

IDRIES TREVATHAN

King Abdulaziz Center for World Culture (Ithra), Dhahran, Saudi Arabia. idriestrevathan@gmail.com

Colour, light and wonder in Medieval Islamic Aesthetics

Abstract: By drawing on a range of literature, this brief paper provides an insight into medieval Islamic aesthetics and particularly its concern with the importance of colour, light and wonderment, their generation, and how they are gazed upon contemplatively in art and architecture. Descriptions of architecture are drawn from a variety of sources including scientific treatises, histories, travelogues and poetry, as well as classical Arabic dictionaries. The analysis also extended to Byzantine descriptions of Islamic muqarnas domes, thus setting it in a medieval intellectual context to shed light on the aesthetic dimension of the use of colour in buildings. Together, these descriptions of materials and experiences lead to considerations of “awe” or “wonder” that are often described in relation to particular materials. Such accounts are then compared with various material studies that suggest an inclination towards creating luminosity and that materials may have been used intentionally to elicit a particular aesthetic experience of the object.

Keywords: Colour, light, aesthetics, architecture, art, wonder.

Resum: A partir de textos diversos, aquest breu article proporciona una visió de l'estètica islàmica medieval, en particular de la seva preocupació per la importància del color, la llum, l'efecte meravellós, la seva generació i la mirada contemplativa en l'art i l'arquitectura. Les descripcions de l'arquitectura provenen de fonts variades, que inclouen tractats científics, relats, literatura de viatges i poesia, així com els diccionaris clàssics àrabs. L'anàlisi s'amplia també a les descripcions bizantines de les cúpules islàmiques de mocàrabs, que permeten fonamentar aquest discurs en un context intel·lectual medieval que ajuda a clarificar la dimensió estètica del color en els edificis. Aquest recull de descripcions de materials i experiències porta a considerar la vivència d'«admiració» o «meravella» que sovint es descriu amb relació a determinats materials. Aquestes descripcions es comparen amb diversos estudis materials que suggereixen la tendència a crear lluminositat i la possible utilització intencionada de materials per tal d'arribar a obtenir una particular experiència estètica de l'objecte.

Paraules clau: color, llum, estètica, arquitectura, art, meravella.

Introduction

The few descriptions of buildings and objects by medieval Muslim observers are filled with joyous praise of the brilliance and translucency of pure, bright colours. Of the variety of aesthetic features included in Islamic buildings, glittering and brilliant colours seemed to be the most captivating. While sensual enjoyment was indeed a fundamental aspect of the aesthetic experience of brightly coloured materials in architecture, it was potentially only a first aesthetic response. Wonder induced by brightness and colour could lead to deeper feelings of awe about the universe, the Divine and their creation. This research paper provides a review of these descriptions from a variety of sources including histories, travelogues and poetry, as well as classical Arabic dictionaries. This review is also extended to Byzantine descriptions of Islamic *muqarnas* domes, thus setting the analysis in the medieval Islamic intellectual climate to shed light on the aesthetic dimension of the use of colour in materials and surfaces. The goal is to demonstrate how such emotional reactions as wonder and amazement not only occurred naturally in spectators but, as evidenced by inscriptions found in the Alhambra and material data found in Damascene rooms, were also intentionally evoked by artists and craftsmen through the use of materials to create brightly coloured, reflective surfaces. The paper also attempts to show that wonder is not just a reaction sought by medieval Islamic aesthetics, but can be seen as the starting point of a process that potentially leads to higher knowledge or states of consciousness and is therefore to be pursued and stimulated.

Ibn Al-Haytham and Aesthetic perception

The great 11th century physicist, mathematician and astronomer Ibn al-Haytham was one of the first Muslim philosophers to make beauty the main subject of his work and thus instituted aesthetics as an independent branch of philosophy. While his writings addressed distinct aesthetic concepts in the modern sense of the word, his work did not treat the aesthetic object of study as exclusive from other fields of knowledge. His *Kitab al-Manazir* (*Book of Optics* or *Persepectiva* in Latin, literally “book of what appears”) presents his theory of optics, which was based on earlier Greek ideas. This treatise investigates a variety of subjects including physiology of vision and sensory perception of beautiful things (*idrak al-husn*) in which the concept of the beauty of proportion features prominently. He presents the visual perception of beauty as a three-part process; “pure sensation”, “glancing perception” and “contemplative perception”. “Pure sensation” is described as the sensual cognition of light and colour involving the senses.¹ For him, pure sensation arises from the qualities of light and colour. He writes that colourful forms are beautiful “without there being a cause on account of which their forms look beautiful”.² The second phase of visual perception, “glancing perception”, is cognition by remembrance, which involves the mind and memory. Third, “contemplative perception” involves faculties whereby it is possible to see beyond the apparent form of the object, and to contemplate its novel qualities, which the mind and memory cannot recognize and the eye cannot distinguish. He

1 IBN AL-HAYTHAM, 1989, I, 128-130.

2 IBN AL-HAYTHAM 1989, I, 200-203. The full text reads as such: “It is these particular properties [light and colour] that separately produce beauty –and by ‘producing beauty’ I mean that they produce in the soul an effect such that the form appears beautiful (which) will be evident from a brief consideration. For light produces beauty, and thus the sun, the moon, and the stars look beautiful, without there being in them a cause on account of which their forms look beautiful and appealing other than their radiant light. Therefore, light by itself produces beauty... colour also produces beauty. For every bright colour... appeal(s) to the beholder and please(s) the eye. Similarly, dyed clothes and covers and utensils, also flowers, blossoms and meadows, are felt to be beautiful. Therefore, colour by itself produces beauty”.

relates the third phase, “contemplative perception”, to the twenty-two other properties he cites as leading to beauty, including proportion, balance, regularity, etc. Thus Ibn Al-Haytham viewed the beauty of light and colour as pure and indivisible and directly perceivable, while the perception of other properties of beauty required a process of discernment. Hence light and colour were considered beautiful, immediate, pure and simple, with no relational element. His description of the qualities of light and colour seems to place them outside the systematic classification that characterizes the aesthetics of other types of beauty. This interpretation fits well with what is found elsewhere in Islamic and Christian literature; for example, this same feeling is echoed by Plotinus in his *Enneads*, where he hypothetically excluded colour from the category of beauty on the basis that it could not be comprehended in the same way as proportion. He writes “All loveliness of colour, and even the light of the sun, being devoid of parts and so not beautiful by symmetry, must be ruled out of the realm of beauty. And how comes gold to be a beautiful thing? And lightning by night, and the stars, why are these so fair?”³ This understanding is also repeated in other Christian literature where the beauty of light and colour are considered pure and indivisible, while the perception of other types of beauty was more theoretically regulated. For example, the 13th century Bishop of Lincoln writes,

The brilliance of gold is beautiful, not because it manifests a certain proportion, but because it is light. Similarly, the purest and greatest physical beauty, that of the stars... is explained not by the harmony of their elements... but by their joyous, flashing radiance... in nature; it is immediate, and is the object of a direct perception... its whole charm consists not in its harmony nor in its proportion not in its weight nor in any other physical attribute, but simply in the direct perception of it.⁴

Commenting on his own efforts to try to understand the medieval experience, Martin further explains in his book *Curious Visions of Modernity: Enchantment, Magic, and the Sacred* that “Colour was a lived, everyday experience, being spiritual, sensual and tactile... medieval experiences of light and colour were about experiences and not theory”.⁵

The Experience of Light and Colour in Buildings

This sensuous feeling is found elsewhere in the descriptions of buildings and objects by pre-modern Muslim spectators. Their observations are filled with joyous praise of the brilliance and translucency of pure and bright colours. Among the variety of aesthetic features that art presented, it was glittering and brilliant colours that seemed the most captivating. This is evidenced brilliantly in Ibn Jubayr’s ecstatic description of the polychrome decor of the ceiling at Martorana in Palermo (Sicily), in which

3 PLOTINUS, *Enneads* I, 6.1. This point is also made by John Gage in his book *Colour and Culture*. Gage writes, “Plotinus thought, somewhat, that any objectivism of the beautiful should be rejected in favour of a more spiritual understanding. For this reason, he says ‘again since the one face, constant in symmetry, appears sometimes fair and sometimes not, can we doubt that beauty is something more than symmetry, that symmetry itself owes something to a remoter principle’” (GAGE 1993, 14). Plotinus must have been aware of Plato’s insistence in the *Timaeus* on the futility of applying an intellectual classification or system to colour. Plato writes here “The law of proportion [intellectual classifications]... according to which the several colours are formed, even if man knew he would be foolish in telling, for he could not give a necessary reason, nor indeed any tolerable or probable explanation of them (...) he whoever, who should verify all this from experiment would forget the difference of the human and divine nature (...) For God only has the knowledge and also the power which are able to combine many things into one and again to resolve the one into many” (PLATO, *Timaeus and Critias*).

4 DE BRUYNE 1969, 59.

5 MARTIN 2011, 198.

he describes the colourful windows as “sparkling fires” that “ravish the sight and will be capable of throwing the souls into a disquiet which we pray God to guarantee”.⁶ This reaction is echoed elsewhere in Ibn Jubayr’s description of the Great Mosque of Damascus (fig. 1), which is again notable for his particularly enthusiastic praise of the light bearing qualities of the mosque’s decor. He writes



Fig. 1. A view of the Umayyad Mosque in Damascus from its central courtyard (photo: Idries Trevathan).

This blessed mosque is entirely adorned, outside as well as inside, with gilded mosaics and arrayed with the richest ornaments of a marvelous art...the brilliant light shed through the gilded and polychromed grilled windows, the sunbeams that stream down to become transformed into reflections of diverse colors dazzling the eye with their iridescent rays, all this stretching across the entire south wall to form a marvelous ensemble that defies description: no words can match even a tiny part of the effects its form makes on the mind of the visitor.⁷

Later, in the Ottoman period, Sai Celebi’s detailed mystical and religious description of the Suleymaniya Mosque sets forth an analogy between the physical light and colours within the sacred space and the divine light which he says enlightens the “eyes of the mind”.⁸ These animated reactions to these buildings resonate with what Ibn al-Haytham has described as the sensual cognition of light

6 GAGE 1993, 277.

7 PAPADOPOULOU 1979, 235. In his book *Jerusalem. The Biography*, S. S. Montefiore writes that the 16th century traveller Evliya Celebi also observed the Al Aqsa mosque in terms of its light. Montefiore reproduces a quotation from Celebi: “This humble one has travelled for thirty-eight years through seventeen empires and viewed countless buildings but I’ve never seen one that so resembled paradise. When a person enters, one stands dumb founded and amazed with one finger to mouth”. He writes further that “The mosque becomes light upon light and the congregants’ eyes shine with reverence as they pray.” (MONTEFIORE, 2011, 366).

8 NECİPOĞLU 1985, 100.

and colour, which is alluded to by late Umberto Eco as a lively feeling resulting from the purely sensuous properties of things. He describes it as a sensuous feeling that is “pure and simple, something immediately perceptible and indivisible”.⁹

As John Gage notes in his short chapter “Light from the East”, Islamic descriptions of buildings lay particular emphasis on light-giving materials and their capacity to stun the spectator in ways that are close to Western descriptions of buildings.¹⁰ This hypothesis is supported by various Byzantine accounts of Islamic monuments that also demonstrate a shared preoccupation with, and appreciation of, the light-bearing qualities represented in Islamic ornamentation. For example, the monk Nikolaus Mesarites describes the muqarnas vault of the Mouchroutas (from the Arabic *makhrut* meaning cone), built in the 12th century in Constantinople, possibly for visiting Seljuk dignitaries. After stating that the building is the work of a Persian hand (i.e., Islamic craftsmen), Mesarites writes,

The canopy of the roof, consisting of hemispheres joined to the heaven-like ceiling, offers a variegated spectacle; closely packed angles project inward and outward; the beauty of the carving is extraordinary, and wonderful is the appearance of the cavities which, overlaid with gold, produce the effect of a rainbow more colourful than the one in the clouds. There is insatiable enjoyment here –not hidden, but on the surface. Not only those who direct their gaze to these things for the first time, but those who have often done so are struck with wonder and astonishment.¹¹

Another account by the Byzantine Bishop John Philagathos also praises the muqarnas ceiling (fig. 2) of the 10th century Cappella Palatina in Palermo by saying



Fig. 2. The muqarnas ceiling in the 10th century Cappella Palatina in Sicily (photo: Idries Trevathan 2014).

⁹ ECO 1986, 44.

¹⁰ GAGE 1993, 64. He cites as examples; lusterware ceramics produced in Egypt and from about the 7th century in imitation of metalwork, and the monochrome silks manufactured in Persia in the ninth century and at Antioch or Damascus in the eleventh century.

¹¹ MANGO 1972, 228. On why the muqarnas were used in the Mouchroutas, see TRONZO 1997, 136-137.

You do not tire of contemplating the roof [ceiling], a cause of wonder and marvel to those who see or hear about it. Embellished as it is with delicate carvings, which are executed as differently shaped coffers and shining with gold from all sides, it imitates the clear sky of heaven, illuminated with choir of the stars.¹²

Necipoğlu, the great Harvard historian of Islamic art, is also of the opinion that passages on the beauty of colour found in medieval Christian literature exhibit a striking affinity with aesthetic concepts encountered in medieval Islamic texts. She cites the 12th century Abbot Suger (1081-1151) and his oft-quoted passage describing his experience of the precious objects studded with gems used to decorate the main altar of the church of St Denis, Suger writes:

Thus, when –out of my delight in the beauty of the house of God– the loveliness of the many-colored gems has called me away from external cares, and worthy meditation has induced me to reflect, transferring that which is material to that which is immaterial, on the diversity of the sacred virtues: then it seems to me that I see myself dwelling, as it were, in some strange region of the universe which neither exists entirely in the slime of the earth nor entirely in the purity of Heaven; and that, by the grace of God, I can be transported from this inferior to that higher world in an anagogical manner.¹³

In reference to this passage, Necipoğlu suggests “The uplifting emotional force of visual beauty would not have been foreign in a contemporary Islamic context” in which light and the brilliance of colour, religious and aesthetic elements are all intimately interlinked.¹⁴

Expressions of Wonder in Art and Literature

It is clear that bright and luminous colours seem to have held substantial intellectual, aesthetic and spiritual interest for people in the pre-modern Islamic world. The question we are left with is: what exactly was it about these light-bearing materials, such as precious stones and metals, that captured their attention? What led to their use in architectural settings and objects? One clue is offered by the Arabic term *‘ajab*, which is frequently used in conjunction with colour in art and expressions of beauty. It means wonderful, wondrous, marvellous, astonishing or amazing and is derived from the root verb *‘-j-b* meaning “to wonder”, “to marvel”, “to be astonished”, “to be amazed”. This verb is also the root of *‘ajab* (wonder, marvel) and *ta’ajjub* (astonishment, amazement). The term *‘ajab* was defined by the 12th century Mazudi in the *Lisan al-Arab* (*The Arab Tongue*) as “the denial or refusal of something that appears to you due to its lack of ordinariness” or “perceiving that a thing is unfamiliar (*ghayr ma’luf*) and abnormal (*ghayr mu’tad*)” and that state wherein man experiences “wonder at something if its impression upon him is great and its cause is hidden”.¹⁵ Likewise, in the first known account of wonders in the Islamic world, *‘Aja’ib al-Makhlūqat* (*Wonders of Creation*),¹⁶ the author Qazwini (d. 1283) defines *‘ajab* as “a state of

12 TABBAA 2001, 125

13 PANOFKY 1979, 63–65.

14 NECIPOĞLU 1995, 196.

15 IBN MANZUR 1955, 130.

16 Wonder constitutes the main topic of *Al-Makhlūqat wa-Ghara’ib al-Mawjudat* (*Wonders Among Things Created and Marvels Among Things Existent*) by the geographer Zakariyya al-Qazwini, which was a very popular treatise that was translated into Turkish, Persian and Urdu. Reminiscent of Ibn Sina, Qazwini also begins this book by defining wonders (*‘ajab*) and wonderment (*‘aja’ib*), presenting as an example the bees’ capacity to make honeycombs and honey.

bewilderment that comes to people due to their incapability of knowing the cause of something". Thus, 'ajab denoted the unknowable, mysterious and wondrous qualities of things, which implies that the word may have been understood primarily in reference to the mystery and wonder of God's creation. Qazwini also asserts that the fundamental point of all these wonders and his classifications is to indicate the oneness of the Creator, for "in everything He has a sign or symbol (ayat), indicating that he is One".¹⁷

In this sense, the term may have been reserved for the "great" and unexplainable aspects of God's creation in the same way that Plotinus and Ibn al-Haytham relate to the incomprehensibility of light and colour through analysis, which tended to place them outside the bounds of systematic human comprehension. What this shows us is that in a pre-modern context, spontaneous and sensual delight in light and colour (whether found in art or nature), and particularly bright and luminescent colour, induced a feeling of 'ajab (wonder, awe and amazement) that stemmed from the perception of the phenomenon as out of the ordinary and beyond normal comprehension. Two examples follow of the use of this term 'ajab in relation to art, the first being textual and the second visual.

Textual example

In their epistles (which is an encyclopaedia of sorts), the 10th century Ikhwan al-Safa (group of scholars) present painting, particularly the application of colour, as an example of a craft that is elevated because, while it has no inherent monetary or practical value, it is considered valuable because of its ability to produce 'ajab in the viewer. They write

As for the craft of the painters, they do nothing more than imitate existent forms, be they natural, artificial, or of the soul, yet their skill is enough to draw the viewer's eyes to [the depiction] and away from the existent thing itself due to *ta'ajjub* regarding its beauty and brilliant appearance. It also happens that the difference between artisans can be quite large. It has been said that a man from one place or another used to paint images and likenesses (*ṣuwarwa-ta-mathil*) in bright pigments and beautiful, luminous colours, and that viewers who saw them experienced *ta'ajjub*, due to the [image's] beauty and brilliance.¹⁸

Indeed the historian Matthew Saba, in his award-winning paper 'Abbasid lusterware and the aesthetics of the 'ajab' writes, that "Reflectiveness in general emerges here as a significant 'ajab-inducing quality... it is evident from medieval Islamic discussions of crafts and their fine attributes that 'ajab or *ta'ajjub* was an appropriate and, moreover, desirable reaction on the part of those beholding such objects".¹⁹

Visual example

Descriptions relating art and architecture to the experience of wonder and contemplation can also be found in mytho-poetical works such as those of Nizami, which present analogies between artists, their use of light and colour, and spiritual transformation. For example, in the *Iskandarnama* (*Book of Alexander the Great*), Nizami narrates the story of Chinese and Greek mural painters competing

¹⁷ BERLEKAMP 2011, 15.

¹⁸ IKHWAN AL-ṢAFA 1957, 1, 287. This translation from SABA 2012, 201.

¹⁹ SABA 2012, 198.

against each other by decorating two facing walls in Alexander's palace. When the artists are finished, two identical depictions are revealed. After a few moments of confusion, Alexander realizes that the Chinese had polished their mural to such a high degree that it reflected the Greek painting opposite like a mirror. This scene is described by Necipoğlu as depicting Alexander and his group "biting their fingers in awe and amazement"²⁰ at the reflective surface (fig. 3). This conventional gesture indicates a psychological state of wonder. In reference to this nail biting, Persis Berlekamp states in her book, *Wonder, Image and Cosmos*, that the Arabic, Persian and Ottoman Turkish languages include a "verbal reference to this conventional gesture [that] indicates a psychological state of wonder. To say that a person was amazed, a writer might say: 'he bit his fingers in astonishment', or 'she held up the finger of astonishment.' Likewise in painting, the gesture indicates an emotional state of wonder".²¹ While these accounts are meant in a metaphorical sense, it can be argued that they also represent contemporary accounts, which document the aesthetic preferences of the pre-modern Muslim beholder. Through such narratives, it is possible to gain a sense of the aesthetic preoccupation with light and colour and it is tempting and not implausible to compare these accounts to those presented in the previous section since they share the same underlying aesthetic preoccupation with wonder and the contemplative perception of brightly coloured and burnished surfaces.

Creating Materials of Light

There is also evidence that suggests that this aesthetic response was originally intended by the artists in their creation of the work. Recent technical analyses performed on a variety of Islamic architectural decorative works support the notion that Muslim craftsmen did seek to create "sensations of light". For example, material analyses on the stuccowork on most of the upper walls of the Alhambra Palace have identified a combination of gypsum, powdered marble and eggshell (fig. 4).²² Alongside these, we also find poetic epigraphy beckoning the viewer to gaze and ponder the beauty of the architecture. One inscription refers to the unfolding of so many wonders (*aja'ib*) that the "the eyes (of the spectator) remain forever fixed on them, provided he be gifted with a mind (to estimate them)".²³

So how did they regard these wonders? Where did this experience of wonder and awe lead? What was the aesthetic intention behind the use of brightly coloured surfaces? According to Ibn Sina, a famous 11th century Persian polymath, it is important to make a distinction between "true seekers" and "fools", with the former understanding wondrous things through the contemplative perception of Divine signs and the latter stopping at mere wonder.²⁴ The historian Jamal Elias notes that Ibn Sina's concern in this regard is reminiscent of Plato's claim in the *Theaetetus*, as well as Aristotle's in his *Metaphysics*, that "wonder is the starting point of philosophy".²⁵ This is echoed by Francis Peters in his discussion of aesthetics in his book *Greek Philosophical Terms* where he also notes the relationship between "awe" and the aesthetic experience as the starting point for noetic knowledge in Plato and Aristotle's work.²⁶ Even in Plotinus' *Enneads*, which was highly influential in the Islamic world, there is an example that expresses this Neoplatonist view. Plotinus articulates the experience of beauty and resulting wonder by writing,

20 NECIPOĞLU 2015, 48.

21 BERLEKAMP 2011, 99.

22 KALAITZOU 2006, 65.

23 Translation taken from BUSH 2006, 55

24 IBN SINA 1892, 207.

25 ELIAS 2012, 168. See also KEMAL 1991, 154-169.

26 PETERS 1967, 124.

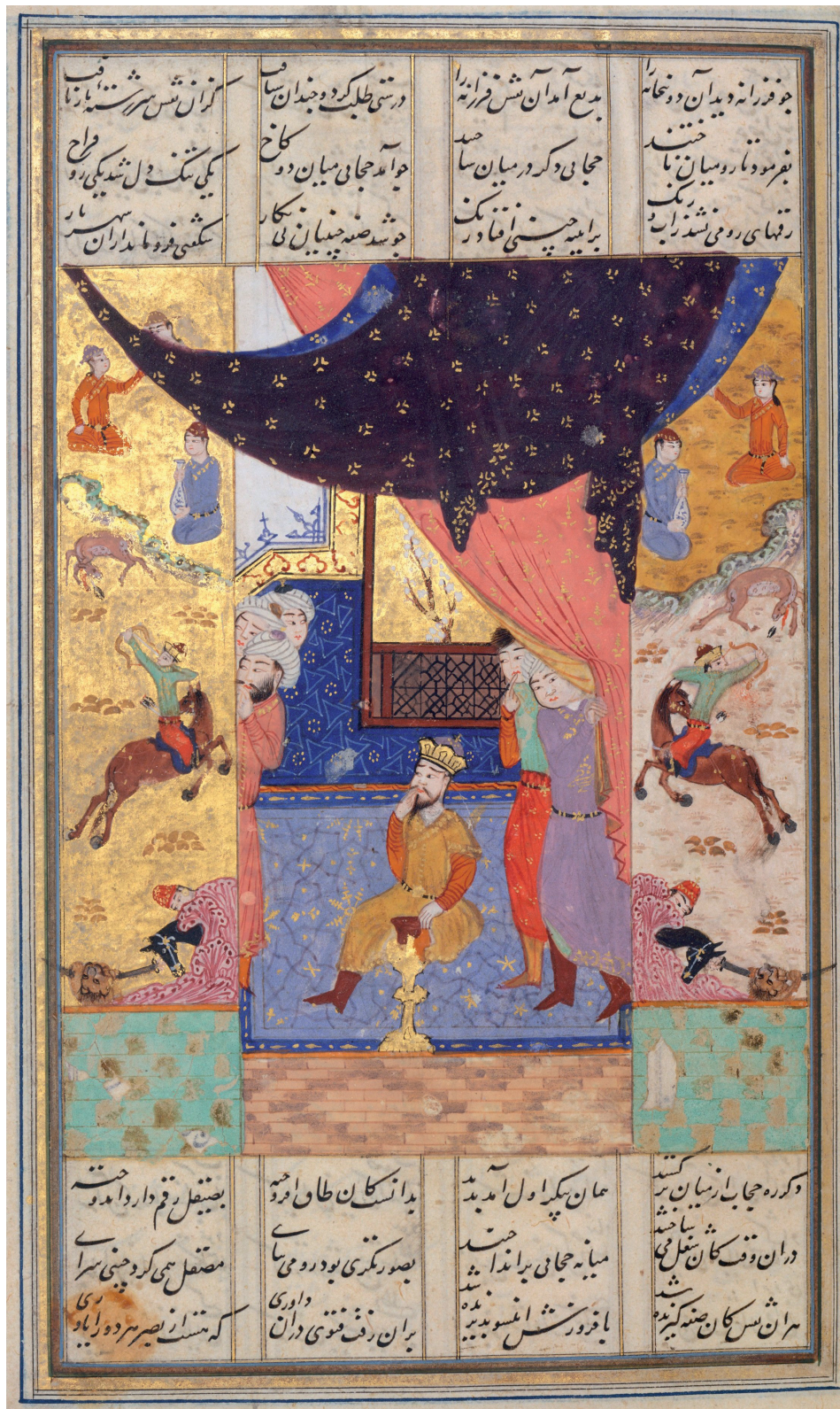


Fig. 3. A painting from a copy of the *Iskandar Nama* (Book of Alexander) from Nizami's *Khamsa*. New York, Metropolitan Museum, 13.228.3, f. (Public domain).



Fig. 4. A view of the columns and capitals in the Alhambra's Court of Lions (photo: Idries Trevathan 2009).

Wonder seizes upon him who contemplates it [beauty], who enters in and becomes one with it. Just as the view of the heavens and the splendor of the stars leads one to think of their author and to seek him out, so the contemplative who has gazed upon the intelligible realm and been struck with the wonder of it should seek out its author.²⁷

As such, the response of wonder was not just a desired reaction in pre-modern Islamic aesthetics, it was also seen as the starting point of a process that potentially leads to higher knowledge or states of consciousness and is therefore to be sought and stimulated. For this reason, it should be viewed as one of the most important qualities constituting aesthetic appreciation of colour in art in a pre-modern Islamic context.

²⁷ PLOTINUS, *Enneads*, 175.

Final remarks

In conclusion, this short paper has tried to show that pre-modern Islamic descriptions of buildings and objects are often full of terms for radiance, brilliance, and sparkle, thereby reinforcing the imagery of light, luminosity and lustre among the most remarkable features of Islamic visual culture. It has also attempted to demonstrate that in a pre-modern context, spontaneous and sensual delight in colour (whether found in art or nature), and particularly bright and luminescent colour, induced a feeling of 'ajab (wonder, awe and amazement) that stemmed from the perception of the phenomenon as out of the ordinary and beyond normal comprehension. Thus while joy was indeed part of the aesthetic experience of brightly coloured surfaces, it was only one aspect of aesthetic response that potentially led to deeper feelings of wonder and contemplation about creation and the universe. To quote Taabaa, seeing colour in architecture has the potential to produce an "effect ... [that] proceeds from instant joy to wonder to heavenly allusion".²⁸ Thus, to draw a comparison between Tabbaa's words and those of Ibn Al-Haytham, colour and light in architecture produce an effect that proceeds from "instant joy" and "immediate wonder", which constitutes what Ibn al-Haytham describes as the sensual cognition of light and colour involving sensual faculties, or "wonder and heavenly allusion", or Al-Haytham's contemplative perception involving faculties that make it possible to see beyond the apparent form of the object, as well as the contemplation of its novel qualities which the mind or the memory cannot recognize and the eye cannot distinguish.

There is also good reason to suggest that a connection can be made between the capacity of materials to bear light and their capacity to lead to an experience of wonder or awe in the viewer thus potentially encouraging contemplative thought or transporting the viewer to "that higher world in an anagogical manner" as Bishop Suger has put it.

A common thread can be found connecting Islamic theosophical, literary and artistic aesthetics and a shared concern with the importance of colour, light and wonderment, their generation, and gazing upon them contemplatively. Thus, this inclination towards luminosity found in the literature was actually shared by the artists and may have even provided an impetus for their technical innovations in creating light and luminosity in art and architecture. The examples discussed indicate that emotional reactions such as wonder and amazement not only occurred naturally in spectators, but, as evidence suggests, they were also intentionally evoked by artists and craftsmen through the use of materials to create brightly coloured and reflective surfaces.

28 TABBAA 2001, 125.

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