

VISUAL ANALYSIS OF BORDER DECORATION IN MUGHAL MINIATURE PAINTINGS

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Abstract

The Mughal era is renowned for its rich cultural and artistic heritage, with miniature painting standing out as a key expression of its aesthetic values. Among its distinctive features, border decoration played a vital role—not only enhancing visual appeal and manuscript illumination but also offering physical and symbolic protection to the artwork. This paper presents a visual analysis of border decoration in Mughal miniature paintings, focusing on motifs, colors, layouts, and stylistic elements. By examining these often-overlooked details, the study highlights the artistic techniques and cultural significance embedded in Mughal border design.



INTRODUCTION

The Mughal Art has always had an excellent appeal for art lovers. The Mughals were the true lovers of the art of decoration. Their buildings, crafts, textiles, and miniature paintings symbolize their aesthetic aptitude. The year 1526 saw the arrival of the magnificent Mughals from Central Asia to the Indian Subcontinent, who brought their unique rituals. Among the many beautiful arts taken on by the Mughals from their predecessors, book illustration was one of them. Beautifully illuminated manuscripts were highly encouraged by the ruling powers. These manuscripts were decorated with pictures illustrating the text, known as miniature paintings. Brown (1981) describes miniature painting as any portable painting that can be transferred from one hand to another. Inspired by the rich and luxurious Persian culture and Indian riches, the Mughals proved to be notable patrons of the miniature painting (Bushra, 2016). This paper analyzes border decoration in the Mughal miniature paintings, emphasizing motifs,

colors, layouts, and stylistic features observed from selected artwork. Visual analysis is the examination of the pictorial elements, composition, and patterns to understand the significance of aesthetics and the meaning of an artwork (Loucher, 2014). Through this visual analysis, the present study brings attention to the artistic approaches employed in these decorative borders to unfold the cultural and aesthetic significance rooted in these often-unnoticed elements.

Literature Review

The developmental phase of Mughal miniature paintings spans almost three centuries and makes a colorful chapter of Indian history. Zahir uddin Babar (1483-1530), the founder of the Mughal dynasty, had an artistic temperament; however, he did not make significant efforts to develop painting during his reign. His son, Emperor Humayun (1508-1556), is regarded as the pioneer of the Mughal School of painting in India. Nonetheless, it was under Akbar's

rule that the Mughal School of miniature painting was firmly established and flourished. In addition to the foreign painters, the local skilled hands contributed to developing this art form. Hence, the Mughal School of painting is the fusion of diverse cultures shaped by the dynamic exchange between multiple regional influences (Brown, 1981; Chakraverty, 1999; Welch, 1987; Welch, 1988). When the Mughal miniature paintings reached their zenith, they exhibited various remarkable features. Border decoration is among them (Nath, 1994). In paintings, the border means a boundary or demarcation line separating one scene from another, often enhancing the artwork's visual appeal and narrative structure.

In Islamic tradition, beauty and ornamentation are not merely decorative features but hold deep spiritual and cultural significance, rooted in religious texts and prophetic teachings. Decoration or ornamentation is always considered vital by Muslims in their art and architecture. This emphasis on beautification draws inspiration from the Quran, where in chapter 7, verse 56, Allah says:

“The mercy of Allah is near to those who do what is beautiful”. This verse suggests that beauty in action and creation is beloved to Allah, encouraging Muslims to incorporate aesthetics in all aspects of life, including artistic expression. The importance of beauty is further emphasized in the saying of the Prophet Muhammad (SAW): “Allah is beautiful and loves beauty” (Sahih Muslim: 911). These foundational teachings inspire a distinct Islamic artistic identity where art without decoration is inconceivable. Islamic crafts, architecture, and manuscripts are richly adorned with floral, geometrical, and abstract motifs, occasionally incorporating human and animal figures (Diamond, 1930). Reflecting on the philosophical basis of Islamic art, Ismail al-Faruqi argued that Islamic art is deeply tied to the Islamic worldview, which seeks to express the oneness and unity—Tawhid and transcendence of Allah through abstract, non-figurative forms. In pursuit of aesthetic refinement, Muslim artists continuously strive to develop new concepts of elegance in design arrangement, reflecting a spiritual aspiration to mirror beauty through art.

Methodology

This study used purposive sampling to select five images from the famous book *The Emperor's Album: Images of Mughal India* (1987) for close visual examination of border decoration; in addition to direct readings of these images, relevant scholarly literature was also consulted to support and contextualize the interpretations.

Analysis of Border Decoration from *The Emperor's Album: Images of Mughal India*

The publication of *The Emperor's Album: Images of Mughal India* was issued in connection with the exhibition with the same title, held at The Metropolitan Museum of Art (Met) from October 21, 1987, to February 14, 1988. This book consists of 128 illustrations from the Kevorkian Album, also known as the Shah Jahan Album. Mughal court artists created the original paintings for Emperors Jahangir and Shah Jahan. The present study examines the border decoration used in Mughal miniature paintings, by exemplifying five images from this book: (i) Qilich Khan Turani, (Pl.70) showing realistic flowers in border; (ii) Calligraphy (Pl.54) showing grapes vines in golden; (iii) Calligraphy (Pl.27) showing floral arabesque in golden set against deep blue; (iv) Calligraphy (Pl.30) showing foliage arabesque incorporating six pointed stars; and (v) Calligraphy (Pl.19). The plate numbers given above are the accessed plate numbers in the Exhibition catalogue book.

Visual Analysis and Discussion

Muslim artists explore techniques to achieve aesthetic harmony to ensure that decorative motifs seamlessly cover entire surfaces. Among these techniques, the Border emerges as a distinct and purposeful layout, where a design unit or motif is systematically repeated at regular intervals across a defined area (Diamond, 1930; Yates, 1986). This structured repetition enhances visual rhythm and cohesion. It reflects the Islamic artistic emphasis on balance, order, and unity, principles deeply rooted in the spiritual and philosophical foundations of Islamic art.

This emphasis on structured and harmonious design also extended to manuscript illumination. Muslim artists highly valued both sacred and secular texts. A notable example is the illuminated ninth-century

Quran, which features borders either around the title or framing the entire page (James, 2003). In the beginning, color margins, interlaced patterns, or plain borders were employed to embellish the pages of the Holy book. Additionally, the beginnings and endings of surahs were often decorated with various motifs to enhance their visual significance. Over time, however, artists introduced geometrical design in vivid colors, along with various palmate and stylized plant motifs within border medallions (Kuhn, 1971). Furthermore, James (2003) describes that many of these decorative elements, such as arabesque and the palmate used by Muslim artists in early decoration, had their roots in pre-Islamic artistic tradition. Moreover, the geometric elements, composed of repeated patterns, centrifugal compositions, and interlacing or strap work, originated from the late Roman art. The use of geometric elements in the Quranic frontispieces began in the fourteenth century in the eastern Islamic world. In contrast, this practice emerged much later in the nineteenth century in the Western Islamic world regions. Among the various decorative techniques, interlacing became a favorite feature in Islamic manuscripts. In addition to geometrical patterns, the vegetal motifs, especially Roman stylized plant forms, were widely used. Similarly, during the Mamluke period, the book illumination, both religious and secular, shows some influences from Chinese art, including the lotus and tree peony blossoms.

Later, the Timurids significantly advanced the art of book illumination (James, 2003). In the 15th century, the Persian artists introduced border painting in secular manuscripts, marking a notable development in decorative tradition. The earliest specimen with a border painting belongs to the Divan of Sultan Ahmed Jalayir, dated 1404 A.D (see Pl.1). His son-in-law, Iskandar Sultan, and his cousin, Sultan Ibrahim, were fond of border illumination; in fact, they are recognized as the patrons of some of the manuscripts richly adorned with gold embellishments (Swietochowski, 1987). Initially, the new style featured elongated golden floral sprays with brightly colored blossoms set against a blue background. Later, some Chinese decoration elements, such as cartouches with cusped ends, were introduced. Eventually, a highly refined style

emerged, known as the Timurid International style. This evolution continued under the subsequent dynasty of the Safavids. The distinction between the Quranic and secular texts gradually disappeared, creating a uniform decorative style. These illuminations typically featured multi colored gold bands, inspired by Chinese art and delicate curling arabesque scrolls, polychrome blossoms, and large fleshy leaves on a blue ground (Pl. 2) (James, 2003). Notably, the renowned Persian painter Behzad was often referred to as the “Raphael of the East” (Brown, 1981, p. 41), elevated not only Persian paintings but also border decoration to its climax (Kuhn, 1971). The art of border decoration reached its zenith under the Mughals' patronage. Apart from the technique, Mughal court artists paid particular attention to subject matter, color schemes, and the ornamental borders that framed paintings and manuscripts (Swietochowski, 1987). Borders were considered an integral element of illuminated manuscripts by nearly all Mughal emperors for their aesthetic contribution and their functional role in protecting the central image (Bushra, 2016). Moreover, the Mughal book illumination was started on the Persian artistic principles, as the Mughal School of painting itself was established with the help of Persian artists (James, 2003).

Simple linear borders were first introduced during Akbar's reign. Subsequently, in the late Akbari period, gold-decorated borders, similar to those of the Persian style, began to appear (Swietochowski, 1987). The earliest examples of Mughal decorated borders are found in the manuscripts from the same period, with the primary focus on human figures (Beach, 1978). In these borders, the drawing appeared simple and slack. The figures were rendered stagnant and inactive and seem unrelated to the composition, reflecting the early, formative stage of the Mughal miniature painting style. Similarly, the early borders of Jahangir's atelier differed significantly from those of the later ones. Initially, these borders featured symmetrically placed cartouches with simple patterns, rosettes, and plant-based motifs that often appeared rough and lacked delicacy. However, later in his reign, the borders gained more perfection and uniqueness (Bushra, 2016). The border was often more elaborate and impressive than the central image itself.

Additionally, many miniatures were framed by multiple layers of ornamentation. Okada (1992) noted that the folio from Jahangir's albums often featured richly decorated borders, possibly created by the same artist as the central image. During this period, more fancy full effects were added to the borders by adding trees, animals, flowers, and even human figures (Swietochoski, 1987). Most of the borders from Jahangir's (1605-1627) and Shah Jahan's (1627-1658) reign are adorned with botanically recognizable floral designs (James, 2003). However, when it came to the Quranic illumination, the Mughal court painters followed the traditional Timurid 'International' style along with some Safavid features (James, 2003, p. 612).

Themes in the Border Decoration of Mughal Miniature Paintings

The borders of Mughal miniature painting are renowned for their intricate and refined designs. Common themes include geometric patterns, floral motifs, zoomorphic figures, human representations, and inscriptional elements. Each reflects the artistic richness and cultural diversity of the Mughal era.

Inscriptional Border

Inscriptions are considered the most important part of decoration in almost all sorts of art objects and architectural surfaces across the Muslim world. Arabic scripts were brought to a high level of intricacy using different calligraphic styles such as the angular Kufic and the flowing cursive forms of Naskhi and thuluth (Jones, 1987). In the art of calligraphy, Persians, with their artistic capabilities, established the most advanced norms of rhythm, dramatic form, and accuracy (Ziauddin, 2004).

The artistic phase commenced in the Indian subcontinent with Akbar's reign. Akbar made the utmost contribution to the development of calligraphy, not only as a decorative element in architecture but also as an art of writing. Although Akbar was illiterate, he generously supported the skilled Persian calligraphers (Nath, 1979).

In Mughal miniature painting, calligraphy was used as the main content and a decorative element. This calligraphic embellishment was developed during the eras of Jahangir and Shah Jahan. Schimmel (1987)

reported that these paintings, surrounded by small calligraphic fragments, were not written directly on the base paper but cut out, pasted on the base with extreme care, and ornamented with delicate designs. Schimmel (1987) added that most inscriptions were drawn from Ghazals, epics, prose texts, or verses. Though the majority were in Persian, some specimens in Turkish have also been found. In later works, however, the same decorative technique was applied. Instead of pasting, the calligraphy was directly written on the base page and consists of one continuous poem according to the inner content.

The Figurative Representational Borders

As Islam spread from the Arabian Peninsula to other areas, the artistic activities of the newly conquered territories significantly influenced Muslim art. Figurative representation in ornamentation was already prevalent in the existing Byzantine, Roman, and Sassanid traditions, influencing Islamic art from early times. However, given the fact that figurative art was prohibited, Muslim artists initially employed stylized and cartoonish depictions of people and animals.

Naef (2005) urged that Muslims follow the idea of iconophobia (the prohibition of representation of living beings, i.e., humans and animals) in their religious buildings. However, the same idea was not followed when decorating secular buildings. Perhaps the early Umayyad palaces were decorated with impressive fresco paintings, completely overturning the idea of iconophobia in the early Islamic period.

Nath (1994) urged that, as far as the Mughals were concerned, their liberal authorities always encouraged depicting animals and human beings in their art and architectural decoration. Their extreme love for depicting living beings can be seen from the miniature painting that started in the Mughal dynasty's early days. The conspicuous borders were considered a part of the manuscript in the late Akbari period. These borders were figurative primarily. The Mughal miniature borders reach their maturity in the late Jahangiri manuscripts. Adding animals, birds, and human forms made these borders more worthy (Bushra, 2016). During Shah Jahan's reign, the painting borders got more prominence. The living beings frequently appeared on the borders of

miniature paintings in the form of humans, animals, or allegorical figures, mostly angels. The painting border was decorated with courtiers doing different activities, and there was not necessarily any connection with the inside painting.

Floral Borders

Flowers are the most beautiful gift of nature, pleasing the eyes with vibrant colors and soothing the senses with their fragrance. The Mughals' intense love for floral imagery could be glimpsed from their richly embellished building, textiles, ceramics, rugs, and miniature paintings. Babur often referred to flowers in his memoir, which gave a clue about the nature lover inside him. Akbar mentioned plants in his memoir *Ain-i-Akbari* as one of God's great gifts (Misbah, 2003). Vegetal motifs, including flowers, blossoms, vines, and even whole plants, were common decoration elements during Akbar's reign (Walker, 1997). The artists used floral designs developed with the influence of European botanical flowers, late Renaissance floral scrolls, acanthus leaves, and Indian and Persian floral elements (Jones, 1987). Their expertise in the depiction of flowers can be understood through the words of poets Kalim, who wrote: "They have inlaid stone flower in marble, which surpass reality in colors if not in fragrance, those red and yellow flowers that dispel the heart's grief, in reality are carnelian and amber" (as cited in Sharma & Gupta, 2012, p.113).

Brown (1981) stated that Jahangir liked flowers and plants like his grandfather. Moreover, he planted a garden and encouraged his court artists to paint flowers meticulously. However, the representation was non-naturalistic, and flowers were treated as the secondary decorative element or used as a part of the composition. Mostly, the representation was in the same manner as in Persian art. The Shah Jahan Album and the tomb of I'timad al-Daulah are good examples of his reign, displaying the floral representation in a purely Persian style. The naturalistic floral motives were not used until about 1620 (Walker, 1997).

Swietochoski (1987) suggested two reasons for the integration of botanical flowers in Mughal miniature painting during the seventeenth century. First, Jahangir visited the world's paradise, Kashmir, and

was inspired by the astonishing range of flowers there, so he instructed Mansoor to paint them (Walker, 1997). Second, the court painters took inspiration from European engraving herbals. Misbah (2003) mentioned different types of identifiable flowers used by the Mughals to adorn their buildings and miniature paintings. These include lily, tulip, Iris, carnation, narcissus, chrysanthemum, zinnia, dahlia, hibiscus, poppy, Rose, and jasmine.

In the beginning, the rendering of flowers was highly naturalistic, with Mansoor depicting most blossoms in an identifiable manner. However, as floral motifs became integral to decoration, artists began to omit specific identifying details. Blossoms from different plants were often combined into a single composition, and over time, the depiction became increasingly stylized rather than naturalistic, making identification nearly impossible (Walker, 1997).

Border Decoration of the Painting Qilich Khan Turani

One example of a painting's border composed of naturalistic flowers can be seen in the painting Qilich Khan Turani Pl.3 from the renowned book *The Emperor's Album: Images of Mughal India* (1987). The outer border of the painting features different flowers set against a buff ground. Different types of lilies and irises adorned the border with an asymmetrical arrangement. Lily is one of the most important herbaceous ornamental flowers used in border decoration for most of the seventeenth century, most often during the 17th century. Some other known flowers like poppy, narcissus, chrysanthemum, and dahlia can also be identified in the same border.

Trees and plants

The Muslim artisans skilfully use trees and other plant-based ornamentation on various artefacts from the early times of Islam. For instance, the earliest Islamic buildings, including the Dome of the Rock (691 CE), Al-Aqsa Mosque, and Umayyad Mosque (709 CE), are adorned with naturalistic representations of floral motifs, derived from Sassanid and Byzantine arts and the vine scroll from the Byzantine art (Abdullahi & Embi, 2015; Rice, 1975). The vegetal motifs in the Umayyad mosque of

Damascus are palm, pear trees, acanthus, and vine leaves. The floor mosaic from the bath of Khirbat al Mafjah is a good example of representing the tree motif more naturally with animals beneath it (Rice, 1975).

Border Decoration of Calligraphy with Vine Scroll Pattern

Walker (1997) reported that the Shah Jahan Album contained many miniature paintings bordered with foliage and a vine scroll pattern in natural or abstract form. For instance, the borders of a calligraphy folio Pl.4 from *The Emperors' Album: Images of Mughal India* are composed of undulating grapevine scrolls in gold on an orange background. The overall composition is dense and crisp (Welch, 1987b). Another glorious example of the vine ornaments on the facade of the Mshatta palace belongs to the eighth century. Later, in the ninth century, the vine leaves became more stylized, as seen in the third style of Samarra. The Samarra Mosque (Iraq) decoration is a good example of how Muslim artists deliberately reproduced the vine leaves and branches in an abstract form (Saoud, 2004).

Border with Floral Arabesque

Arabesque is the most common motif in Islamic art. Diamond (1930) describes the term "arabesque" as "an ornamental design consisting of curving scrolls, crossed or interlaced, and having stylized leaf or flower motifs" (p.13). The Greeks used the linear vegetal scroll with no leaves or flowers in 512 B.C. Buschgens (2011) reported that the Greco-Roman and Sassanid Persian artistic traditions contributed to the development of the Arabesque style of ornamentation among Muslims. Jones (1978) urged that the development of Arabic design from the classical vine scroll to the highly stylized design happened in the early Islamic period.

Arabesque design was also considered a vital element in the decoration of books, both in the border around the text and for the decoration of their binding. The stylized floral motifs first used for the decoration of the Quran were rosettes, medallions, and roundels in the margin decoration for the purpose, as they indicate the end of the ayahs, surahs, ajzah, and sajdah, etc. The Quranic copies of the tenth century

were the earliest example of full-page arabesque decoration at the beginning or end of the book. Later on, such decorative pages became an integral part of the manuscripts (Al Faruqi, 1985)

The Mughals very elegantly used the floral arabesques in the marginal decoration of the miniature paintings. These designs are apparent in many decorative borders. The arabesque decorations were also very finely rendered in the borders of calligraphic specimens and miniatures. Mainly, the arabesque borders are composed of flowers, palmate, floral scrolls, flower heads, and occasionally quatrefoil and cartouches. Daulat was known as the most expert illuminator from the court of Jahangir. He was praised for his delicate arabesque decoration in many folios.

Border Decoration of Calligraphy with floral arabesque

One example of a border with floral arabesque is the calligraphic specimen Pl.5. This calligraphic specimen shows gracefully scrolling palmate leaves, flower heads, and buds on delicate stems with birds perched at intervals on them and a ribbon band looping and arching above them. The rhythms of the design suggest lilting cadences, belying the incredible control of the brushstrokes. The painting borders are gold on a blue ground.

Borders with Geometrical Designs

Geometric designs are the abstract motifs that include all those designs that correspond to rectilinear and curvilinear geometric figures, i.e., squares, rectangles, circles, hexagons, octagons, different shapes of crosses, five, six, eight, ten, and even more pointed stars. In addition to these motifs, polygons with different numbers of sides, equal or unequal, and angles have been applied by the Muslim artists (Al-Farooqi, 1985). The geometric designs are considered the most vital element of Islamic art due to their aniconic nature, whether used separately or in combination with other types of ornamentation. These abstract elements are not only used for decoration on the surfaces of the gigantic building but also appear as an important decorative element in a vast variety of other objects.

Geometric ornamentation reached its height in the hands of Muslims; however, its roots lie in late

antiquity among the Greeks, Romans, and Sassanids. The contribution of the Islamic Mathematicians, astronomers, and scientists cannot be denied in creating this new form of decoration (Jones, 1987).

The two main reasons which encourage the development of geometrical art in the Muslim world are: firstly, these expressions are used as an alternative to the forbidden depiction of live creatures. Abstract geometrical forms were particularly used in mosques because they boost spiritual thought. Therefore, geometry became dominant in the art of the Muslim World, giving free rein to the artists for their aesthetics and creative capabilities. The second reason was the approval and admiration of the science of geometry in the Mohammadan's eye (Saoud, 2004). In early Islamic architecture, the ornamentation was significantly based on floral themes, and geometric motifs were added later. The Great mosque of Kairouan, rebuilt in 836 CE during the Abbasid period, was decorated with floral and some basic geometrical shapes (Abdullahi & Embi, 2013).

Border Decoration of a Calligraphy with foliage arabesque and six-pointed stars

Similar to the religious buildings and tombs, geometric designs were also used for the embellishment of borders of the manuscripts and miniature paintings by the Mughal painters and decorators (Abdullahi & Embi, 2013). Circles, ovals, lozenges, crosses, octagons, hexagons, David stars, Lakshmi or eight-pointed stars, cartouches, and quatrefoils were the simple patterns used in combination with floral scrolls or naturalistic floral designs. One example of the border decoration of a calligraphy folio is Pl.6 (Welch, 1987c). This border exhibits a geometrical star pattern along with flora and fauna. This calligraphic specimen is surrounded by a floral and a calligraphic cutout border. The outer border is composed of gold scrolling leaves, blossoms, and palmate, combined with five complete stars and two half stars at the inner margin, formed of two intersecting equilateral triangles. The star pattern is one of Islamic art's simplest, oldest, and most popular designs. The inner hexagon within the star contains a bird, while in the center, one in the outer border, there are two birds surrounded by foliage, which also fill the points of the star. The birds are not identifiable

as the decoration is gold rather than naturalistic colors on Persian blue.

Among many elements borrowed by the Mughal artist from European art, the cartouche found its way from Europe to India. This decorative element was used in architectural decoration and as a prominent part of miniature paintings' decorative borders. A cartouche is an oval or oblong design with a slightly convex surface, often with scrolled framing, which became an integral part of ornamentation from the 16th century onwards. It has been suggested that the cartouche developed from the flattened shape used to highlight the names of royalty in Ancient Egyptian Pictographs. Hereafter, the cartouche form has been used to surround anything from important messages, landscapes, and genre paintings in architecture and the decorative arts.

Border Decoration with five oval cartouches

The calligraphic specimen in Pl.7 has an extremely finely painted border with the pattern of delicate scroll bearing leaves, palmate, and flower heads in subtle colors on a buff ground, with five prominent oval cartouches. This border design is a beautiful blend of floral and geometric motifs (Welch, 1987d). Another important member of the Islamic geometric patterns group and prominently represented in Mughal miniature paintings is the eight-pointed star, also known as the Lakshmi star. An eight-pointed star divides the outer border of the folio Shah Jahan on the Peacock Throne into different compartments (Pl.8). Between each pair of eight-pointed stars, two hexagonal compartments are formed, filled with different types of flowers. In contrast, the Lakshmi star-shaped compartments are filled with different birds. The empty spaces are filled with the floral arabesque.

Material and methods

The Mughal court painters showed great care in selecting and preparing material for the painting, which is why these paintings retained their freshness even after three hundred years. Most of these materials were prepared by the master painters themselves or by the joiner painter under the supervision of the master. Some of the materials used by the court painter are as follows:

Paper

The selection of paper for the painting was an important step for the court painters. Considerable attention and knowledge were needed to select the right paper for the purpose. At the start, paper was imported from Persia. Afterward, a paper factory was established at Sialkot (Anita, 2008). Brown (1981) added that this local product, Sialkot, was mainly used for writing. A good paper of a suitable size was not available during Akbar's time. Thus, the artist joined several pieces together to get the workable size. Papers were very skillfully joined at the sides or ends to avoid the awkward juncture across the middle of the painting. Later, burnishing and priming of the surface prevented the joint from appearing in the finished work. Subsequently, some other types of paper were also used by the painters, including Basaha or bhansi made from bamboo; Tataha was obtained from jute or tat made from cotton; and Sanni was made from flex. Some artists used Hariri or silk paper to execute their work; however, this paper often cracked during the work. Silk was rarely used as a base, while some miniatures were executed on vellum (Anita, 2008).

Colors

According to Brown (1981), many of the colors used by the Mughal court painter in miniature painting were mineral extracts; however, some were of vegetable origin. The Persian blue used in early Safavid and Mughal painting was azurite, a natural ore of copper. In later works by Mughal artists, lapis lazuli, imported from Badakhshan, replaced azurite. Indigo from the vegetable sources and two types of red, red ochre and Indian red, extracted from iron oxide, were among the colors from the Mughal palette. Among the yellows were chrome and ochre (Multani Mitti), Indian yellow, a euxanthionate of magnesium, orpiment, a sulphide of arsenic, and one of the yellows they extracted from a flower. A glowing green tint was obtained from verdigris, and another was made by mixing indigo with orpiment. White was a white lead, while black, which the Persians and Mughals commonly used for outlining, was black Indian ink (Brown, 1981).

Brushes

The Mughal painters used different types of brushes. The finest brushes were made from the tail of a young squirrel, whereas large brushes for coarse work were made from hair inside the ears of calves (Anita, 2008). Medium-sized brushes were made from the hair on the underside of the goat and the mongoose (Brown, 1981).

Technique of Painting

In miniature paintings, the painters mostly used the opaque watercolor technique termed by the Europeans as tempera (Jones, 1987). A style of painting known as garah was also practiced in the later period, in which parts of the picture were covered with the real seed pearl and flakes of precious stones (Brown, 1981, p.187). Such decorations were applied in the head ornaments, draperies, and other ornamental accessories (Jones, 1987).

Conclusion

The whole review concludes that the Mughal age was not only the period of experiment and innovation but also the continuation of the process of fine arts. Along with the technique, artistic approaches to the subject matter and color scheming, the dazzling borders around the paintings and manuscripts were the eye-catching part of Mughal paintings. Borders were considered a prominent part of the illuminated manuscript by almost all the Mughal emperors. Among all the themes used in borders by the Mughal painters, flora got more prominence in the form of arabesque, natural flowering plants, or trees in the landscape. Most of the borders of the Jahangir reign are composed of identifiable plant motifs, while the later borders have unidentifiable plant motifs. The borders produced during late Jahangir and Shah Jahan's reign are more mature in their depiction and coloring. The European technique of chiaroscuro, which depicts human figures and vegetal motifs and perspective using colors and lines, was followed in these paintings. Thus, the human drawing shows a three-dimensional quality while the landscape scenes have more depth. The rendering of naturalistic landscape elements like trees, animals, birds, and human forms gave significance to the borders.

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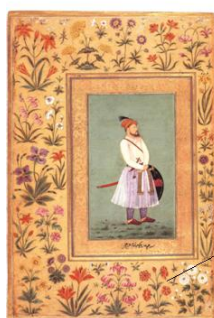
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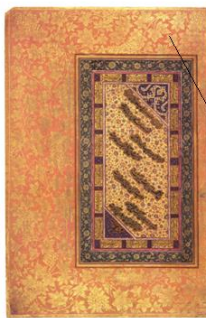
Pl.1: Pastoral scene from Sultan Ahmed Jalayir, *Diwan*, Baghdad, 1403. (Blair & Bloom, 1994:Pl.40)



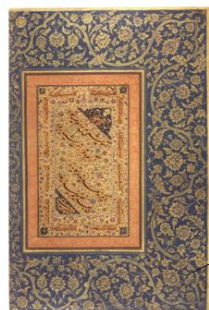
Pl.2: Qur'anic leaf of Ibrahim Sultan, Iran (Shiraz), A.H. 830/A.D. 1427. Retrieved from <http://www.metmuseum.org/art/collection/se>



Pl.3: Qilich Khan Turani (Welch, et al., 1987:Pl.70)



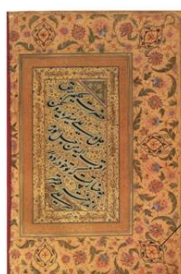
Pl.4: Calligraphy (Welch, et al., 1987:Pl.54)



Pl.5: Calligraphy(Welch et al.1987, Pl.30)



Pl.6: Calligraphy(Welch et al. 1987:Pl.30)



Pl.7: Calligraphy (Welch et al.,1987:Pl.19)



Pl.8: Shah Jahan on the Peacock throne
(Welch, 1985: Pl.154)

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