on the painting to

give the naturalistic look to the pearl strings shown around the neck of a king or some royal lady.

Black Colour

The most commonly used material to obtain black colour was *Kajal* (Carbon). To get it, a clay plate is placed to accumulate the smoke of oil lamp. The best lamp-black is achieved through the burning of *Kafoor* (Camphor wood). Next in quality is the lamp-coal obtained by burning the oil of *Khashkhash* (Poppy) and *Sarson* (Mustard) seeds. *Cheer* (Fig) tree, *Akhrot* (Walnut) and Kerosene oil are not good enough. The most inferior lamp-coal can be obtained by burning the branches of those trees that have oil in them. According to the author of *Rasal-i-Raushnai*, European lamp-black, which was the cheapest in the market in those days, was the lowest in quality because the colour did not last long.[14]

Kajal is basically the purest form of Carbon. Above-mentioned sources are very good to get a high quality Carbon to apply as pigments. Camphor wood, Poppy and Mustard seeds have the right amount of oil in them that is suitable for colouring. Too much oil in the branches of the trees is never good to get a pure *Kajal* (Carbon) and its application on the paper is not practical.[15]

Usually round clay cups were filled with oil and a wick of cotton was burned. This lamp was placed in an area where there was not much air. Clay plate or lamp-cover was placed at a safe distance on top of the burning lamp. After sometime when enough lamp-coal is accumulated on the lamp cover, it was taken off with the help of a delicate brush. Bird feathers were also used for this purpose.[16]

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.

These are some of the preferred methods to get white and black color that have been used in the Subcontinent by the traditional miniature painters. Pigments obtained were of such high quality that they are very much appreciated by the painters even today with all the modern technology adopted for color making, which testifies the utility and quality of the older processes.

Notes & References

[1] To get the information about the materials and techniques used by the artists, I interviewed the old painters and art historians who are involved in this art form for many years. One of the interviewees was Mr. Salah ul Din. He is a senior miniature painter. He was also employed by Lahore Museum where he worked on the damaged paintings of the museum. Since most of the Lahore Museum collection is based on miniatures so he is very familiar with the material used for painting.

The other person who was of tremendous help is Faqir Saif ul Din, the curator/director of Faqir Khana Museum Lahore. He shared the knowledge about materials used by the artists.

For technical expertise Prof. Dr. Abdul Qayyum Mirza was consulted. He is a PhD in chemistry and confirmed the chemical reactions of the materials used.

Khalid Saeed Butt is a retired professor of miniature painting at College of Art & Design, University of the Punjab Lahore. He is also an accomplished painter and has been painting miniatures for more then forty years. He still makes his own paper (to paint *Wasli*) for miniature painting. He informed in detail about the pigments and their reaction on paper.

All these persons are experts in their field and have the first hand knowledge about the materials used to make new paints. As Mr. Salah ul Din and Khalid Saeed Butt said that even today they prepare their own painting material. I am really grateful for their help and guidance.

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

[3] Ibid. 37

[4] Ibid. 46.

[5] R. P. Srivastava, *Punjab Painting* (New Delhi: Hans Raj Gupta & Sons 1983), 63.

[6] Ibid. 66.

[7] Interview Mr. Salah ul Din

[8] Interview Professor Khalid Saeed Butt.

[9] Edited by Muhammad Abdul Aziz Mohtamam, *Rasal-i-Raushnai* (Printers: Khadam ul Taleem, Punjab Lahore 1902), 80.

[10] Interview Dr Abdul Qayyum Mirza

[11] Edited by Muhammad Abdul Aziz Mohtamam, *Rasal-i-Raushnai*, 80.

[12] Ibid, 80.

[13] Interview Dr Abdul Qayyum Mirza

[14] Edited by Muhammad Abdul Aziz Mohtamam, *Rasal-i-Raushnai*, 61.

[15] Interview Dr Abdul Qayyum Mirza

[16] Edited by Muhammad Abdul Aziz Mohtamam, *Rasal-i-Raushnai*, 62.