BRILL

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ABBASID LUSTERWARE AND THE AESTHETICS OF *ʿAJAB*

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> Art history does not yet command the means to integrate the industrial arts into the fabric of the societies that produced them, and to do that is its primary task.[1]

The group of ceramics often called "Abbasid lusterware," produced in lower Iraq in the ninth and tenth centuries, has traditionally been discussed in terms of the differences within it evident to art historians and archaeologists today.[2] The differences most frequently identified fall on two axes of comparison. The first is chromatic, with three widely recognized divisions: polychrome (fig. 1), bi-chrome (fig. 3), and monochrome (fig. 2).[3] The second is graphic, where a number of motif groups have been identified that crosscut the recognized chromatic divisions.[4] Two bowls, both housed in the Louvre, exemplify the two extremes of the group according to this understanding. The first (fig. 1, hereafter the Louvre Bowl) exemplifies the "polychrome vegetal type." The polychrome and bi-chrome types are usually dated to the ninth century. This small polychrome bowl has a palette of at least four colors: a dominant ruby red, gold, yellow, and a greenish silver. It is decorated with tendrils, blossoms, and leaves. The second (fig. 2, hereafter the Flag-bearer Bowl) exemplifies the "monochrome figural type," usually dated to the late ninth or tenth century.[5] It is larger than the Louvre Bowl, and has only one color of pigment, a highly reflective yellowish brown, painted over an opaque white glaze; it is decorated with a figure holding a flag or standard, set against a stippled background.

The distinct color schemes and content identified in examples like the Louvre Bowl and the Flag-bearer Bowl are generally assumed to reflect fundamental aesthetic differences and have thus preoccupied art historians and archaeologists for decades. What accounts for such variation in wares thought to come from the same area of production?[6] As I will argue further, there has been no satisfying explanation for this supposed change in aesthetic interests, primarily because these arguments have done little to account for what was actually tasteful or interesting to viewers in the Abbasid period. In this essay, I reformulate the premise outlined above as a question: to what extent would the differences identified among Abbasid lusterwares by specialists today have been pertinent to audiences in Abbasid Iraq? Following from this, to what extent can the differences in these two bowls be said to represent a change in aesthetic interests? At stake are the terms according to which early Islamic ceramics have traditionally been classified: e.g., vegetal vs. figural; monochrome vs. polychrome. By extension, our understanding of the development of Abbasid lusterware, traditionally explained as part of the larger tendency toward abstraction associated with early Islamic art, will need to be rethought.

To answer these questions I re-examine the development of Abbasid lusterware along the axes of comparison outlined above. Regarding the distinction between polychrome and monochrome, I argue that the two types share a basic quality that may have been more pertinent to contemporary viewers than color palette: both have surfaces that appear to change under different conditions—they are visually unstable, never appearing quite the same. They are both what an Abbasid viewer might have called *abū qalamūn*-like bowls (on which

Fig. 1. Polychrome luster bowl (hereafter the Louvre Bowl). Iraq, ninth century, 3.8 cm (height) × 31.7 cm (diameter). Paris, Musée du Louvre, inv. no. OA 6700. (Photo: Herve Lewandowski, courtesy of Réunion des Musées Nationaux, and Art Resource, New York)

Fig. 2. Monochrome luster bowl (hereafter the Flag-bearer Bowl). Iraq, late ninth or tenth century, 9.8 cm (height) × 31.7 cm (diameter). Paris, Musée du Louvre, inv. no. MAO 23. (Photo: Herve Lewandowski, courtesy of Réunion des Musées Nationaux, and Art Resource, New York)

Fig. 3. Bi-chrome luster bowl excavated at Samarra. Iraq, ninth century, 8.5 cm (height) × 26.7 cm (diameter). Berlin, Museum für Islamische Kunst, inv. no. Sam. 1102. (Photo: courtesy of Bildarchiv Preussischer Kulturbesitz)

term see below). I then examine how viewers in ninth and tenth-century Iraq understood this effect and why they might have appreciated it so much. I argue that the reflective, semi-iridescent surfaces of Abbasid lusterware fulfilled a specific expectation that people in Abbasid Iraq had for works of craft, namely that a person should experience pleasurable wonder, expressed by the Arabic term *ʿajab*, when viewing such objects.[7] I then turn to the modes of decoration employed and argue that both the vegetal designs characteristic of the polychrome types and the figural subjects that adorn the monochrome pieces can be seen as strategies intended to induce the desirable experience of *ʿajab*. The choice and combination of decorative motifs across the group serve to obscure the viewer's ability to read the designs, and the methods of composition used in the monochrome variety further complicate the experience of reading the surface by creating a sense of motion. Such qualities are consistently described as wonder-producing (*ʿajīb*) in descriptions of works of craft.

By examining the case of Abbasid lusterware, this essay attempts to address a larger methodological issue in the study of Islamic pottery identified by Oleg Grabar long ago and encapsulated in the introductory quote above. Grabar pointed out that while specialists are well equipped to identify types, workshops, and even "hands" specific to a time and place, either by taxonomic classification of attributes or by technical studies of glazes and body fabrics, the objects of analysis are rarely considered in light of the interests of the people who produced and used them.[8] The criteria of classification are derived, rather, from the interests and perceptions of the specialist or collector, or from the results of material analysis, and while both the "connoisseurly" and the "technological" approach are useful for describing the breadth and depth of a group of wares, neither successfully addresses why the objects appeared the way they did. I proceed here with the contention that ceramic vessels can furnish a more expansive perspective on the interests of the societies who made them than the precious things frequently chosen as the objects of inter-

pretation in art-historical writing. More widely available and mobile, these "industrial" products were thus informed by and, in turn, informed the interests of a larger set of viewers.

I. THE PROBLEM OF STYLISIC DEVELOPMENT

Potters in ninth-century Iraq are credited with the invention of what we call lusterware. At that time, the luster-painting method may have been referred to as *talwīḥ*, a term derived from the Arabic *lawwaḥa*, among whose meanings is "to expose to fire," and "to make sparkle."[9] The production of lusterware requires two steps. First, earthenware vessels are coated with an opaque white glaze, fired, and left to cool. Then pigments composed of diluted metallic oxides are painted over the glaze and the vessel is fired for a second time in a reduction kiln. This second firing results in a deposit that produces a reflective and often iridescent sheen.[10] A related technique had been used to decorate glass in Egypt and Syria for some time, although the effect was different: in that case, metallic pigments applied to the surface of the vessels were absorbed into the body of the glass during a second firing, producing a permanent reddish-brown stain. It was only in ninth-century Iraq that these metallic pigments were painted onto the surfaces of glazed ceramics, producing a lustrous effect.[11]

Both the archaeological record and the material composition of these wares suggest that the luster-painting technique appeared as part of a range of related innovations in glazing technology that took shape during the ninth century. Wares coated in an opaque white glaze of similar composition were also decorated with cobalt-blue, copper-green, manganese-brown, and iron-black pigments, which seeped into the glaze during firing.[12] In all known cases, the in-glaze painted wares that employ cobalt blue are made of the same ceramic material as the luster-painted wares, suggesting a similar, if not identical, place of manufacture.[13] Moreover, these in-glaze painted wares have been found at several sites where lusterware was also unearthed, including Samarra, Basra, Susa, Nishapur, Siraf, and Aqaba.[14] Although glazing technology had existed in the Near East long before the rise of Islam, the range of techniques, colors, and motifs that appear on these opaque-glazed wares was truly unprecedented.

Suggestions as to how and why these innovations took place in Abbasid Iraq have been debated since the excavations conducted by Friedrich Sarre and Ernst Herzfeld between 1911 and 1913 at Samarra, where a range of opaque-glazed vessels were found. The conventional explanation is that potters in Iraq initially created the white glaze to imitate imported Chinese porcelain.[15] Sarre believed that the entire spectrum of imported T'ang ceramics was copied in local products, while others argued for a more limited extent of influence.[16] The explanation of this phenomenon solely in terms of influence and imitation is unsatisfactory, however, as it deflects attention from other interesting questions raised by the Iraqi products. That some of the opaque-glazed bowls produced in Abbasid Iraq bear striking resemblances to Chinese products in form, decoration, and surface effect is clear. Why the residents of ninth-century Iraq would have been so interested in these qualities is an important issue that has yet to be fully explored.[17]

Even with the acknowledged debt to Chinese ceramics, the range of decorations on the surfaces of the opaque-glazed wares produced in Abbasid Iraq suggested to art historians that local aesthetic sensibilities were at work. While numerous examples of opaque-glazed wares with little to no further embellishment exist, potters in Iraq also departed from the Chinese tradition by using the white surface of the vessels as a medium for colorful decoration, and the motifs and themes they chose often bore little resemblance to those that appear on the Chinese wares.[18] Nowhere is this more apparent than in the varieties of lusterware, where pigment was liberally applied to both the interior and the exterior.

As mentioned in the introduction, art historians have identified several differences among the lusterwares themselves. While the dating of the various types is still tentative (a problem that is beyond the scope of this article), it appears that monochrome luster eventually eclipsed the polychrome varieties, although the respective periods in which they were produced may well have overlapped. Questions have thus been raised as to why

these supposedly dramatic shifts in color palette and decoration occurred. Recent studies of glazing technology suggest that the compositions of the pigments and method of application changed very little from polychrome to monochrome, despite their differences in appearance, precluding the arguments that either the materials for polychrome were no longer available, or that the monochrome variety was easier to produce and thus a more cost-efficient choice for potters.[19] Alternatively, there is the longstanding but increasingly criticized theory that the adoption of a single golden-brown color indicated a desire for a product that imitated metal. According to this model, the polychrome phase represents experimentation, while the monochrome phase represents perfection of the technique.[20] Aside from the fact that we have very little surviving metalwork from the Abbasid period to support this theory, some of the finest examples of luster painting were done in a polychrome palette that mimics the effect of marble and other precious stones (fig. 4). These observations suggest that the desire for a product that looked like metal was not the only motivating factor in the development from polychrome to monochrome.[21]

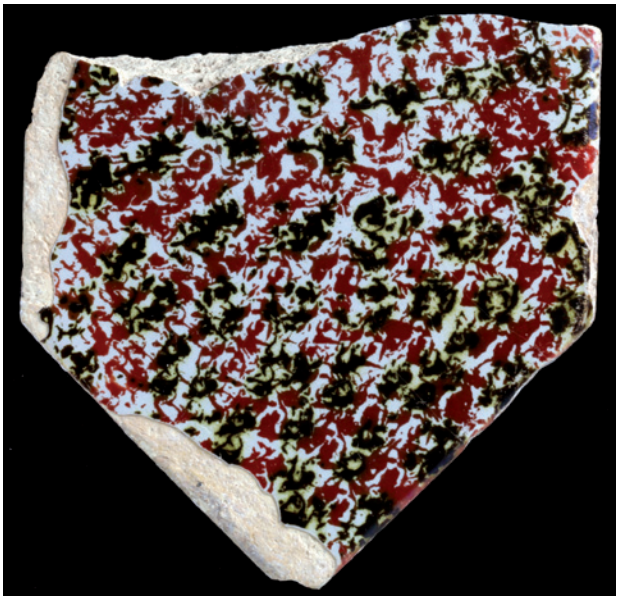

Fig. 4. Part of a polychrome luster tile excavated at Samarra. Iraq, ninth century, 16 cm (maximum height) × 16 cm (maximum width). London, Victoria and Albert Museum, inv. no. C.620-1922. (Photo © Victoria and Albert Museum)

More puzzling for art historians than the change in color palette, however, has been the difference in decorative motifs evident between the monochrome and polychrome types. While the polychrome varieties are decorated with vegetal and geometric patterns covering the surface of the vessel, the monochrome luster bowls often contain large, centrally placed figures whose contours are outlined to distinguish them from the surrounding decoration. Various sources have been suggested for these figures, including Central Asian Buddhist paintings, astrological images, and talismanic or apotropaic forms, but no single source or significance seems to apply to the entire group of monochrome wares.[22]

There has never been a clear explanation of the difference in style between the polychrome and monochrome varieties. The most detailed discussion is still Ernst Grube's survey of Islamic pottery in the Keir Collection, published in 1976. While Grube suggests that the polychrome type "clearly relates to developments in Early Abbasid design," he considers the figures on the monochrome bowls to be "entirely enigmatic," attributing their appearance to a foreign population in Iraq, perhaps from Khurasan or Central Asia.[23] While some of these figures do suggest sources from outside Abbasid Iraq, this fact alone does not imply a foreign audience. Precious objects from all corners of the Abbasid Empire entered through the port of Basra during the ninth and tenth centuries and circulated among the local population, who took great interest in them.[24]

More recently, Oliver Watson has argued that the stylistic difference between the polychrome and monochrome varieties should be attributed to a change in taste within Abbasid Iraq, perhaps related to a change in the source material the potters used as inspiration for their designs. The specifics of this change are still unclear, however, for while the designs on the polychrome wares may be argued to resemble those used in contemporary manuscript illumination, suggesting an available source of inspiration, the monochrome variety has no obvious parallels in the material culture of Abbasid Iraq.[25]

The confusion over the appearance of the monochrome type stems from an assumption that merits closer scrutiny. While the polychrome type is easily explained as being "influenced" by the style of other, more valuable media, or by "Early Abbasid design" in general, the monochrome wares decorated with figures conflict with the tendency toward abstract, non-figural decoration assumed for the art of the early Islamic world, and especially Abbasid Iraq, in many of the field's foundational studies.[26] It is still taken for granted that people in Abbasid Iraq favored abstract, vegetal forms and disliked figural images, and any deviation from such tendencies is construed as a problem. The terms, however, have been formulated according to polarities such as "abstract vs. naturalistic," and "vegetal vs. figural," both of which assume that such stylistic categories were as significant to viewers in Abbasid Iraq as they are in art-historical interpretation today. Other potential values that may have been more important, such as the surface effect of the object or the qualities associated with its materials, have not been taken into consideration.

Rather than insist on a universal impulse toward abstraction or a taste for vegetal decoration that does not always reflect what is evident in the material and, indeed, the verbal records, it is more logical to begin by looking for concepts or interests demonstrably operative in Abbasid Iraq that resonate with the qualities inherent to the objects under discussion here. The remainder of this essay is dedicated to that task. While subjectivity is unavoidable in this venture, a closer consideration of the terms used in Abbasid Iraq to describe and evaluate works of craft highlights aspects of these pieces that were potentially significant to Abbasid-period viewers.[27] As descriptions of ceramic vessels are rare in the written sources, I turn to discussions of materials with attributes similar to Abbasid lusterware in order to excavate many of these terms. I have limited myself to sources from the ninth through early eleventh centuries, as well as later works that cite earlier references, such as the classical dictionaries. While disparate, these sources offer new perspectives on the appeal of lusterware to viewers in Abbasid Iraq that will help explain how these objects developed.

II. A SURFACE AS UNSTABLE AS *ABŪ QALAMŪN*

Although the lusterware of the Abbasid period comes in several color schemes, the monochrome and polychrome types share a common surface effect. The sheen and iridescent colors that appear on the surfaces of these ceramics, often for fleeting moments in the right conditions, are two of the most prominent aspects of the material. This effect has been best preserved in small fragments, since they have been subjected to the least amount of reconstruction and cleaning. Take, for example, photographs of a polychrome luster fragment housed in the Victoria and Albert Museum (fig. 5). For the photograph at left, I held the camera directly above the fragment. Its surface appears dull and the decorative pattern, a grid with alternating trefoil and crosshatching motifs, is clearly visible. In the photograph at right, I held the fragment in front of my camera, so that it was exposed to sunlight from a large window behind me. At this angle, a band of reflected light appears across the surface, nearly obscuring the pattern with a brilliant sheen. The surface effects of the monochrome variety can be just as dramatic, as a fragment from the base of a bowl, also in the Victoria and Albert, demonstrates (fig. 6). As in the previous example, the photographs were taken at two different angles. In the photograph on the left, the surface of the fragment appears matte, and the large "peacock-eye" pattern is clearly visible. In the second image, a wash of golds, purples, and blues appears on the surface. Both sets of photographs were taken without a flash in a room lit only from tall windows lining one wall. Natural light brings out these ephemeral surface effects most strongly.

In both cases, the surfaces of these fragments appear to change according to the position of the viewer or the object, producing brief and unexpected flashes of light or color. This type of effect appears to have appealed to viewers in the early-Islamic world in a range of materials. An oft-quoted passage from the eleventh-century *Safarnāma* (Book of Travels) of Nasir-i Khusraw (d. between 1072 and 1078) serves as a good example. The passage comes in a discussion of Cairo and its markets:

> In Old Cairo they make all types of pottery (*sefālīneh*)[28] so fine and translucent that you can see your hand behind them when held up to the light. From this [material] they

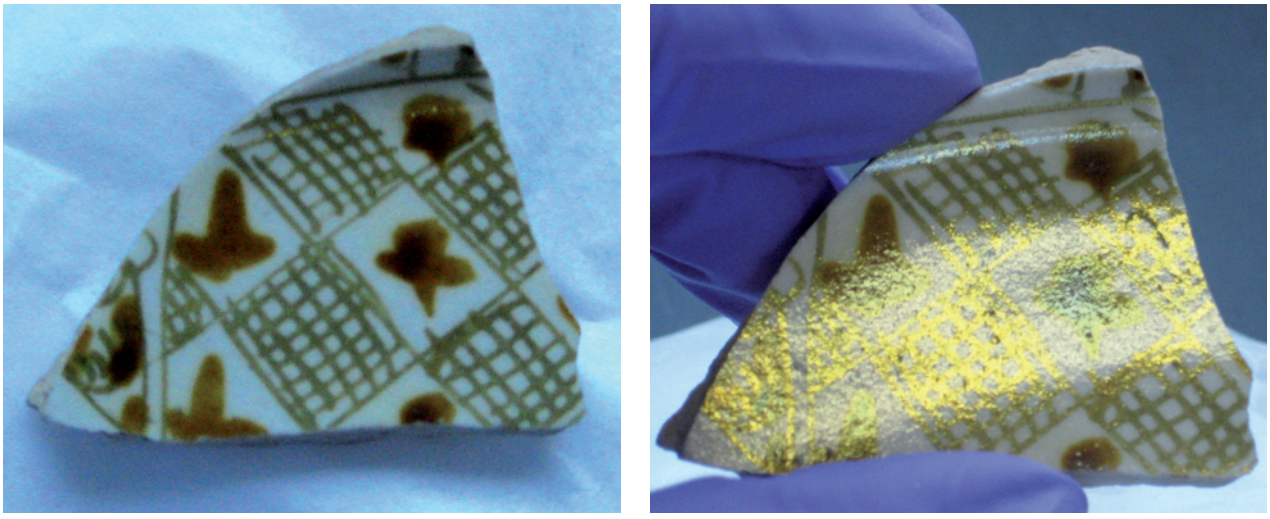

Fig. 5. Fragment of a polychrome luster vessel excavated at Samarra (shown from two angles). Iraq, ninth century, 6 × 5 cm. London, Victoria and Albert Museum, inv. no. C.817-1922. (Photos: Matthew D. Saba, courtesy of the Victoria and Albert Museum)

Fig. 6. Fragment from the base of a monochrome luster vessel excavated at Fustat (shown from two angles). Iraq, late ninth or tenth century, 7.3 × 7 cm. London, Victoria and Albert Museum, inv. no. C.1624-1921. (Photos: Matthew D. Saba, courtesy of the Victoria and Albert Museum)

> make cups, bowls, plates and the like, and they color them so that their color resembles *būqalamūn* and different colors appear at every angle you hold them.[29]

I wish to call attention here to the term *būqalamūn*, which Nasir-i Khusraw used to describe the surface of the vessels. In this case, the word (a contraction of the Arabic phrase *abū qalamūn*) probably refers to a type of cloth distinguished by its peculiar iridescent sheen, since the author earlier defines it as such.[30] As other scholars have observed, however, *abū qalamūn* had a

wider semantic range that included a variety of lustrous, multi-colored materials.[31] I will suggest that *abū qalamūn*, understood in its broader sense of something visually unstable or changeable, would have been a phrase commonly used in Abbasid Iraq to describe the surface effects of lusterware. This may lead us to a better understanding of the appeal of these ceramics to an Abbasid audience.

References to *abū qalamūn* in the classical sources are plentiful and a review of a few of them will serve to establish the qualities that the term encompassed during the early Islamic period. Ibn Manzur (d. 1312), lexicographer and author of the *Lisān al-ʿArab* (The Tongue of the Arabs), provides a standard definition, as it had crystallized by the thirteenth century. Though the *Lisān* postdates the Abbasid period, its definitions are intentionally archaic, incorporating substantial material from classical Abbasid sources. In his discussion of *qalamūn*, for example, Ibn Manzur cites the authority of al-Sirafi (d. 979) and al-Azhari (d. 980), author of *Tahdhīb al-lugha* (Refinement of Language). These in turn cite Sibawayhi (d. 796) and al-Farra' (d. 822). Ibn Manzur writes:

> *Qalamūn*: Many-colored gowns (*maṭārif kathīrat al-alwān*). Sibawayhi used [this term] as an example, and al-Sirafi glossed its meaning [as above]. In the *Tahdhīb's* section on quadriliteral roots [al-Azhari wrote]: "al-Farra' [said] *qalamūn* [follows the pattern] *fa-ʿa-lūn* like the word *qa-ra-būs*, and it is a place. Others have said that *abū qalamūn* is a garment (*thawb*) that takes on the appearance of various colors when the sun shines upon it. I do not know why it is called by that [name]. A person from Egypt told me that *abū qalamūn* was a type of water bird (*ṭā'ir min ṭayr al-mā'*) in which various colors are seen and so the garment was likened to it ....[32]

As in Nasir-i Khusraw's text, the first meaning given is for a type of textile, here with a possible etymology stemming from an animal with iridescent feathers.[33] The qualities of being multi-colored and of having a surface that appears to change color are mentioned. An earlier reference from Abbasid Iraq provides more detail on the textile called *abū qalamūn*. The text is a short treatise on mercantile terminology titled *Kitāb al-Tabaṣṣur bi'l-tijāra* (Reflections on Commerce), attributed to al-Jahiz (d. 868–69). It is a matter of debate whether or not Jahiz wrote it, but an attribution of late

Fig. 7. Textile fragment: plain cloth, brocaded with silk and metal threads. Iraq, ninth century, 16.8 × 10.5 cm. The Cleveland Museum of Art, John L. Severance Fund, 1950.526. (Photo: courtesy of the Cleveland Museum of Art)

ninth-century Iraq is likely, placing it within close historical range of the ceramics under discussion and suggesting that this cloth was available in lower Iraq, where the wares were made.[34] Here, the author defines *abū qalamūn* as "a regal Byzantine tapestry" (*min al-zalālī al-khusruwānī al-rūmī*) of deep red, purple, and green threads whose color varies with the intensity of the sunlight.[35] Though references to the cloth called *abū qalamūn* do not allow for definite identification of examples in extant collections, art historians have noted that a class of textiles attributed to Iraq bears a resemblance in both its color palette and shimmering surface to descriptions of *abū qalamūn* cloth (fig. 7).[36]

Several references show that the term "*abū qalamūn*," or "*būqalamūn*," was applied to a range of other irides-

cent, or multicolored, reflective materials. Al-Biruni (d. after 1050), citing his Iraqi predecessor al-Kindi (d. 866), uses the term to designate a particular hue of yellow corundum. The *būqalamūn*-colored variety, al-Biruni writes, "contains every color, from light-reds to yellows to greens and greenish-blues; these colors appear on it when it is moved."[37] In his *Murūj al-dhahab* (Meadows of Gold), Masʿudi (d. 956) described a type of gemstone known as *bāqalamūn*, which displayed different colors, specifically reds, greens, and yellows, according to the angle from which it was seen.[38]

Jabir ibn Hayyan, an alchemist or possibly a name referring to a group of alchemists active in the late eighth and early ninth centuries, used the term in the title of a treatise: *Kitāb Abī qalamūn*. This piece is now lost, but several of Jabir's extant works make reference to it. In one instance, Jabir wrote, "I derived a name for my book from [*abū qalamūn*'s] type: that is, that which has many changes in color (*talawwun*)."[39] More interestingly for our purposes, in the manual on coloring glass titled *Kitāb al-Durra al-maknūna* (Book of the Hidden Pearl), Jabir listed a type of lustrous stain whose hue was "*abū qalamūn*." In the instructions he mentions that the *abū qalamūn*-colored stain continuously changes color.[40]

Abū qalamūn was also used to refer to animals with iridescent plumage or skin. In addition to the reference to a bird in the *Lisān al-ʿArab* cited above, Ibn al-Haytham (d. ca. 1040) mentions in his *Kitāb al-Manāẓir* (Optics) a "species" called *abū qalamūn*, which appeared to change color according to the angle of the viewer.[41] While the animal was not specified, the editor of the text suggests that it refers to a chameleon, fabled in Arabic lore for its ability to change colors (*talawwun*), which may have occasionally gone by this nickname.[42] In other instances, it was used for a mollusk whose beard was used to weave an expensive cloth called "sea wool" (*ṣūf al-baḥr*).[43] Muqaddasi (d. after 990) reported that the cloth was golden colored and appeared to change color every hour.[44]

The semantic range of the term was not limited to materials and wildlife, however. "As shifty as *abū qalamūn*" was an epithet for someone considered fickle or two-faced, with a personality that was always changing. This usage appears in the *Maqāmāt* of Badiʿ al-Zaman al-Hamadhani (d. 1008). In the *Maqāmat al-Makfūf*, a traveler comes upon a clearing where he sees a blind man singing for a group of spectators. The traveler feels pity for the man and offers him a dinar. After the performance, however, the man is exposed as Abu al-Fath al-Iskandari, the anti-hero of the *Maqāmāt* known above all for his trickery. The traveler exclaims: "By God, you're Abu al-Fath!" to which he responds:

> I am *abū qalamūn*!
> I come in every color
>
> Choose a base living
> For your age is base
>
> Repel time with stupidity
> For time is a kicking camel
>
> Don't fool yourself with reason
> For reason is insanity[45]

What emerges from these references is that the term *abū qalamūn* was associated with a variety of materials and species, and even a personality type, all characterized by the quality of changeability. In Abbasid Iraq, *abū qalamūn* was a flexible term used to signify shiftiness or instability, and it was regularly employed to describe visual effects. While it is unlikely that we can label a surviving object as *abū qalamūn*, we could say that both the polychrome Louvre Bowl and monochrome Flagbearer Bowl are *abū qalamūn-like*. Like the sherds shown above, the Louvre Bowl appears dull under some conditions while it glimmers under others. The Flagbearer Bowl has a similarly unstable surface, due to its high metallic sheen: at each angle, light is reflected and a different section of the surface gleams. In both cases, what is visible at one angle is washed away by light and color at another.

If a taste for the *abū qalamūn*-like was alive in Abassid Iraq—and indeed, as I shall argue, rather strong—then these two bowls may be seen as attempts to produce the same desirable effect rather than as aesthetically incompatible. But first, it will be helpful to turn to several contemporary discussions of light and color to see how viewers may have understood the cause of these unstable visual effects.

III. ON THE EXPLANATION OF *ABŪ QALAMŪN*-LIKE COLORS

Today we understand the color of an object to be dependent on the light reflected or transmitted from its surface that then enters our eyes. In my descriptions of the *abū qalamūn*-like surfaces of lusterware bowls, I made use of standardized terms like "iridescence" that assume such an understanding of color. There was no universal term for iridescence in Abbasid Iraq, however. Rather, phrases such as "*talawwana alwānan*" (to change between many colors) and "*tarā'ā bi-alwān shattā*" (to take on the appearance of various colors) were used to describe the ephemeral colors of the *abū qalamūn*-like.[46] Descriptions of phenomena like iridescence differed from viewer to viewer and the resulting expressions, often awkward and phrased with difficulty, suggest that the relationship between cause and effect—between light, material, color, and appearance—was not completely resolved in the minds of contemporary viewers.

It would be an exaggeration to draw such conclusions from phrasing alone. A survey of scientific texts produced during the first centuries of Islam, however, suggests that the explanation of color was indeed a source of contention among scholars. Under the patronage of the caliphs, Abbasid Iraq saw the translation of numerous scientific and philosophical texts into Arabic from Greek, Syriac, and Pahlavi, a project that sparked significant interest in theories of color and related questions regarding vision.[47] Two matters regarding the ontology of color were of primary concern in these texts, as well as in the works of the Arabic scholars who translated them. The first was whether color should be considered essential to a colored body or merely an accident (*ʿaraḍ*), meaning, in this case, a sensible attribute not inherent to the substance of the thing itself. The second question had to do with the perception of color: how did a color reach the surface of the eye and how did the eye then differentiate between colors?[48] There was to be no universal consensus on the answer to these questions until centuries later, but some examples from the major authorities active between the ninth and eleventh centuries reveal various opinions that were propagated in the Islamic world.

Though not all of his writings on optics survive, a preoccupation with the question of color is manifest in the work of al-Kindi, the so-called "Philosopher of the Arabs," who resided in Baghdad for most of his adult life.[49] From extant treatises and later Latin translations of his work, for example, it is clear that al-Kindi viewed color as an accident, only potential in a colored body until actualized by light. According to al-Kindi, for a body to be colored, it must be solid and obstruct rays emanating both from luminous bodies and from the eye. The apparent coloration of transparent bodies was explained as an effect of rays emanating from behind it.[50] Thus, the blue of the sky is not the color of the sky itself (made up of air, a colorless body), but is an effect caused by the interaction of luminous rays from stars and from elements that surround the earth.[51]

Al-Kindi's explanation of color relates to his general understanding of vision: he defended the theory of extramission, in which the act of seeing was understood as the result of rays that emanate from the eye outward toward the visible object.[52] Al-Kindi was not alone. Hunayn ibn Ishaq (d. 877), another scholar active in ninth-century Baghdad, also subscribed to a theory of vision through extramission. For Hunayn, both light and visual rays act upon the air, transforming it into an instrument of sight. Hunayn also specifies in his writings that the colors in a colored body act upon the air, transforming the transparent body and endowing it with their qualities, which enables us to perceive them. Thus, a white garment under the canopy of a leafy tree appears green in bright sunlight, since the air between tree and garment takes on the green of the leaves.[53]

The group active in the tenth century and collectively known as the Ikhwan al-Safa' (Brethren of Purity) also explained color as an accident, but a "spiritual accident" (*ʿaraḍ rūḥānī*), as opposed to a corporeal accident (*ʿaraḍ jusmānī*). The Ikhwan discuss the matter in some detail in an epistle on sensation.[54] Any physical body, they explain, is composed of primordial matter (*hayūlā*), and "forms" (*ṣuwar*), which, for the Ikhwan, included width, length, and depth. Anything beyond this (e.g., color or any other sensible attribute) should be considered "accidents entering on the body, supplemental to its existence as a body, fulfilling it."[55] Two sorts of perceptible color are then further distinguished: "natural color"

(*lawn ṭabīʿī*) and "accidental color" (*lawn ʿaraḍī*). Visually-complex, transparent bodies like gemstones and glass, were explained as having "accidental color":

> As for transparent bodies, these are the heavens, fire, air and water, and some earthly bodies like rock-crystal, rubies, glass, and other things like that. Transparent bodies do not have a natural color. A natural color is that which is inseparable from the body (*mulāzim li'l-jism*), like the blackness of the eye, the whiteness of snow, the yellowness of saffron, the redness of safflower, or the greenness of plants. As for accidental color, it is like the blue seen in the atmosphere or in deep water.[56]

Interestingly, the theory that color could be an accident was supported by pointing to the surface effects of *abū qalamūn*-like materials. Such explanations are evident in the writings of al-Biruni, for example. In his description of the iridescent hue of yellow corundum (cited in the previous section), al-Biruni explains: "What al-Kindi said regarding the colors that appear upon movement indicates that they are not within it themselves but are rather signs (*makhāyil*) [like those in] *abū qalamūn* and *abū barāqīsh*."[57] "*Abū barāqīsh*" is not precisely defined by al-Biruni, but he does mention that it has color-changing feathers, and from later definitions it is possible to surmise that the term refers here to a bird with iridescent plumage.[58]

At approximately the same time that al-Biruni was writing, Ibn al-Haytham presented in his Optics a quite different conclusion regarding the nature of color. His explanation of color strikes the reader as closer to our own. This is due to the fact that his overarching theory of vision was based on intromission, the notion that sight is the result of luminous rays entering the eye. Theories of intromission had been advanced in the Arabic-speaking world before Ibn al-Haytham (by Ibn Sina [d. 1037], for example), but his explanation was to be far more influential.[59] In a statement opposing the conclusions of al-Kindi and al-Biruni, Ibn al-Haytham rejects the analogy made between the prismatic colors seen on the surfaces of *abū qalamūn*-like materials and the colors of other opaque objects.

> Some people believed that color has no reality itself, and that it is something that comes about between the eye and the light just as irises[60] come about, and that color is not a form in the colored body. But the matter is not as the holders of this opinion believe it to be. For irises are due only to reflection, and reflection can take place only from a particular position and not from all positions. Irises that appear in the feathers of some animals are due only to reflection of lights from the surfaces of the feathers of these animals, and for this reason the forms of these irises vary with the lights. Thus when these animals, in whose feathers irises appear, change their position with respect to the eye, or when the eye changes position with respect to them, the forms of their irises undergo visible changes .... This is not the case with colors that exist in colored bodies.[61]

In the following pages, Ibn al-Haytham describes light's effect on the perception of color, maintaining that color exists on the surface of any non-transparent body in actuality but that its appearance is affected by the quality of light shining upon it. Furthermore, he writes specifically that *abū qalamūn* (the cloth) and *abū qalamūn*-like materials, such as the feathers of peacocks, appear to be different colors at different times of day, but that this is due to the lights shining upon them.[62]

The examples cited above speak to the fact that the cause of color was a problem that was still subject to debate in Abbasid Iraq, much like the question of vision itself. Moreover, the examples brought forth by Ibn al-Haytham, the Ikhwan, and al-Kindi show that explanations of the nature of color were complicated by observations of visual phenomena like the occasional coloration of translucent substances and iridescence. In other words, the explanation of visually unstable, *abu qalamūn*-like surfaces, a category that I have argued should include lusterware, appears to have been an especially intriguing and perplexing subject for intellectuals in the early Islamic world. As we will see, the difficulty in understanding the cause of *abū qalamūn*-like colors may have been one of the very qualities that made them immensely appealing to people in Abbasid Iraq.

IV. *ʿAJAB*-PRODUCTION AS ARTISTIC EXCELLENCE

There was something particularly attractive about the illusive and difficult-to-describe surfaces that reflected light and showed the type of colors that the Ikhwan called accidental (*ʿaraḍī*), al-Biruni called "signs" or

"hints" (*makhāyil*), and Ibn al-Haytham called irises (*taqāẓīḥ*). Al-Biruni writes that the colors that "appear between the eye and the eye of the sun," like those of *abū qalamūn* are "as beautiful as can be" (*ʿalā aḥsan mā takūn*), and Ibn al-Haytham specifically mentions iridescence in his Optics, in a section on the perception of beauty.[63]

Iridescent surfaces seem to have held substantial intellectual and aesthetic interest for people in the early Islamic world, but why exactly? Masʿudi offers a clue in a description of Indian peacock feathers, whose iridescence, or "color-changing" (*talawwun*), he has just likened to the surface effect of the gemstone he calls *bāqalamūn*:

> The *talawwun* of this type of gemstone—I mean *bāqalamūn*—is like the *talawwun* of peacock feathers … In India, I have seen colors on [peacocks] that become apparent to the sense of sight upon close scrutiny of them.[64] They are imperceptible and innumerable (*lā tudrak wa-lā tuḥṣā*), and they do not resemble any other color, since the colors in their feathers follow successively in a wavelike motion (*tamawwuj*). This [effect] is due to their grandeur, their large bodies and wide feathers, for peacocks in India are of a wondrous quality (*shaʾn ʿajīb*).[65]

For Masʿudi, the iridescent plumage of the peacock is not merely beautiful (*ḥasan*), but wondrous (*ʿajīb*). *ʿAjīb* derives from the root *ʿ-j-b*, which also gives rise to the nouns *ʿajab* and *taʿajjub* (wonder, astonishment, amazement). While *ʿajab* and *ʿajīb* may not be especially precise terms, their frequent occurrence in medieval Arabic descriptions of craft and expressions of beauty suggests that it is worthwhile to look more closely at what qualities were considered to provoke *ʿajab*. How was the experience of *ʿajab* described, and what was said to cause it?

In his *Lisān al-ʿArab*, Ibn Manzur first defines *ʿajab* as "the denial or refusal of something that appears to you due to its lack of ordinariness (*qillat iʿtiyādihi*)," and again as "perceiving that a thing is unfamiliar (*ghayr maʾlūf*) and abnormal (*ghayr muʿtād*)."[66] For the verb *taʿajjaba* (to experience *ʿajab*), the *Lisān* offers as synonyms *tafattana* (to experience *fitna*, or chaotic temptation) and *taṣabbā* (to experience *ṣabwa*, or a child-like, uncontrollable desire). The intensive form *aʿjabahu* is glossed as "it delighted him" (*sarrahu*). To experience wonder from something is to be both confused and delighted by it.[67]

Continuing with his definition, Ibn Manzur states that: "man experiences wonder at something if its impression upon him is great and its cause is hidden." The literary critic Jurjani (d. ca. 1078) had similarly written that *ʿajab* was "a change in the soul (*nafs*) through something the cause of which is unknown and is out of the ordinary."[68] The *ʿAjāʾib al-makhlūqāt* (Wonders of Creation), the first known systematic exposition on wonders in the Islamic world, compiled by Qazwini (d. 1283), begins with the definition: "*ʿajab* is a state of bewilderment that comes to people due to their incapability of knowing the cause of something." Ibn Manzur thus explains that "the attribution of *ʿajab* to God is considered to be metaphorical because the causes of things are not hidden from Him and *taʿajjub* arises from things whose causes are hidden and have not been discerned."[69]

ʿAjab, then, is a desirable feeling that stems from one's own inability to fully comprehend an event, object, or phenomenon because it is perceived as too strange, too great, or too complicated. Masʿudi thus found "*ʿajīb*" a fitting word to depict the surfaces of peacock feathers: the numerous colors were difficult to describe and, as I have suggested, their cause was probably not fully understood by most people at the time.

Masʿudi was, of course, not the only one to express wonder at the *abū qalamūn*-like plumage of peacocks. In medieval compendia of wonders, the peacock almost always made the list. In his *ʿAjāʾib al-makhlūqāt*, Qazwini wrote that the peacock was the "most beautiful" among birds and the "most excellent in terms of color." He explained that it was surely a sign for believers of God's wisdom, for how else were its wondrous patterns (*nuqūsh ʿajīb*) and varied colors created within an egg, when it took the labors of many skilled artisans to make lumps of gold from the earth into attractive objects?[70] God is the paradigmatic artisan because His creations are more *ʿajīb*.

A sermon attributed to ʿAli ibn Abi Talib (d. 661) contains a vivid description of the wondrousness of the peacock. This work was collated in 1010 by al-Sharif al-Radi of Baghdad (d. 1016), in his compilation titled *Nahj al-balāgha* (Way of Eloquence).[71] ʿAli begins by calling

attention to birds in general as examples of God's wondrous creations.[72] They are, he explains, a visible testament to God's fine craftsmanship (*ṣanʿa*).[73] Again, the metaphor of craft is employed and God is the arch-artisan. The peacock is then distinguished as the *most* wondrous (*al-aʿjab*) among birds, and though the author refers to the peacock's elegant strut and lustful vigor, the most ink is spilled on its coloration and sheen:

> You would think the bases of the feathers to be the teeth of combs made of silver, and those wondrous (*ʿajīb*) moons and suns, which have sprouted atop them, to be pure gold and chunks of emerald. If you were to compare them with that which grows in the earth, you would say, "a bouquet gathered of blossoms from every spring." If you compared it to clothing, it would be richly patterned vestments or fine Yemeni cloaks. If you likened it to jewelry, it would be multi-colored stones girded with bejeweled silver….The back of the neck is like an ewer, and the place from where the neck begins to the belly is the hue of the *wasima* plant from Yemen.[74] It is like silk covering a polished mirror: it is as if it is covered in a black veil except that, due to the excess of its sheen (*kathrat māʾihi*) and strength of its luster (*shiddat barīqihi*), it seems a verdant green is mixed in. Along the openings of its ears, there is a daisy-colored line as fine as a pen stroke, snowy white. Its brightness (*bayāḍ*) glistens through the darkness around it. How few colors are there that it did not take in portion and improve in terms of the amount of its polish (*ṣiqāl*) and luster (*barīq*), and glitter (*baṣīṣ*) and brilliance (*rawnaq*)? Like scattered blossoms that neither the rain of spring nor sun of summer has weathered….If you studied one of the hairs from its feathers closely, it would show you the red of a rose and then the green of an emerald and then again the yellow of refined gold.[75]

The sermon is written to provoke wonder through allusions to the fantastic and the sensual. The *abū qalamūn*-like sheen of the feathers is particularly emphasized, with no less than five words from separate roots used to describe it: *barīq*, *rawnaq*, *ṣiqāl*, *bayāḍ*, and *baṣīṣ*. Reflectiveness in general emerges here as a significant *ʿajab*-inducing quality.[76] ʿAli ends with a description of the experience of *ʿajab*:

> How can those of profound sagacity come to describe this, or the most gifted minds attain it? [How can] the expressions of one describing it even hope to form a fitting description? The smallest fraction of it has disabled imaginations (*awhām*) from grasping it and tongues from describing it. Glory to Him who has overwhelmed minds (*bahara al-ʿuqūl*), preventing description of a creation that He revealed to [our] eyes so that they might perceive it as a definite, created, formed, and colored entity! [Glory to Him] who has incapacitated tongues from giving a concise description of it, and paralyzed them, preventing them from conveying its characteristics![77]

The peacock is a tangible entity there for eyes to see, yet it overwhelms the mind and defies description. It is sheer sensual inundation: the *abū qalamūn*-like colors overload the intellect with more data than it can process. That is precisely why it is *al-aʿjab*, the most wondrous, of birds.

In the passages above, it is the unstable, inexplicable, *abū qalamūn*-like effect of color-changing and of sheen that is particularly *ʿajab*-inducing. Given this interest, it is noteworthy that the surfaces of the bowls under consideration are often decorated with more explicit visual links to peacock-plumage. Art historians have suggested, for example, that the eye-shaped motifs that adorn the surfaces of many lusterware bowls, both in the Abbasid era and in later periods (as in fig. 6), may have been intended to represent peacock feathers, thus accentuating the analogy between the bowls' iridescent surfaces and the plumes.[78] This interpretation could be extended to the use of the herringbone patterns and overlapping shingle-shaped motifs that figure prominently in the polychrome wares of ninth-century Iraq (fig. 8). That these would have suggested plumage to their original audiences is supported by the fact that they not only appear alone as a pattern but occur regularly on renderings of birds' wings in the monochrome wares (fig. 9), as well as in metalwork of the early Islamic period (fig. 10).[79]

It is evident from medieval Islamic discussions of crafts and their fine attributes that *ʿajab* or *taʿajjub* was an appropriate and, moreover, desirable reaction on the part of those beholding such objects. In her study of geometric ornament in Islamic architecture, Gülrü Necipoğlu has stressed that in many classical Islamic theories of aesthetic perception, a reaction of "pleasurable wonder" stemming from extended contemplation of works of craft was sought after.[80] One implication of these theories, Necipoğlu proposes, is that the modes of ornament that began to develop in Abbasid Iraq, characterized by intricate and infinitely extendible geo-

Fig. 8. Fragment of a polychrome luster vessel found at Bahnasa, Egypt. Iraq, ninth century, 12.7 cm (maximum width). London, Victoria and Albert Museum, inv. no. C.763-1921. (Photo © the Victoria and Albert Museum)

Fig. 9. Monochrome luster jar. Iraq, late ninth or tenth century, 28.2 cm (height) × 23.2 cm (diameter). Washington, D.C., Smithsonian Institution, Freer Gallery of Art and Arthur M. Sackler Gallery: Purchase, F1953.90. (Photo: courtesy of the Freer Gallery of Art and Arthur M. Sackler Gallery)

Fig. 10. Octagonal platter with image of a simurgh (detail of central medallion on the right). Iran, tenth or eleventh century, gilt silver, 35.8 cm (diameter). Berlin, Museum für Islamische Kunst, inv. no. I. 4926. (Photo: courtesy of Bildarchiv Preussischer Kulturbesitz)

metric modules, could be seen as a "willful complication of vision" in order to induce a reaction of *ʿajab*.

The epistles of the Ikhwan al-Safa' support this theory. In an epistle on the applied crafts (*al-ṣanā'iʿ al-ʿamaliyya*),[81] the Ikhwan explain that while some works of craft are elevated due to the material from which they are made, or to the fact that they satisfy a need, others are of value "by way of the craft itself" (*min jihat al-ṣināʿa nafsihā*).[82] Like music and juggling, painting is one such craft: it has no inherent monetary or practical value, but is considered valuable because of its ability to produce *ʿajab* in the viewer:

> 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 *taʿajjub* 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 (*ṣuwar wa-tamāthīl*) in bright pigments and beautiful, luminous colors, and that viewers who saw them experienced *taʿajjub*, due to the [image's] beauty and brilliance. But there was deficiency in his work such that a skilled and talented artist passed by, stopped to closely scrutinize them, and then wished to offer a critique; so he took a piece of charcoal from the road and depicted next to those images a Zanji man who appeared to be making a gesture with his hands at the viewer. After that, the viewers' attention was diverted away from the colored images and towards his, and there was *taʿajjub* due to his creation being *ʿajīb*, and the beauty of its gesture (*ḥusn ishāratihi*) and the form of its movement (*hay'at ḥarakatihi*).[83]

The work of art, in this case a drawing, is judged by its ability to induce *taʿajjub* in passers-by. Bright and shiny colors appear here again on the list of qualities that are considered *ʿajīb*. An additional item may also be added to our list of wonder-inducing qualities: it is the illusion of movement that makes the charcoal-drawing more *ʿajab*-inducing than the colorful pictures.

In the tradition of Arabic poetry, the idiom of *ʿajab* is also used to convey the impression that praiseworthy works of craft made on those who beheld them. An excellent example is a poem by Ibn al-Rumi (d. 896) describing a wine cup, supposedly written for Abu al-Hasan ʿAli al-Munajjim (d. 888–89), a courtier at Samarra and son of the famous Baghdadi astronomer Yahya al-Munajjim. The poet opens by depicting the cup as a wonder of nature too difficult to describe with words:[84]

1. Oh marvel of marvels! (*badā'iʿ*)
   It captivates every intellect, attracts every eye

2. So complete in beauty and elegance
That one describing it cannot give a fitting description

He continues, focusing especially on the cup's translucence. Here, it is the surface effect of the material rather than the material itself (he never specifies what it is) that is of primary interest:

5. Crafted from a substance, clear by nature
Not clarified through the process of alchemy
6. The eye penetrates right through it, so that you see [the eye]
Missing [the cup], due to the thinness of its walls

7. Like air without dust motes mixed with light
Nay—finer than that and clearer

As a final example of the importance of *ʿajab* to the evaluation and description of works of craft, I would like to quote the Abbasid court poet al-Buhturi (d. 897–98) on the wall paintings in the Arch of Khusraw at Ctesiphon.[85] Built by the Sasanians before the rise of Islam, the Arch (actually the vault of a monumental iwan in a larger palace complex) was well known to the Abbasids and widely considered a wonder of craftsmanship.[86] Buhturi's detailed description comes in the middle of the poem:

21. It [the hall] would inform you of a troop's wonders (*ʿajāʾib*),
Their record does not grey with obscurity
22. When you see the panel [depicting] the Battle of Antioch
You tremble among Byzantines and Persians
23. The Fates stand still, while Anushirvan
Leads the ranks onward under the banner
24. In a deep green robe over yellow.
It appears dyed in saffron.
25. Men in combat are under his command
Some are quiet and hushed.
26. Some are intense, rushing forward with spear-points.
Others are cautious of them, using shields.
27. The eye describes them as very much alive
They signal to one another mutely
28. My wavering (*irtiyābī*) about them increases
Until my hands establish them [as being inanimate] through touch.[87]

The wonders of the building and its decorative program confound the poet's senses. The paintings, which the eye describes as "very much alive," are imbued with a sense of movement: the figures appear to be advancing and retreating, and the gestures appear real. Even after he reaches out and touches the paintings, the pleasurable illusion continues, the poet imagining that Khusraw Parviz is actually there offering him a drink. He again expresses bewilderment at the paintings, asking himself in line 34: "Is this a dream that closed my eyes to doubt?"

Both Buhturi's poem and Ibn al-Rumi's were descriptions of the *ʿajab* experienced when viewing works of craft; at the same time, these poems were themselves works of craft, made to provoke *ʿajab*. They are examples of a new style of poetry, cultivated in Baghdad and later at the Abbasid court in Samarra, whose very aim was to astonish the audience through the use of ingenious turns of phrase and rhetorical conventions. This style, dubbed *badīʿ* by the Abbasid prince and poet Ibn al-Muʿtazz (d. 908), was replete with trickery and wordplay such as the use of antithesis (*muṭābaqa*) along with paronomasia (*tajnīs*), so that two words that sounded similar but had opposite meanings would appear in the same line, or two semantically-unrelated words of the same root would be used together, showing the poet's ability to manipulate the Arabic language.[88] Another tactic of the new generation was the use of unexpected metaphors that destabilized traditional imagery, such as when the poet Bashshar ibn Burd (d. ca. 783) somewhat infamously compared the strength of his lover's perfume to the smell of onions.[89] Jurjani explains the attraction of unexpected comparisons and images in terms of their ability to elicit *ʿajab* in his analysis of a poem in which the petals of a narcissus are compared first to gemstones and then to flames:

> If a thing manifests from an unknown place or is extracted from an unmined source, then the soul experiences more longing for it and it is more worthy of [the soul's] infatuation. The effect of *taʿajjub* and finding something strange is similar when you find something in a place that is not its [usual] place, or if you discover something that was nonexistent or unknown to begin with. If someone were to liken the narcissus to other plants or to grant it a likeness with something colorful, you would not find strangeness (*gharāba*) in it, and this example would not be considered beautiful.[90]

Badīʿ, of course, not only means "new," but "marvelous" and "amazing": it is a synonym of *ʿajīb*. In Abbasid Iraq, just as there was an appreciation for visual phenomena and works of art that befuddled the intellect, so too was there a notable taste for poetry that genuinely surprised or even shocked the audience: excellent art produced *ʿajab*.

V. ABBASID LUSTERWARE AND THE AESTHETICS OF *ʿAJAB*

This essay has thus far been largely concerned with developing a vocabulary appropriate to understanding lusterware and other works of craft made in Abbasid Iraq. I began with the observation that the vocabulary used to describe the development from polychrome to monochrome ("less colorful," "more abstract," "figural instead of vegetal") led to the conclusion that the later types were aesthetically incompatible with the former. In the previous section, it emerged that in early-Islamic Iraq works of craft were expected to be able to elicit significant reactions of *ʿajab* in viewers, and that objects and monuments were often judged according to this criterion. Some of the qualities consistently described as *ʿajīb* included surface effects like reflection or iridescence, a sense of movement, and the unexpected fusion of forms or images. Taken together, these characteristics form what I will call an "aesthetics of *ʿajab*"—a set of expectations, informed by contemporary interests, to which Abbasid lusterware could be held.

Again comparing the Louvre Bowl and the Flagbearer Bowl, it is clear that the qualities of both speak to the aesthetics of *ʿajab*. Despite their change in palette, they share an aspect that was perhaps of greater interest to an Abbasid-period audience: they are, as discussed earlier, both *abū qalamūn*-like. The descriptions of other *abū qalamūn*-like objects in the sources cited above suggest that the appeal of these pieces derived precisely from the enigmatic nature of the subtle transformations in color and light seen on their surfaces. Each vessel, with its brilliant, visually unstable surface, defies succinct explanation. The surface effect was important to the design of these bowls, but it was not the only component of their visual appeal. Abbasid lusterwares are covered with motifs encompassing a wide range of subject matter and styles that have traditionally been interpreted as representing different aesthetic sensibilities. Keeping in mind the expectations and interests outlined above, however, the seemingly disparate themes and modes of composition employed in these bowls may, in fact, be seen as complementary expressions of a similar concern with the *ʿajīb*.

The surface of the Louvre Bowl is covered with fleshy blossoms and tendrils. Adding to the somewhat chaotic effect of these motifs is the application of different colors of luster that are encouraged to bleed into one another. At the base, a blossom is one of the few forms to emerge relatively easily out of the sea of curves and spirals. The motif is simply constructed: a central teardrop flanked by two volute-like forms. In the latter, ruby red runs into a brighter yellow orange and swirls of moss green appear in the yellow stain at the tips of the volutes' spirals. It is difficult to tell where one shape ends and the next begins, and colors often merge seamlessly into one another. The phrase Masʿudi used to describe the wondrous qualities of the peacock comes to mind: *lā tudrak wa-lā tuḥṣā*—these patterns are indecipherable, the shapes innumerable. The methods of composition and coloration on this bowl make the design difficult to perceive without extended, close observation, suggesting the same "willful complication of vision" identified as an *ʿajab*-producing strategy in other forms of art mentioned in the previous section.

Even the choice of patterns in some of the polychrome vessels may be seen to evoke opposing sensations, thus encouraging prolonged, active engagement on the part of the viewer. Pointed herringbone patches are juxtaposed with rounded leaf-like forms (as in fig. 8), and curvilinear flowers alternate with rectilinear diamond patterns (as in fig. 3). The tactile sensations evoked by some of these patterns, ranging from rough (the stippled surface in fig. 4) to soft (the fleshy leaves depicted in fig. 1), encourage the viewer to reach out and touch, suggesting again an interest in visual trickery and prolonged contemplation. It is interesting to note that the juxtaposition of variegated patterns such as these was, in fact, a wondrous quality of marble paneling praised in descriptions of architecture during the Abbasid period and, contemporaneously, in Byzantine literature.[91] In a poem describing the al-Kamil palace, built

by the Abbasid caliph al-Mutawakkil (r. 847–61), Buhturi calls attention to the decorations of the interior, pointing toward the juxtaposition of patterns in the stone:

> 19. Its roofs raised to the gusting winds
> The marvels (*'ajā'ib*) of its fantastic beauty resplendent
> 20. As if the glass wall of its interior
> Were waves beating upon the seashore
> 21. As if the striped marble
> Where its pattern meets the opposite prospect
> 22. Were streaks of rainclouds arrayed between clouds, dark and light
> And striped, coming together and mingling...[92]

While the designs on the polychrome specimens added to the wondrous, *abū qalamūn*-like surface effect through their complexity and variety, a different strategy appears to have been at work in the monochrome types like the Flag-bearer Bowl, although it would have been no less wondrous to Abbasid-period viewers. In this example, the figure is quite clearly rendered, and actually seems to leap out of the bowl. This effect is due to the use of patches of stippling to create the illusion of a background. The painter has also left white spaces around the main figures (the flag bearer, the peacock, the vegetal form on the right-hand side, and the flag), which are, by contrast, rendered in fat strokes of luster. The result of this technique is that one layer momentarily appears to be on top of the other, raising the monochrome figures up off the surface, toward the viewer.

In the descriptions of wondrous objects discussed above, the illusion of movement is mentioned consistently as a wonder-producing quality. The peacock and other *abū qalamūn*-like surfaces are characterized by changes in color and the appearance of sheens that represent one sort of motion. Buhturi describes the vivid gestures of the apparently advancing and retreating soldiers: this sense of motion is the primary cause of the poet's amazement at the images. The Ikhwan al-Safa' also identify the illusion of movement in the depiction of a man rendered in charcoal as a source of *'ajab*. Indeed, motion figures prominently in the oft-quoted passage from Maqrizi's *Khiṭaṭ* (fifteenth century) describing a contest held by the Fatimid vizier al-Yazuri (r. 1040–58) in which two painters were each asked to submit an image for judgment.[93] After the first boasted that he could paint a dancer as if she were emerging from the wall, he was one-upped by the second, who claimed that he could paint the dancer as if she were retreating into the wall. The latter was dubbed *a'jab* (more wondrous) by the crowd, perhaps because it was a less common effect. Both, however, elicited wonder though the illusion of movement engendered by the layering of colors (white on black and yellow on red).

Though it is risky to take this anecdote as evidence of extant techniques, the use of contrasting colors to create a sense of depth would have been one strategy available in contexts where single-point perspective was not employed, and this strategy is actually evident in the monochrome figural lusterware bowls. Restricting the color palette allowed the potter to experiment with such techniques in order to convey a sense of motion in the designs, making an otherwise unremarkable image more wondrous.

Even in the Flag-bearer Bowl the sense of outward motion is unstable. Inside the flag, white patches appear that complicate what is intended as foreground and background. The large white circle in the center of the flag could be read as a hole cutting through the fabric, revealing white ground behind with raised patches of stippling and pseudo-Arabic script; or it could be read as a decoration on the flag. The block of white with forms resembling Arabic letters to the right of the peacock is similarly unstable: it can be viewed as either white on gold or gold on white.

The tendency toward figure-ground ambiguity is more pronounced in a bowl excavated at Susa and now housed in the Louvre (fig. 11), where one's initial impulse is to read the design on the front as white palmette motifs with gold pseudo-script on a gold ground.[94] From this perspective, the design is executed in reserve, meaning that the painters had completely reversed the relationship that governs the more easily legible pieces, which feature figures painted in luster against a white ground with stippling. Turn these bowls over, however, and the opposite pertains: the backs of almost all monochrome bowls are decorated with quick brush-strokes of luster, re-establishing the gold-on-white relationship overturned in the front. The relationship between foreground and background is thus never quite stable on the surfaces of the monochrome bowls.

Fig. 11. Fragmentary monochrome luster bowl excavated at Susa. Iraq, late ninth or tenth century. Paris, Musée du Louvre, inv. no. MAO S. 454. (Photo: Claire Tabbagh, courtesy of the Musée du Louvre / Réunion des Musées Nationaux)

The potential to destabilize figure and ground on the surfaces of vessels rendered in only one color of luster is taken yet a step further in a group of monochrome wares found in several collections characterized by vegetal designs that completely dissolve foreground and background. For example, the design of a bowl in the David Collection (fig. 12)[95] can be read two ways: as a series of white s-hook tendrils on a golden ground or as a vine composed of long leaves with volutes at one end painted on a white ground. They are both equally convincing, and as viewers shift their perspective back and forth between the two possibilities, one appears to rise up from the ground while the other recedes. Not only is the design characterized by complete visual instability, but it also provides the illusion of unceasing forward-backward motion.

The pattern on this bowl immediately recalls the so-called "Beveled Style" of carved architectural decoration, first identified in the stuccos of Samarra but also attested in carved and painted woodwork, as well as in marble and rock crystal dating from ninth- and tenth-century Iraq and Egypt.[96] This style, long understood as a hallmark of the Abbasid period, is characterized by the use of repeat-patterns loosely based on vegetal forms that are carved into the surface with beveled edges, making it difficult for the viewer to discern foreground and background. Ernst Herzfeld, the first to explain the development of this style in an Islamic context, understood its emergence and spread as the result of a Muslim aversion to images and a Semitic impulse toward abstraction.[97] While the "Islamicness" of this style has rightly been contested, Herzfeld's ideas still remain influential today.[98] It makes more sense in light of the evidence presented above, however, to understand the proliferation of strategies for figure-ground reversal apparent in the Beveled Style and in other forms of Abbasid material culture, such as the monochrome luster bowls discussed above, as a response to an increased interest in the *ʿajab*-producing qualities of motion and visual complexity. This could be achieved in the depiction of both figural and non-figural subject matter.

The seemingly disparate range of styles and motifs represented by the Abbasid lusterware housed in muse-

Fig. 12. Monchrome luster bowl. Iraq, late ninth or tenth century, 6 cm (height) × 20.5 cm (diameter). Copenhagen, the David Collection, inv. no. 26/1962. (Photo: Pernille Klemp, courtesy of the David Collection)

ums today may, then, be understood as speaking to the same underlying motivation: the creation of a product that is *ʿajīb*. The polychrome and monochrome types may have different colors and motifs but both have surfaces as unstable as *abū qalamūn*. The complex and contrasting, difficult-to-read vegetal forms often used in the polychrome varieties, the monochrome motifs that destabilize figure-ground relations, and the monochrome figures that appear to jump out of the bowl: all suggest strategies intended to complicate the reading of the overall design on the piece in question. The designs are complex, full of movement and pleasurable contrasts. Abstract or naturalistic, vegetal or figural, monochrome or polychrome, they can be seen as an attempt to fulfill what has emerged as a far more important expectation of art in the Abbasid period.

CONCLUSION

When viewed in terms that reflect the interests of people who lived during the Abbasid period, the various types of Abbasid lusterware do not appear to be aesthetically incompatible with one another, but rather represent a set of different approaches, evolving over time, to producing *ʿajab*, the experience of being pleasurably wonder-struck. The survey of texts and objects conducted here suggests that surface effects like reflection, sheen, and iridescence were considered to be particularly conducive to eliciting this reaction in viewers. Also important were the use of complex, difficult-to-decipher motifs, the creation of a sense of motion, and the juxtaposition of dissimilar patterns, textures, and forms.

While the reflective, semi-iridescent surfaces of Abbasid lusterwares are unique to the medium, other characteristics of these pieces that have been identified as *ʿajab*-inducing are shared with different types of craft. For example, the interest in figure-ground reversal and a sense of motion is amply evident in fragments of carved stucco and wood dating from the ninth and tenth centuries that once covered architectural surfaces. Thus, while lusterware has been particularly germane to this discussion, the "aesthetics of *ʿajab*," if fleshed out further, could be a productive framework for understanding broader developments in the material culture of Abbasid Iraq that are not limited to one medium or type of object.

In taking up Grabar's challenge to further integrate one type of pottery into the fabric of the society in which it was produced and used, I hope to have made a case for further research on ceramics and other "industrial arts" as a way to establish resonances between material culture and the history of aesthetic experience. Ceramics are justifiably valued by archaeologists and art historians for the evidence they provide regarding the movement of goods, the history of technology, and the dating of buildings and sites. As I have argued in this essay, their form and decoration can also speak volumes about the aesthetic interests alive in the societies that produced them and even the sorts of aesthetic experiences possible among the people who used and took pleasure in them.

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NOTES

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1. Oleg Grabar, "Between Connoisseurship and Technology: A Review," *Muqarnas* 5 (1988): 8.
2. The term "Abbasid lusterware" is not intended here to imply the patronage of the Abbasid court itself. Rather, I will use "Abbasid" in this essay to refer to this group of lusterwares because they were produced in the Abbasid Empire, which was established in 750 in Iraq and remained the dominant political power in the eastern Islamic world until the middle of the tenth century. While the distribution of these wares was by no means limited to Abbasid lands, archaeological excavations show that it was available for use in many of its cities, including the ninth-century capital of Samarra, as well as Susa (a regional center), and Siraf (a port city). For finds from Samarra, see Friedrich Sarre, *Die Keramik von Samarra* (Berlin, 1925), 36–43; for Susa, see Monique Kervran, "Les niveaux islamiques du secteur oriental du Tépé de l'Apadana," *Cahiers de la Délégation Archéologique Française en Iran* 7 (1977): 75–161; for Siraf, see David Whitehouse, "Islamic Pottery in Iraq and the Persian Gulf: The Ninth and Tenth Centuries," *Annali dell'Istituto Orientale di Napoli* 39 (1979): 45–61.
3. This division was first suggested by Ernst Kühnel in "Die ʿabbâsidischen Lüsterfayencen," *Ars Islamica* 1, 2 (1934): 149–59. This article has been translated into English by Christiane J. Gruber and Jonathan M. Bloom as "'Abbasid Lustrewares," in *Early Islamic Art and Architecture*, ed. Jonathan M. Bloom (Aldershot, U.K., and Burlington, Vt., 2002), 87–95.
4. For a discussion of motif groups, see Robert Mason, *Shine Like the Sun: Lustre-Painted and Associated Pottery from the Medieval Middle East* (Costa Mesa, Calif., 2004), 25–28.
5. The relative chronology of polychrome, followed by bi-chrome and then monochrome was suggested in Kühnel, "Die ʿabbâsidischen Lüsterfeyencen." For more recent discussions of the chronology, see Oliver Watson, *Ceramics from Islamic Lands* (London, 2004), 183, and Mason, *Shine Like the Sun*, 29–31, and table 3.2. Jessica Hallett has suggested that the chronology be modified to bi-chrome followed by polychrome and then monochrome, based on comparisons between the bi-chrome luster and luster-stained glass from the eighth-century. See Jessica Hallett, "Trade and Innovation: The Rise of a Pottery Industry in Abbasid Basra" (PhD diss., University of Oxford, 1999).
6. A parallel can be drawn here to the interpretation of the slip-painted wares produced in tenth-century Khurasan. In this case, two roughly contemporary types, one with figural

decoration and the other adorned with Arabic calligraphy, were assumed to be aesthetically incompatible and to represent the tastes of different social groups. See Richard W. Bulliet, "Pottery Styles and Social Status in Medieval Khurasan," in *Archaeology,* Annales, *and Ethnohistory*, ed. A. Bernard Knapp (Cambridge, 1992), 75–82. For a criticism of this interpretation, see Oya Pancaroğlu, "Serving Wisdom: The Contents of Samanid Epigraphic Pottery," in *Studies in Islamic and Later Indian Art from the Arthur M. Sackler Museum, Harvard University Art Museums* (Cambridge, Mass., 2002), 59–75

7. Several scholars have pointed to the ubiquity of the idea of wonder in Arabic and Persian discussions of craft, suggesting its potential significance in understanding developments in visual art in the medieval Islamic world. See especially Oleg Grabar, *The Mediation of Ornament* (Princeton, N.J., 1992), 85–86, and Gülru Necipoğlu, *The Topkapı Scroll: Geometry and Ornament in Islamic Architecture. Topkapı Palace Museum Library MS H. 1956* (Santa Monica, Calif., 1995), 213–14. The usefulness of *ʿajab* as a concept in the study of Islamic aesthetics is debated in Nasser Rabbat, "*ʿAjīb* and *Gharīb*: Artistic Perception in Medieval Arabic Sources," *The Medieval History Journal* 9, 1 (2006): 99–113. More recently, Persis Berlekamp has explored the role of *ʿajab* in Islamic wonders-of-creation manuscripts, both as a sought-after aesthetic experience provided for the reader and as an idea employed by the authors of these books to organize and understand God's Creation. See Persis Berlekamp, *Wonder, Image and Cosmos in Medieval Islam* (New Haven, 2011), especially "A Question of Approach," 8–22.

8. In recent surveys of Islamic ceramics, both style and technology are used to classify the material. In *Ceramics from Islamic Lands*, for example, Watson organizes the range of wares represented in the Al-Sabah Collection according to technological families (e.g., opaque-glazed wares vs. underglaze painted wares) and, within these, according to style (e.g., slip-painted wares with calligraphic designs vs. slip-painted wares with abstract designs). For a similar approach, see also Ernst J. Grube, ed., *Cobalt and Lustre: The First Centuries of Islamic Pottery*, The Nasser D. Khalili Collection of Islamic Art 9 (London, 1994). In *Shine Like the Sun*, Mason relies more heavily on the analysis of shapes and glaze composition to construct chronological sequences of ceramics.

9. This term is attested in a recently discovered treatise attributed to Jābir ibn Ḥayyān (fl. late eighth or early ninth century), titled *Kitāb al-Durra al-maknūna*, copied in a thirteenth-century manuscript: Paris, Bibliothèque nationale de France, Ms. Arabe 6915. See Ahmad Y. Al-Hassan, "An Eighth Century Arabic Treatise on the Colouring of Glass: *Kitāb al-Durra al-maknūna* (The Book of the Hidden Pearl) of Jābir ibn Ḥayyān (c. 721–c. 815)," *Arabic Sciences and Philosophy* 19 (2009): 121–56. The term is also attested in later lapidaries, e.g., Abū Rayḥān Muḥammad ibn Aḥmad al-Bīrūnī, *Kitāb al-Jamāhir fī al-jawāhir*, ed. Yūsuf al-Hādī (Tehran, 1995), 430; and Muḥammad ibn-i Abī al-Barakāt Jawharī Nīshābūrī, *Javāhirnāma-i Niẓāmī*, ed. Īraj Afshār (Tehran, 1383 [2004]), 352.

10. The luster-painting technique employed in thirteenth-century Iran is described in a lapidary written in the late thirteenth or early fourteenth century. See Abū al-Qāsim al-Kāshānī, *ʿArāyis al-javāhir wa-nafāyis al-aṭāyib*, ed. Īraj Afshār (Tehran, 1345 [1966-67]), 338–47. These instructions have been translated by James W. Allan as "Abū'l-Qāsim's Treatise on Ceramics," *Iran* 11 (1973): 111–20. Detailed discussions of the technique include Alan Caiger-Smith, *Lustre Pottery: Technique, Tradition, and Innovation in Islam and the Western World* (London, 1985), 210–20.

11. For luster-stained glass and its possible connections to luster-painted pottery, see Carl Johan Lamm, *Oriental Glass of Mediaeval Date Found in Sweden and the Early History of Lustre-Painting* (Stockholm, 1941), 18–29. For a discussion of the technique of luster painting on glass, see Stefano Carboni and David Whitehouse, *Glass of the Sultans* (New York, 2001), 34–35 and 199–201.

12. For a discussion of the styles and techniques related to cobalt-painted wares, see Vera Tamari, "Abbasid Blue-on-White Ware," in *Islamic Art in the Ashmolean Museum, Part Two* (Oxford, 1995), 117–45.

13. Basra, Iraq has been suggested as the specific place of manufacture for these wares, based on petrographic analysis of kiln furniture attributed to the site in comparison with examples of the pottery itself. See Robert Mason and Edward Keall, "The ʿAbbāsid Glazed Wares of Sīrāf and the Baṣra Connection," *Iran* 29 (1991): 51–66. For a more detailed characterization of the ceramic body fabric associated with Basra, see Mason, *Shine Like the Sun*, 37–44.

14. For an overview, see Alastair Northedge and Derek Kennet, "The Samarra Horizon," in Grube, *Cobalt and Lustre*, 21–35. A relative chronology based on the Susa material is given in Kervran, "Les niveaux islamiques."

15. Archaeological evidence for the importation of Chinese ceramics into the Abbasid Empire during the ninth century is available from Samarra and Siraf. For Samarra, see Sarre, *Die Keramik von Samarra*, 54. For Siraf, see David Whitehouse, "Chinese Stoneware from Siraf: The Earliest Finds," in *South Asian Archaeology: Papers from the First International Conference of South Asian Archaeologists Held in the University of Cambridge*, ed. Norman Hammond (London, 1973), 241–55. For a larger history of Chinese ceramics in the Persian Gulf, see Axelle Rougelle, "Les importations de céramiques chinoises dans le Golfe arabo-persique (VIIIe–XIe siècles)," *Archéologie Islamique* 2 (1991): 5–46.

16. Sarre, *Die Keramik von Samarra*, 71. See also Yolande Crowe, "Early Islamic Pottery and China," *Transactions of the Oriental Ceramic Society* 41 (1975–77): 263–78, and Alastair Northedge, "Friedrich Sarre's *Die Keramik von Samarra* in Perspective," in *Continuity and Change in Northern Mesopotamia from the Hellenistic to the Early Islamic Period*, ed. Karin Bartl and Stefan R. Hauser (Berlin, 1996), 229–58.

17. On "influence studies" in art-historical scholarship, see "Excursus against Influence," in Michael Baxandall, *Pat-*

terns of Intention: On the Historical Explanation of Pictures (New Haven, 1985), 58–62.

18. Watson, *Ceramics from Islamic Lands*, 183.
19. Trinitat Pradell et al., "The Innovation of Lustre: Iraq 9th and 10th centuries AD," *Journal of Archaeological Science* 35, 5 (2008): 1201–15, and Hallett, "Trade and Innovation," 134–35.
20. E.g., Caiger-Smith, *Lustre Pottery*, 31.
21. Watson, *Ceramics from Islamic Lands*, 47.
22. Géza Fehérvári, "Two Early ʿAbbāsid Lustre Bowls and the Influence of Central Asia," *Oriental Art* 9, 1 (Spring, 1963): 79–88; Johanna Zick-Nissen, "Medieval Ceramic Bowl Decorations Interpreted as Constellations," in *Memorial Volume of the VIth International Congress of Iranian Art and Archaeology, Oxford, September 11–16, 1972*, ed. M. Y. Kiani (Tehran, 1976), 349–67; and Ulrike al-Khamis, "The Iconography of Early Islamic Lusterware from Mesopotamia: New Considerations," *Muqarnas* 7 (1990): 109–19.
23. Ernst J. Grube, *Islamic Pottery of the Eighth to the Fifteenth Century in the Keir Collection* (London, 1976), 45.
24. For example, the central figure on a monochrome luster bowl in the Ashmolean Museum has been identified as deriving from representations of Bodhisattvas in the Central Asian tradition (published in James W. Allan, *Islamic Ceramics* [Oxford, 1991], 8, and discussed in Fehérvári, "Two Early ʿAbbāsid Lustre Bowls"). While such an image may have been considered "foreign" in an Islamic context, Hindu and Buddhist images that had been plundered as booty did circulate during the Abbasid period and were not unknown to the population of Iraq. See Finbarr Barry Flood, *Objects of Translation: Material Culture and Medieval "Hindu-Muslim" Encounter* (Princeton, N.J., 2009), 26–37. Among others, Flood highlights an anecdote recorded by Masʿudi in which an image of a four-armed goddess sent to Iraq by the governors of Sistan in 896 was publicly displayed in Basra as well as in Baghdad before being melted down for use as coinage. Its aesthetic interest was apparently so great among locals that the population of Baghdad nicknamed it "*shughl*," which loosely translates as "a distraction."
25. Watson, *Ceramics from Islamic Lands*, 47.
26. For example, as articulated by Ernst Herzfeld in his seminal article, "Die Genesis der islamischen Kunst und das *Mshattā*-Problem," *Der Islam* 1, 1 (1910): 27–63, 115–44. This idea was later elaborated in his introduction to *Der Wandschmuck der Bauten von Samarra und seine Ornamentik* (Berlin, 1923), 4–9.
27. For an exercise demonstrating both the potential of such an approach and its inherent difficulties, see Baxandall, *Patterns of Intention*, 105–16. The importance of considering historically specific aesthetic categories in the study of Islamic art is demonstrated in Necipoğlu, *Topkapı Scroll*, esp. 185–96.
28. This term (also written *sofālīneh*) is usually translated as "pottery," but in this context it is also possible that it refers to opaque glass paste painted with luster, a product made in Fatimid Cairo that would have been available for sale along with monochrome luster-painted ceramics. Either way, the two wares are closely related in terms of technology and surface effect. For a discussion of this matter, see Lamm, *Oriental Glass*, 44.
29. Nāṣir-i Khusraw, *Nasir-i Khusraw's Book of Travels = Safarnāmah*, ed. and trans. Wheeler Thackston (Costa Mesa, Calif., 2001), 70. This translation differs slightly from Thackston's.
30. Nasir-i Khusraw defines *būqalamūn* as follows: "In the city of Tinnis they weave a cloth called *būqalamūn*, which is found nowhere else in the world. It is a colorful cloth that appears to be a different color at every time of day. It is exported to the East and West from Tinnis alone. The ruler of Byzantium, they say, sent a message to offer the Sultan of Egypt a hundred towns for Tinnis. The sultan refused, knowing he wished to procure *qaṣab* (a type of fine linen) and *būqalamūn* from it": ibid., 49–50.
31. For the various meanings for the term, see A. J. W. Huisman, *Encyclopaedia of Islam, Second Edition* (henceforth *EI2*) (Leiden, 1954–2005), s.v. "Abū Ḳalamūn"; and Lamm, *Oriental Glass*, 39–44. For *abū qalamūn* as a term used to describe the surface effect of luster, see Fahmida Suleman, "From Shards to Bards: Pottery-Making in Historic Cairo," in *Living in Historic Cairo: Past and Present in an Islamic City*, ed. Farhad Daftary, Elizabeth Fernea, and Azim Nanji (London and Seattle, 2010), 138. A more extensive discussion is provided by Suleman in her doctoral thesis, "The Lion, the Hare and Lustre Ware: Studies in the Iconography of Lustre Ceramics from Fāṭimid Egypt (969–1171 CE)" (DPhil thesis, University of Oxford, 2004), 46–49.
32. Abū al-Faḍl Jamāl al-Dīn Muḥammad ibn Mukarram ibn Manẓūr, *Lisān al-ʿArab*, 15 vols. (Beirut, 1955–56), 13:347.
33. A list of references to *abū qalamūn* (the cloth) is given in R. B. Serjeant, *Islamic Textiles: Material for a History up to the Mongol Conquest* (Beirut, 1972), 142–45, 212–13.
34. Abū ʿUthmān ʿUmar ibn Baḥr al-Jāḥiẓ, *Kitāb al-Tabaṣṣur bi'l-tijāra*, ed. Ḥasan Ḥusnī ʿAbd al-Wahhāb al-Tūnisī (Cairo, 1935). The text has been translated into French by Charles Pellat in "Ǧāḥiẓiana, I: Le *Kitāb al-Tabaṣṣur bi-l-tiǧāra* attribué à Ǧāḥiẓ," *Arabica* 1, 2 (May 1954): 153–65. For the attribution to ninth-century Iraq, see André Miquel, *La géographie humaine du monde musulman jusqu'au milieu du 11e siècle*, 4 vols. (Paris, 1967–88), 1:110–11, 332–33. See also David Jacoby, "Silk Economics and Cross-Cultural Artistic Interaction: Byzantium, the Muslim World, and the Christian West," *Dumbarton Oaks Papers* 58 (2004): 221. A textile called *būqalamūn* is also mentioned in descriptions of wealthy homes in Baghdad. See, for example, Muḥammad ibn Aḥmad ibn al-Muṭahhar al-Azdī, *Ḥikāyat Abī al-Qāsim al-Baghdādī*, ed. Adam Mez (Heidelberg, 1902), 32.
35. Jāḥiẓ, *Kitāb al-Tabaṣṣur bi'l-tijāra*, 22.
36. For other examples of this variety, see Ernst Kühnel, "Abbasid Silks of the Ninth Century," *Ars Orientalis* 2 (1957): 367–71. Our Louvre Bowl was also recently compared to descriptions of the cloth called *abū qalamūn*, due to its

color palette and surface effect. See *Reflets d'or: D'Orient en Occident, la céramique lustrée IXe–XVe siècle; Musée de Cluny, Musée national du Moyen Age, 9 avril–1er septembre 2008*, ed. Xavier Dectot (Paris, 2008), 20.

37. Bīrūnī, *Kitāb al-Jamāhir,* 149. The Arabic reads: "*yūjad fīhi kull lawn min khalūqiyya wa'l-ṣufra wa'l-khuḍra wa'l-samāwiyya turā fīhi hādhihī al-alwān ʿinda taḥrīkihi*." Al-Biruni quotes al-Kindi extensively throughout the *Kitāb al-Jamāhir*, citing a now-lost book on stones as a primary source (see *Kitāb al-Jamāhir*, 103). For more on al-Biruni's sources, see Syed H. H. Nadvi, "Al-Bīrūnī and His *Kitāb al-Jamāhir fī-Maʿrifah al-Jawāhir*," in *Al-Bīrūnī: Commemorative Volume; Proceedings of the International Congress Held in Pakistan on the Occasion of the Millenary of Abū Raihān Muhammad ibn Ahmad al-Bīrūnī, 973–ca.1051 A.D.: November 26, 1973 thru' December 12, 1973*, ed. Hakim Mohammed Said (Karachi, 1979), 530–39.
38. Abū ʿAlī ibn al-Ḥusayn ibn ʿAlī al-Masʿūdī, *Murūj al-dhahab wa-maʿādin al-jawhar,* ed. Yūsuf Asʿad Dāghir, 4 vols. (Beirut, 1965) 1:419.
39. For this quote, see Paul Krauss, *Jābir ibn Ḥayyān: Contribution à l'histoire des idées scientifiques dans l'Islam*, 2 vols., Mémoires de l'Institut d'Égypte 44 and 45 (Cairo, 1943–44), 1:24, no. 41 and n. 2. According to Kraus, the book probably discussed the qualities of the "seven metals" (*al-asjād*) and their transformation (ibid., 24).
40. Al-Hassan, "An Eighth Century Arabic Treatise," 143.
41. A. I. Sabra, ed. and trans., *The Optics of Ibn al-Haytham, Books I–III: On Direct Vision*, 2 vols. (London, 1989), 1:202 (Bk. II, 3[218]).
42. Sabra suggests that *abū qalamūn* should here be translated as "chameleon," based on Ptolemy's use of the chameleon in his discussion of color, from which Ibn al-Haytham explicitly draws: see notes in Sabra, *Optics of Ibn al-Haytham*, 2:101. I thank Fahmida Suleman for pointing me to this reference. For the chameleon in Arabic sources, see Charles Pellat, *EI2*, s.v. "Ḥirbā." For an Abbasid-period description of the chameleon's coloration, see al-Jāḥiẓ, *Kitāb al-Ḥayawān*, ed. ʿAbd al-Salām Muḥammad Hārūn, 8 vols. (Cairo, 1938–45 [2nd ed. 1965–69]), 6:363.
43. For a discussion of cloth made from the beards of fan mussels (mollusks of the genus *Pinna*) and its relationship to the term *abū qalamūn*, see Berthold Laufer, "The Story of the Pinna and the Syrian Lamb," *The Journal of American Folklore* 28, 108 (April–June 1915): 103–28.
44. Serjeant, *Islamic Textiles*, 196–97.
45. Badīʿ al-Zamān al-Hamadhānī, *Maqāmāt*, ed. Muḥammad Abduh al-Maṣrī (Beirut, 1924), 86.
46. The former phrase is used in the definition of *abū qalamūn* provided in the *Kitāb al-Tabaṣṣur bi'l-tijāra,* and the latter in the *Lisān al-ʿArab*.
47. On the history and cultural impact of the Abbasid translation movement, see Dimitri Gutas, *Greek Thought, Arabic Literature: The Graeco-Arabic Translation Movement in Baghdad and Early ʿAbbāsid Society* (*2nd–4th/8th–10th centuries*) (London, 1998).
48. See Alfred Morabia, *EI2*, s.v. "Lawn."
49. For a bibliography of works attributed to al-Kindi, see Pinella Travaglia, *Magic, Causality, and Intentionality: The Doctrine of Rays in al-Kindī* (Florence, 1999), 103–46.
50. Morabia, *EI2*, s.v. "Lawn."
51. Travaglia, *Magic, Causality, and Intentionality*, 70. The treatise in which this theory was advanced is titled *Fī ʿillat al-lāzuwardī alladhī yurā fī al-jaww fī jihat al-samāʾ wa-yuẓannu annahu lawn al-samāʾ* ("On the cause of the deep-blue that is seen in the atmosphere toward the sky and is thought to be the color of the sky"). It has been translated into English by Otto Spies, in "Al-Kindi's Treatise on the Cause of the Blue Colour of the Sky," *Journal of the Bombay Branch of the Royal Asiatic Society*, n.s., 13 (1937): 7–19.
52. See David C. Lindberg, *Theories of Vision from al-Kindi to Kepler* (Chicago, 1976), 19–24.
53. Ḥunayn ibn Isḥāq, *The Book of the Ten Treatises on the Eye, Ascribed to Hunain ibn Is-Hâq* (*809–877 A.D.*)*: The Earliest Existing Systematic Text-book of Ophthalmology*, ed. and trans. Max Meyerhof (Cairo, 1928), 37–38. For the influence of Galen on Hunayn's theory of sight, see Lindberg, *Theories of Vision*, 33–42.
54. Ikhwān al-Ṣafāʾ, *Rasāʾil Ikhwān al-Ṣafāʾ wa-Khullān al-Wafāʾ*, 4 vols. (Beirut, 1957), 2:396–416.
55. Ibid., 2:398: "*aʿrāḍ dākhila fī al-jism zāʾida baʿda kawnihi jisman mutammima lahu*."
56. Ibid., 2:399–400
57. Bīrūnī, *Kitāb al-Jamāhir*, 149. *Makhāyil,* the word used to describe the ephemeral colors seen upon the surface of the stone, is the plural of *makhīla* and can mean a sign, indication, or token of something not present. For example, the word was sometimes used to mean a rain cloud, since clouds bear the sign of oncoming rain but are not rain themselves. See Ibn Manẓūr, *Lisān al-ʿArab*, 11:227.
58. For the meanings of this term, see F. Viré, *EI2*, s.v. "Abū barāḳish."
59. Lindberg, *Theories of Vision*, 61–67.
60. *Taqāzīḥ* (sing. *taqzīḥ*), is translated here as "iris," in the sense of a band or ring of prismatic color, not referring to the flower or to the anatomical membrane in the eye.
61. Sabra, *Optics of Ibn al-Haytham,* 1:48 (Bk. I, 3[132]), and notes in 2:39-40. This is Sabra's translation of the Arabic text.
62. Ibid., 1:55 (Bk. I, 4[25]).
63. Ibid., 1:202 (Bk. II, 3[218]). On Ibn al-Haytham's writings regarding beauty in the *Kitāb al-Manāẓir*, see Necipoğlu, *Topkapı Scroll*, 189–90, 201–4.
64. The term employed here for close scrutiny, "*taʾammul*," is also used by Ibn al-Haytham to mean contemplative perception (*idrāk bi'l-taʾammul*); it is contrasted with perception by mere glance or intuitive perception (*idrāk bi'l-badīha*). Contemplation is required for the viewer to perceive the "true form" of the object by singling out each of its properties and identifying them. See Sabra, *Optics of Ibn al-Haytham*, 1:207–9 (Bk. II 4[1–5]), and notes in 2:102–4.

65. Masʿūdī, *Murūj al-dhahab*, 1:419.
66. The following references, unless otherwise noted, come from Ibn Manẓūr, *Lisān al-ʿArab*, 1:580–82.
67. For the association between wonder (*ʿajab*) and pleasure (*ladhdha*), see also Necipoğlu, *Topkapı Scroll*, 213.
68. This and the following definition are quoted in Roy Mottahedeh, "*ʿAjā'ib* in *The Thousand and One Nights*," in The Thousand and One Nights *in Arabic Literature and Society*, ed. Richard G. Hovannisian and Georges Sabagh (Cambridge, 1997), 29–39.
69. Ibn Manẓūr, *Lisān al-ʿArab*, 1:581.
70. Zakarīya ibn Muḥammad al-Qazwīnī, *ʿAjā'ib al-makhlūqāt* (Lahore, 2004), 453.
71. Abū al-Ḥasan Muḥammad ibn Abī Aḥmad al-Sharīf al-Raḍī, *Nahj al-balāgha*, ed. Muḥammad ʿAbduh, 4 vols. (Beirut, 1954), 2:150–57.
72. Ibid., 150.
73. Ibid., 151.
74. Perhaps a deep indigo color.
75. Al-Sharīf al-Raḍī, *Nahj al-balāgha*, 2:153–57.
76. This would be consistent with the evidence found in other texts on precious stones. Al-Biruni, for instance, lists intense radiance as being among the unique qualities of the ruby: Bīrūnī, *Kitāb al-Jamāhir*, 122. Precious stones were not only shiny, but some believed them to actually radiate light. For a discussion of this idea, see Avinoam Shalem, "Jewels and Journeys: The Case of the Medieval Gemstone Called al-Yatima," *Muqarnas* 14 (1997): 42–56.
77. Al-Sharīf al-Raḍī, *Nahj al-balāgha*, 1:156–57.
78. Suleman, "From Shards to Bards," 138.
79. Other examples of images of plumage decorated with these motifs include a polychrome luster bowl in the Ashmolean Museum, Oxford (1956.63), and a monochrome bowl in the Louvre (MAO 131). These are published in Caiger-Smith, *Lustre Pottery*, figs. 7 and 8, respectively.
80. Necipoğlu, *Topkapı Scroll*, 204.
81. Ikhwān al-Ṣafā', *Rasā'il*, 1:276–295. On the discussion of crafts in the epistles of the Ikhwan al-Safa', see also Necipoğlu, *Topkapı Scroll*, 188 and 199, and Sharbil Dāghir, *al-Fann al-Islāmī fī al-maṣādir al-ʿArabiyya: Ṣinā'at al-zīna wa'l-jamāl* (Kuwait: Dār al-Āthār al-Islāmiyya, 1999), 91–120.
82. Ikhwān al-Ṣafā', *Rasā'il*, 1:287.
83. Ibid., 1:289.
84. Ibn al-Rūmī, *Dīwān Ibn al-Rūmī*, ed. Ḥusayn Naṣṣār, 6 vols. (Cairo, 1973–81), 4:1558 (poem no. 1203).
85. Al-Walīd ibn ʿUbayd al-Buḥturī, *Dīwān al-Buḥturī*, ed. Ḥasan Kāmil al-Ṣayrafī, 3 vols. (Cairo, 1963–64), 2:1152–64 (poem no. 470). This poem, one of Buhturi's most famous, has been translated into English; it is discussed in Akiko Motoyoshi-Sumi, *Description in Classical Arabic Poetry: Waṣf, Ekphrasis, and Interarts Theory* (Leiden, 2004), 101–8, and in Samer M. Ali, *Arabic Literary Salons in the Islamic Middle Ages: Poetry, Public Performance, and the Presentation of the Past* (Notre Dame, Ind., 2010), 157–60. I quote from Ali's translation with any modifications noted and glosses placed within brackets.
86. There are reports, for example, that the Abbasid caliphs used materials from the palaces at Ctesiphon in their own constructions in Baghdad. For references, see Lionel Bier, "The Sasanian Palaces and Their Influence in Early Islam," *Ars Orientalis* 23 (1993): 57–62. The Arch of Khusraw was also identified as one of the local wonders of Iraq in several medieval Arabic geographical works: see Miquel, *La géographie humaine*, 4:109.
87. The line reads: "*yaghtalī fīhimi ʿrtiyābī ḥattā tataqarrāhumu yadāya bi-lamsī*." Ali, *Arabic Literary Salons*, translates it as follows: "My wonder about them boils till my hand explores them with a touch."
88. Ibn al-Muʿtazz lists *muṭābaqa* and *tajnīs* as two of the five "gates" (*abwāb*) of *badīʿ* in his *Kitāb al-Badīʿ*: see Ibn al-Muʿtazz, *Kitāb al-Badīʿ of ʿAbd Allāh ibn al-Muʿtazz; Edited from the Unique Ms. in the Escorial*, ed. Ignatius Kratchkovsky (London, 1935), 36–47. One of the most famous examples of this motif is Abu Tammam's ode on the battle of Ammuriyya, where he compares the merits of warriors and men of letters, contrasting the "white of sword-blades (*ṣafā'iḥ*)" and "the black of book-pages (*ṣaḥā'if*)." See Suzanne Pinckney Stetkevych, *Abū Tammām and the Poetics of the ʿAbbāsid Age* (Leiden, 1991), 189. For a suggestion on the possible implications of *badīʿ* aesthetics in the interpretation of Abbasid art, see Thomas Leisten, "'Abbasid Art," *Ḥadīth al-Dār* 24 (2007): 50–57.
89. See Nuwas G. Schoeler, "Bashshār b. Burd, Abū al-Atāhiya and Abū Nuwās," in *The Cambridge History of Arabic Literature: ʿAbbasid Belles-Lettres*, ed. Julia Ashtiany et al. (Cambridge, 1990), 275–86.
90. ʿAbd al-Qāhir al-Jurjānī, *Asrār al-Balāgha = The Mysteries of Eloquence*, ed. Helmut Ritter (Istanbul, 1954), 118.
91. Marble was also praised for its wave-like patterns in Byzantine descriptions of architecture. On the qualities of marble emphasized in both Greek and Arabic sources, see Marcus Milwright, "'Waves of the Sea': Responses to Marble in Written Sources (Ninth–Fifteenth Centuries)," in *The Iconography of Islamic Art: Studies in Honour of Robert Hillenbrand*, ed. Bernard O'Kane (Edinburgh, 2005), 211–21. For a more extensive survey of associations carried by marble and marble-like materials in the Eastern Mediterranean, see also Fabio Barry, "Walking on Water: Cosmic Floors in Antiquity and the Middle Ages," *The Art Bulletin* 89, 4 (Dec. 2007): 627–56.
92. Julie Scott-Meisami, "The Palace-Complex as Emblem: Some Samarran Qaṣīdas," in *A Medieval Islamic City Reconsidered: An Interdisciplinary Approach to Samarra*, ed. Chase F. Robinson (Oxford, 2001), 73. For the full poem in Arabic, see Buḥturī, *Dīwān*, 3:1646–50 (poem no. 641). This translation is by Meisami.
93. This passage has been translated into English and discussed numerous times. See Thomas W. Arnold, *Painting in Islam: A Study of the Place of Pictorial Art in Muslim Culture* (New York, 1965), 22; Richard Ettinghausen, *Arab Painting* (Geneva, 1962), 55; and Rabbat, "*ʿAjīb* and *Gharīb*," 101–2.
94. A similar bowl is housed in the Museum für Islamische Kunst, Berlin. The bowl is published in *The Arts of Islam:*

Hayward Gallery, 8 April–4 July 1976, ed. Dalu Jones and George Michell (London, 1976), cat. no. 270.

95. See also a bowl in the Los Angeles County Museum of Art (M.2002.1.338) and a bowl in the Al-Sabah Collection (LNS 111C), the latter published in Watson, *Ceramics from Islamic Lands*, cat. E.16 (p. 194).
96. For the Beveled Style (originally termed the "First Style"), see Herzfeld, *Der Wandschmuck der Bauten von Samarra*, 10–14, and following inventory numbers. For the proliferation of this style at other sites, see Richard Ettinghausen, "The 'Beveled Style' in the Post-Samarra Period," in *Archaeologica Orientalia in Memoriam Ernst Herzfeld*, ed. George Carpenter Miles (Locust Valley, N.Y, 1952), 72–83.
97. See Herzfeld, *Der Wandschmuck der Bauten von Samarra*, 9. A form of the Beveled Style that appears in the ornament of the Mosque of Ibn Tulun in Cairo had been identified before as a major development in the history of vegetal ornament by Alois Riegl in his *Stilfragen*, published in 1893: see Alois Riegl, *Stilfragen: Grundlegungen zu einer Geschichte der Ornamentik* (Berlin, 1893) = *Problems of Style: Foundations for a History of Ornament*, trans. Evelyn Kain, and ed. David Castriota (Princeton, N.J., 1992), 266–72.
98. Many surveys of Islamic art still suggest that the Beveled Style presents evidence for a Muslim aversion to images and a taste for non-figural, abstract compositions. See, for example, Richard Ettinghausen, Oleg Grabar, and Marilyn Jenkins-Madina, *Islamic Art and Architecture 650–1250* (New Haven, 2001), 59. The idea that the Beveled Style is inherently "Islamic" is challenged in Terry Allen, "The Arabesque, the Bevelled Style and the Mirage of an Early Islamic Art," in *Five Essays on Islamic Art* (Sebastopol, Calif., 1988), 1–16.