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## FOUNTAINS OF LIGHT: THE MEANING OF MEDIEVAL ISLAMIC ROCK CRYSTAL LAMPS

The type of *tamthīl* which reveals a similarity between an abstract idea and a concrete object is based on a similarity comprehended, or revealed, by the intellect, and resulting from analogies between correlations of the attributes rather than the attributes themselves.

al-Jurjani, *Asrār al-Balāgha* (11th century)<sup>1</sup>

Two rock-crystal vessels, the first from St. Petersburg (Hermitage Museum, EG 938) and the second from Venice (S. Marco, Tesoro no. 99), are the two remaining medieval Islamic rock crystals which, presumably, were originally used as lamps.<sup>2</sup> The boat-shaped Fatimid rock crystal from St. Petersburg is 22 cm long and is adorned with delicate carving of vine scrolls and half-palmette leaves (fig. 1). In the fifteenth century it was mounted with gilded silver and enamel, probably in an Italian workshop, in order to serve as a goblet.<sup>3</sup> The cylindrical tenth-century Iraqi (?) rock crystal from Venice, which is about 35 cm long (with mounting 49 cm) and 17 cm in diameter, is decorated on its upper part with a carved

Kufic inscription invoking good wishes for the owner<sup>4</sup> and on its lower part with a carved decorative band (fig. 2). A bulge at the bottom of the lamp was recarved in the second half of the thirteenth century and was concealed by a gilded silver filigree mounting, as the lamp was intended to serve as a vase in that church.<sup>5</sup>

The two lamps have a form very different from the common Islamic globular vase-like lamp. This unusual shape can be explained in part by the material from which they were made: the high price of rock crystal and the proficiency required of the carver meant that the manufacture of these precious objects was only patronized by royalty or nobility. Thus these artifacts were probably designed to individual taste, independent of the constraints which normally dictated the form of lamps in other materials. The lamp from St. Petersburg recalls the boat-shaped early Christian metal lamps with the curved handle, the Islamic name of which is *sirāj* (سراج). This kind of lamp might be placed on a ring foot which was usually supported by a stem or a sturdy



Fig. 1. Lamp, possibly Fatimid Egypt. Carved rock crystal. St. Petersburg, Hermitage, EG 938. (Photo: Courtesy, Hermitage Museum, St. Petersburg)



Fig. 2. Lamp, Iraq? 10th century. Carved rock crystal. Venice, San Marco. (Photo: *Der Schatz von San Marco in Venedig*)

disk from below or even hung on chains (fig. 3). The lamp from S. Marco was probably suspended with the help of chains and a metal ring, fixed around the upper rim of the cylindrical body (fig. 4). This kind of lamp seldom appears in medieval Islamic manuscript illustrations.<sup>6</sup>

The aim of this paper is to investigate the meanings attached to rock-crystal lamps in the medieval Islamic world. The shortage of medieval Islamic rock-crystal lamps which survive to our own day governs the direction this research takes, mainly to medieval documents

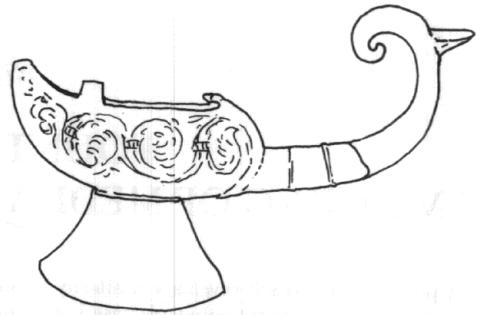


Fig. 3. The lamp from St. Petersburg. A suggested reconstruction of its original state.

and to the plentiful surviving glass lamps, which to some extent make good this deficiency. From them it is possible to fill the vacuum with a hypothetical sketch of what they looked like and to get an idea of what the medieval Islamic attitude towards these precious objects was.

The earliest rock crystal lamp to be mentioned is probably the famous Qulaila which used to hang in the mihrab of the Umayyad Great Mosque of Damascus. Al-Ghuzuli (d. 1412), who drew from earlier authors in his composition, *Matāli' al-budūr fī manāzil al-surūr*, informs us that "in the mihrab of the Companions of the Prophet was a stone of crystal — and there are those who say that it was a precious stone or pearl (دُرّ, *durra*, meaning big precious stone<sup>7</sup>) — and its name was Qulaila (قَلِيلَة), and when the lamps [of the mosque] were extinguished this lamp was brightening for you with its own light."<sup>8</sup> According to him the lamp was brought by stealth to Baghdad during the reign of al-Amin (809–13), the son of Harun al-Rashid, who was a rock-crystal collector, and a glass lamp was sent to Damascus as a replacement.<sup>9</sup> Al-ʿUmari (d. 1348) provides us with quite similar information on Qulaila.<sup>10</sup> He adds, quoting Bedouins who prayed in this mosque, that the Qulaila was sent back to Damascus by al-Maʿmun. At some later stage it was broken and replaced by a glass lamp, and as the latter suffered the same fate no further efforts were made to find a substitute.<sup>11</sup>

Ibn Jubayr, who traveled to the east between the years 1183 and 1185, gives us the following detailed account of Islamic holy places and their interior decoration. In the south aisle, in front of the right-hand corner of the *maq-sūra* of the Great Mosque of Damascus was to be found the head of Yahya ibn Zaqariya (John the Baptist). Above it, he goes on, "is a wooden chest that stands out from the column, and on which is a lamp that seemed to be of hol-



Fig. 4. The lamp from San Marco. A suggested reconstruction of its original state.

low crystal and like a large drinking vessel. It is not known whether it is the glass of Iraq, of Tyre, or some other ware."<sup>12</sup> In Mecca, in the Zamzam Dome, he notices the exclusive presence of rock-crystal lamps, "On the side of the dome which faces the Ancient House are chains on which hang crystal lamps that are lit each night; and on the side to the right, which faces north, it is the same."<sup>13</sup> On his way back to Spain, his homeland, he reaches Sicily. Admiringly he describes the mosque of Qasr Sa'ad in Solanto: "It is an oblong building with long arcades spread with spotless mats of workmanship such as I have never seen better; and within it are hung forty lamps of brass and crystal."<sup>14</sup> Since most of the time Ibn Jubayr distinguishes between lamps made out of different materials and gives us the exact number of each kind, it is likely that the lamps in the mosque of Qasr Sa'ad bore some resemblance to a polycandelon (*būqandalāt*) made of brass rims with suspended rock-crystal vessels.<sup>15</sup>

Ibn al-Najjar in his history of Medina (completed in 1197) tells us about the variety of lamps in the Prophet's tomb. He enumerates more than forty silver lamps, two of crystal and one of gold.<sup>16</sup> Another crystal lamp in a silver box is listed in the inventory of the Ka'ba treasury which was ordered by Sultan Qa'it Bay in 1476.<sup>17</sup>

These documents indicate that rock-crystal lamps were used in the major Islamic shrines. It is no wonder that rock crystal was used in connection with light, notably as lamps. The natural merit of rock crystal, namely its pellucidity, was considered by medieval Islamic physicists, such as Ibn al-Haytham (b. 965) to have reached the third degree of translucence below the most transparent substance, the celestial body, the first and the second degrees being attributed to air and water respectively.<sup>18</sup> This enables it to absorb light without damaging the rays. Furthermore its ability to reflect light magnificently made it preferable to other materials. The description of the Qulaila's own brilliance in the obscurity of the mihrab<sup>19</sup> and al-Tifashi's narrative about work in the rock-crystal mines near Kashghar which was made impossible in daytime by the reflection of the sun rays<sup>20</sup> provide further confirmation of its renowned luminosity.

It is quite possible that the earliest recorded rock-crystal lamps were pre-Islamic products. The delicate carving of the Sasanian cameo of the Cup of Khusrau, datable to the sixth century A.D. (Paris, Bibliothèque Nationale, Cabinet des Monnaies, Médailles et Antiques),<sup>21</sup> hints at the probable existence of a rock-crystal-carving center in Mesopotamia before the rise of Islam. A manufactory of rock-crystal lamps probably existed in the Byzantine Empire. Some late-antique rock-crystal lamps which are excellently preserved are probably products of fifth-century Byzantine workshops. Most of these lamps are shaped in the form of sea creatures or decorated with marine scenes.<sup>22</sup>

This "aquatic" iconography of pre-Islamic rock-crystal lamps might well be explained by the widespread Western conception that rock crystal was congealed water "petrified" in the course of a long and continuous natural process.<sup>23</sup> This belief was adopted by Muslims in medieval times as well. For instance, al-Biruni explained the word crystal (*mahā* or *mihā*) as akin to water (*al-mā*), since both are pure and clear.<sup>24</sup> As for its origin, he accepted the idea of congealed water.<sup>25</sup> He added that the existence of leaves or ears of grain in rock-crystal bowls like the one he had was a proof of the earlier fluid state of the stone.<sup>26</sup>

The dominant impression conveyed by the stone is one of water; thus in medieval Islamic poetry rock crystal

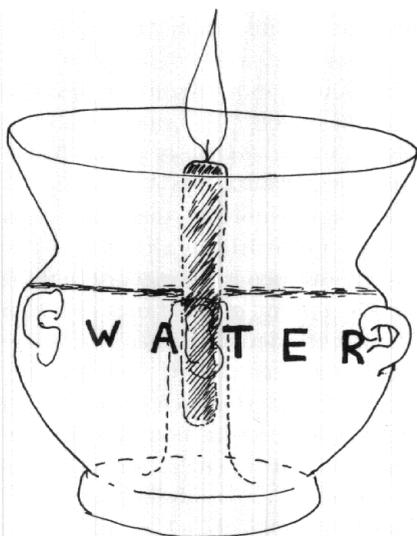


Fig. 5. A drawing of the candle-bearer lighting system.

is compared more than once to water, raindrops, and the waves of the sea.<sup>27</sup> One of Ibn al-Muʿtazz's poems, cited by al-Biruni in connection with rock crystal in *Kitāb al-Jamāhir fī maʿrifat al-Jawāhir*, clearly illustrates this point:

اما رايت حباب الماء حين بدا  
كانه قحف البلور اذا انقلبا

Do you not see the waves of flowing water  
As if they are a rock-crystal bowl [turned] upside down.<sup>28</sup>

This poem of Ibn al-Muʿtazz could fit as a perfect poetical description of some late-antique rock-crystal bowls which served as lamps, especially of the bowl with the fish, shells, crabs and Medusa (?) in the treasury of S. Marco.<sup>29</sup>

Though we do not possess any information on the shape of rock-crystal lamps in mosques, it is quite probable that they had the concave form of a bowl, a cup, a vase, or some other kind of container able to hold an inflammable liquid or to protect the light of a candle in it. The glass finds from Samarra, studied by Lamm,<sup>30</sup> encourage this speculation. Fragments of suspended glass lamps which were hung with chains to a ceiling, either by glass ring handles attached to their bodies or, presumably, by a metal ring fixed to the rim of the glass, frequently have in common the form of a container.<sup>31</sup>

Amongst these finds from Samarra two cup-formed glass lamps explain the system of lighting.<sup>32</sup> The hollowed cylindrical glass tube affixed to their inner base

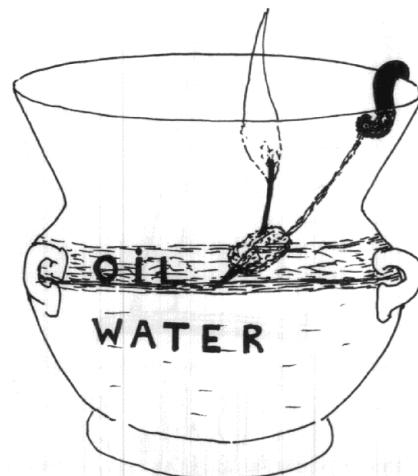


Fig. 6. A drawing of the floating-wick lighting system.

served as a holder for a candle placed within. The high outer walls of the cup might have served as protection against the wind, and the relatively high tube within made it possible to fill the cup with water up to the very top of the tube; in this way the candle was extinguished as soon as it reached the water, thus avoiding any danger of fire (fig. 5).<sup>33</sup> Water was frequently used in Byzantium and in the Islamic regions of the Near East for fire-proofing, especially for suspended lamps where the danger of fire is more acute.<sup>34</sup> This system was not restricted to hanging lamps containing candles but is found in floating wick glass lamps as well. The latter were lit by means of oil floating on water and by various techniques of suspending a cotton wick in the oil. One well-known method was that of the wick holder, a metal S-shaped hook fixed to the cup's rim, but it is probable that the common system, still in use in the Middle East, of cotton wicks floating on oil with the help of cork and tin holders, was also used. In this floating-wick system the oil was continuously absorbed upward by the wick, the top of which was lit. As soon as the oil was completely finished, water extinguished the remaining flame (fig. 6).<sup>35</sup>

The hanging rock-crystal vessel in a mosque, made out of a substance clearly linked to water and probably made safe by water, might have achieved an effect of supra-water, sparkling when the floating wick was lit.

The supreme clarity of the "rocky" limpid water, i.e., of rock crystal, was the reason behind medieval spiritual interpretations which tend to associate the mineral with paradise, the source of life and celestial scenes. In Genesis it is mentioned in connection with one of the four streams of Eden: "A river flowed from Eden to water the

garden, and from there it divided to make four streams. The first is named the Pishon, and this encircles the whole land of Havilah where there is gold. The gold of this land is pure; bdellium (crystal, ברלח) and onyx stone are found there."<sup>36</sup> In the Book of Revelation crystal is used to describe the river of life: "Then the angel showed me the river of life, rising from the throne of God and the Lamb and flowing crystal-clear."<sup>37</sup> In one of the poems of the fourth-century poet Lactantius the Fountain of Life in the "far-off land" is described as follows: "... there is a fountain in the midst, the fountain of life they call it, crystal clear, gently flowing, rich in its sweet waters."<sup>38</sup> Similar views were expressed in medieval Islam. The Arabic name of the stone (*maha*) which encompasses the words *al-mā* (water) and *al-hawā* (air) hints at the two elements of life embodied in that stone.<sup>39</sup> Two verses of sura 37 which describe the destiny of the believers in paradise were cited by al-Biruni in connection with rock crystal, "They shall be served with a goblet filled at a gushing fountain, white, and delicious to those who drink it. It will neither dull their senses nor befuddle them."<sup>40</sup> In one of the versions of the Persian passion plays (*ta'ziya*) performed during the 'Ashura' festivities al-Husayn will be welcomed in paradise by his father 'Ali who will offer him a crystal cup full of cool water from one of the rivers of paradise, the river Kauthar.<sup>41</sup> Not only paradisiac water is offered in a crystal cup; Ja'far al-Sadiq (699-765) recommends enshrining the dry-powder elixir (*al-iksīr*), the secret life-giving mixture, in a crystal or a gold capsule.<sup>42</sup>

These associations of rock crystal with the sources of life and the rivers of paradise might explain the presence of the "hollow crystal" lamp seen by Ibn Jubayr in the Damascus sanctuary of John the Baptist, the man so closely associated with the idea of baptism in water as an act of purification and as a spiritual rebirth. Furthermore, the reference of Ibn Jubayr to the presence of rock-crystal lamps in the Zamzam Dome emphasizes the link between rock crystal and holy water. To this day Zamzam water is drunk by pilgrims for its health-giving power. According to Muslim tradition the well is said to be the very one which was miraculously unveiled in the desert by the angel Gabriel in order to save the life of Hagar and her son Isma'īl after they were evicted by Abraham. The Zamzam well is the "Well of Life" which saved Hagar and Isma'īl, the primordial mother and the son in Arab genealogy.<sup>43</sup>

Since we are concerned with rock-crystal lamps, this "suspended well" should be reexamined in connection with light, and the overlapping areas between the ico-

nography of light and water should be investigated as well.

Sura 24:35 is the most cited verse of the Qur'an regarding light. It reads: "God is the light of the heavens and the earth. His light may be compared to a niche that enshrines a lamp, the lamp within a crystal of star-like brilliance. It is lit from a blessed olive tree neither eastern nor western. Its very oil would almost shine forth, though no fire touched it. Light upon light; God guides to his light whom He will."<sup>44</sup> The idea of light as a life-giving source, i.e., a symbol of God, is widespread, and fire cults were and still are celebrated all over the world.<sup>45</sup> In the Muslim world the divine light was condensed into the form of a transparent suspended mihrab lamp.

The iconography of the mihrab lamp is too vast to be discussed here; the meanings applied to this symbol varied over the course of the Middle Ages.<sup>46</sup> Of no less importance is the role of water in the Qur'an;<sup>47</sup> an abundance of water as well as light is a proof of God's existence. This idea appears frequently in the Old Testament, especially in the Psalms: "You strode across the sea, you marched across the ocean, but your steps could not be seen."<sup>48</sup> Or: "Greater than the voice of ocean, transcending the waves of the sea, Yahweh reigns transcendent in the heights."<sup>49</sup> It is expressed even more forcefully in Habakkuk: "For the country shall be filled with the knowledge of the glory of Yahweh as the waters swell the sea."<sup>50</sup> In the Qur'an, rain, rivers, and ocean are all subject to God's will.<sup>51</sup> Even more important is the emphasis on water as the source of life of any living creature and as the reviving fluid of Nature: "Are the disbelievers unaware that the heavens and the earth were but one solid mass which We tore asunder, and that We made every living thing of water? Will they not have faith?"<sup>52</sup> "It was He who created man from water. . . ;"<sup>53</sup> "... and sent down pure water from the sky, so that We may give life to a dead land. . . ."<sup>54</sup> We may conclude that in the Qur'an, both water and light are regarded as the basic elements of life and reveal God's omnipotence in bestowing life.<sup>55</sup>

The visual effect achieved when these rock-crystal lamps were lit was probably impressive. Light was seen through water, whether the water which protects against fire or the "congealed water" of rock crystal. This effect of light seen through water captivated the medieval Muslim mind, resulting in fanciful and complicated medieval fairy-tale architecture in which the natural antagonism between the two was ostensibly annulled; these miraculous edifices belong to the realm of mechanical devices and are probably variations on the legendary

glass palaces of Solomon and Khusrau.<sup>56</sup> Fortunately, the same idea of lighted water was visually expressed on the bottoms of Persian and Mamluk metal vessels used as water containers. Though the rock-crystal lamps belong to the *ars sacra* of the mosque and the metal vessels to the secular and mercantile level of Mamluk society, one can still study the meaning of the former through the latter. In the course of migrating into a secular context a religious symbol has somehow to be altered in its visual representation, usually by losing its non-figurative character and becoming simpler and easier to understand. The effect of light through water which characterizes rock-crystal mosque lamps is represented on the metal vessels through the motif of sun and fish. By studying this motif at its popular level we might be able to decipher the higher and sometimes even spiritual ideas behind combining light and water.<sup>57</sup> The representation of sea creatures encircling solar symbols has been studied mainly by Richard Ettinghausen, D. S. Rice, and Eva Baer.<sup>58</sup> All three point to the possibility that this motif is connected to the source of life or to paradise; Ettinghausen would like to see in it a variation on the "solar symbol" as a source of life.<sup>59</sup> Rice, who deals with two vessels of the same kind, reads the outer verses, hinting at al-Husayn's being received with paradisiac water from his father's hand, and understands the entire decoration as a Shi'ite manifestation of eternal water.<sup>60</sup> Baer suggests that folk tales popular among the Muslim bourgeoisie are visually reflected on these vessels and understands the motif as meaning a blessing for a good life.<sup>61</sup> Her final piece of evidence, taken from Nizami's *Iskandar Nāma*, in which water from the source of life in the land of darkness is made drinkable with the help of the sun rays, hints at the popular associations of sun and water with the source of life.<sup>62</sup>

It is likely that the light seen through the water-like rock-crystal lamp was understood in medieval times as an allegory for the sparkling water in the legendary source of life. In the lighted rock-crystal lamp it was impossible to differentiate between water and light; water looked like waving rays of light, and rays of light looked like streams of water. The rock-crystal lamp probably corresponds to Nizami's poetical description of the Fountain of Life:

That fountain appeared like silver,  
Like a silver stream which strains from the middle of the rock [the mountain-mine].  
Not a fountain, which is far from this speech;  
But if, verily, it were, it was a fountain of light [not of water].<sup>63</sup>

This dualism between water and light led to confusion whereby, on the one hand, God who is actually light is compared in the Qur'an to a source of water, from which the unbelievers are unable to drink ("The idols to which the pagans pray give them no answer. They are like a man who stretches out his hands to the water and bids it rise to his mouth; it cannot reach it. Vain are the prayers of the unbelievers"<sup>64</sup>), and on the other hand, more than once, a transparent drinking vessel is compared to a lamp or to a source of light. Thus the drinker seems to drink light. Daqiqi, a tenth-century poet from Tus, expressed a similar thought:

Water and ice in crystal bowl combine;  
Behold these three, which like a bright lamp shine.  
Two deliquescent, one hard-frozen see,  
Yet all alike of hue and bright of blee.<sup>65</sup>

Asadi Tusi, another tenth-century poet from Tus, said: "Then they retired to a garden for pleasure and feasting. . . . Goblets like moons in the hands of drinkers were sprinkling the jewels of the Pleiades."<sup>66</sup>

Three other poems of different lyricists are quoted by al-Biruni in his treatise on rock crystal.<sup>67</sup> The first one is by Abu'l-Fadl al-Kaskari:

الراح فوق الراح كالمصباح في  
فرط شعاع والتهاب وضيء  
يحسبها الناظر لاتحادها  
بكاسها قائمة بلا اناء

The wine on top of hand is like a lamp  
overflowing with rays and flames and radiance  
The beholder considers it, because of its unity with its  
beaker, that it is there [exists] without any vessel.<sup>68</sup>

The second one is by Ibn al-Mu'tazz:

It flowed in it [the beaker] a yellow Karkhi [wine from  
Karkh], [brightly shining] as it was burning in his beaker.<sup>69</sup>

The third one is by an anonymous poet:

مشمولة كشعاع الشمس في قدح  
مثل السراب . . .

A chilled [wine] [shines] like rays of sun in a beaker, like a  
mirage.<sup>70</sup>

The confusion between a transparent drinking vessel and a transparent lamp might have its roots in the development of the suspended lamp. The first hanging lamps were shaped like a drinking vessel.<sup>71</sup> These early sus-



Fig. 7. Lamp, Iran? 10th century. Yellowish glass. Copenhagen, David Collection, 14/1964. (Photo: Courtesy David Collection, Copenhagen)

pendent lamps, which were usually lit at sunset (sometimes even by Jews<sup>72</sup>), fulfilled a further purpose during the daytime, when the lamp was extinguished. In one of the documents relating to the caliphate of <sup>ʿ</sup>Abd al-Malik we are told that the oily liquid of the lamps in the Dome of the Rock, whether tamarisk, myrobalan, or jasmine oil, had such a pleasing smell that the pilgrims perfumed themselves with it.<sup>73</sup> Despite this evidence of the dual function of the early drinking-vessel lamp, the fact that the transparent, single hanging Islamic lamp retained throughout the centuries the form of a drinking vessel — the most frequent one is the jug lamp (*qandīl* or *mis-bāh*)<sup>74</sup> which looks like a suspended water jug with its useless flat and stable base — hints at the possibility that this ambiguous shape evoked two ideas at the same time; it was both a source of light and a source of water.

A colorless glass lamp from Iran, datable to between the eighth and the tenth century (Copenhagen, David Collection, 14/1964) seems to illustrate this assumption (fig. 7). The fluid-like decorative glass loops which are attached to the lamp's body give the impression of dripping water flowing out of a vessel.<sup>75</sup> Moreover, the Syrian enamel beakers manufactured in the thirteenth and

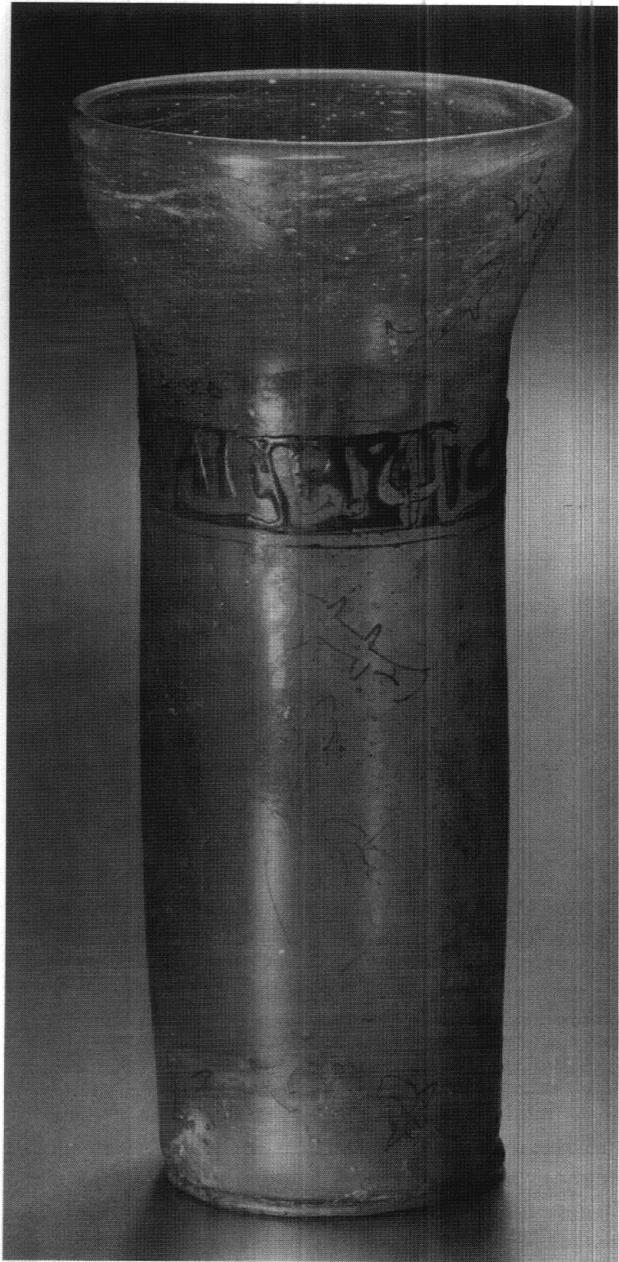


Fig. 8. Beaker. Probably Syria, 13th-14th century. Enamel glass. Düsseldorf, Kunstmuseum im Ehrenhof, Hentrich Glass Museum, P.1939-17. (Photo: Walter Klein; Courtesy Kunstmuseum, Düsseldorf)

fourteenth centuries which simultaneously served as drinking vessels or lamps<sup>76</sup> — some of them decorated with fish, like the thirteenth-century enamel beaker from Damascus or Aleppo (Kunstmuseum, Düsseldorf,

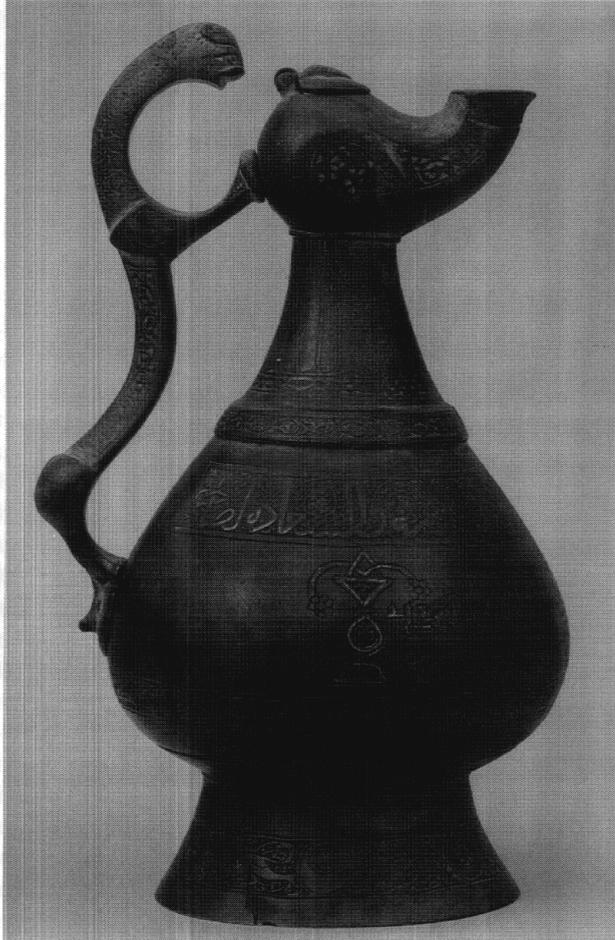


Fig. 9. Jug-shaped oil lamp. Probably Khurasan, 12th century. Bronze inlaid with copper and silver. New York, Metropolitan Museum of Art, Rogers Fund, 1933, 33.96. (Photo: Courtesy Metropolitan Museum of Art, N.Y.)

the Hentrich Glass Collection, P.1939–17; see fig. 8), might even have achieved a similar effect to that of the “fish-pond” vessels as soon as the wick was lit inside the beaker. The twelfth-century hybrid combination of an ovoid ewer body with a traditional oil lamp which served as a spout, to be found in a group of Khurasanian ewers and standing oil lamps (like the one from the Metropolitan Museum of Art, Rogers Fund, 1933, 33.96; see fig. 9),<sup>77</sup> stresses the double meaning of the lamp vase. All these examples hint at a correlation between the iconography of water and light, as this was plastically demonstrated all through the centuries, mainly through the ambiguous shape of a *misbāh*.

It is not surprising to discover that the two remaining Islamic rock-crystal lamps also share the form of a drinking vessel. The form of the boat-shaped lamp from St. Petersburg probably derives from the shape of primitive Mesopotamian lamps which were actually cut-open conch shells.<sup>78</sup> Some of these primitive lamps were unearthed in Ur and are datable to the fourth millennium B.C. (they are now in the British Museum). The inner whorls of the conch shell which were cut away recall the boat shape of the St. Petersburg lamp, and the natural orifice was replaced by a carved tube. Conch shells were frequently used as drinking vessels as well as lamps. Thus the shift of function from a lamp to a drinking vessel in the sixteenth century is understandable. A cone-shaped vessel with a lower bulge, similar to the crystal lamp from the S. Marco treasury, is to be found in one of the painted twelfth-century panels of the Cappella Palatina ceiling in Palermo.<sup>79</sup> A frontal sitting figure raises both arms, holding one vessel in each hand. Although the shape of the vessels corresponds to that of a lamp, the vessels are undoubtedly drinking vessels.

All these facts suggest that the rock-crystal lamp was conceived by the pious Muslim not only as the sacred crystal or glass lamp of sura 24 but also as a drinking vessel, made of paradisiac water, full of luminous water like the clear, pure and sacred water of Eden. Ibn Jubayr was correct when he described the lamp in the sanctuary of John the Baptist as “[seeming] to be of hollow crystal, and like a large drinking vessel.”<sup>80</sup>

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## NOTES

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1. K. Abu Deeb, *Al-Furjānī's Theory of Poetic Imagery* (Warminster, 1979), p. 132.
2. C. J. Lamm, *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten*, vol. 2 (Berlin, 1929–30), pl. 68:5 and 17; for further literature on the lamp from St. Petersburg, see *The Arts of Islam*, Hayward Gallery exhibition (London, 1976), cat. no. 109; *Europa und der Orient 800–1900*, exhibition catalogue (Berlin, 1989), cat. no. 4/10; Richard Ettinghausen and Oleg Grabar, *The Art and Architecture of Islam: 650–1250* (Frome, Somerset, 1987), p. 193, fig. 180. On the lamp from S. Marco, see Kurt Erdmann, “Islamische Bergkristallarbeiten,” *Jahrbuch der Preussischen Kunstsammlungen* 61 (1940): 144, fig. 25; cf., idem, “Opere islamiche,” *Il Tesoro di San Marco*, ed. H. R. Hahnloser, vol. 2 (Florence, 1971), pp. 111–12 (cat. no. 123), pls. XCVI, XCVII; *Der Schatz von San Marco in Venedig*, Römisch-Germa-

- nisches Museum, Cologne (Milan, 1984), pp. 272–81 (cat. no. 36). A pegged beaker of carved rock crystal in the Kestner Museum in Hanover was considered to be a Fatimid lamp (I would like to express my thanks to Dr. Helga Hilschenz-Mlynek from the Kestner Museum who sent me a photograph of, and literature related to, this vessel); see R. Schmidt, "Die Hedwigsgläser und die verwandten fatimidischen Glas- und Kristallschnitarbeiten," *Jahrbuch des schlesischen Museum für Kunstgewerbe und Altertümer*, 6 (1912), p. 76, fig. 27, and Lamm, *Mittelalterliche Gläser*, pl. 61, no. 16. The piece was formerly part of the treasury of the Luneburg church where it served as a relic container. Its form recalls, as far as I am able to judge from the photograph, a typical Islamic candlestick with a bell-formed base and a short neck.
3. *Europa und der Orient*, p. 547.
  4. دولة دائمة ونعمة كاملة وسلامة لمولانا which can be translated as follows: "Permanent power and complete excellence and safety to our lord."
  5. For the illustration of the recarved bulge, see Erdmann, "Opere islamiche," pl. XCVI/a.
  6. See for examples, Esin Atil, *Kalila wa Dimna* (Washington, D. C., 1981), fig. 22; D. Haldane, *Mamluk Painting* (Warminster, 1978), pl. 37.
  7. Lamm translates *durra* as "pearl" and points out that al-Ghuzuli uses the word *durra* to describe any big precious stone. See Lamm, *Mittelalterliche Gläser* 1: 513.
  8. ʿAlī ibn ʿAbd Allāh al-Bahāʿī al-Ghuzūlī, *Matālīʿ al-budūr fi manāzil al-surūr*, vol. 2 (Cairo, 1882–83), p. 284. Lamm translates the name Qulaila in this passage as "the little vase" (*ibid.*); this name, though written with *qaf* and not with *kaf*, might be derived from the saying that the lamp was shining in the mihrab every night (*kul-layla*). A small rock-crystal vase, the upper projecting rims of which might hint at its use as a lamp, is in the S. Marco treasury; see *Il Tesoro*, cat. no. 84.
  9. Al-Ghuzūlī, *Matālīʿ al-budūr*, 2: 284.
  10. Ibn Fadl Allāh al-ʿUmārī, *Masālik al-absār fi mamālik al-amsār*, ed. A. Zaki Pasha, vol. 1 (Cairo, 1924), pp. 193–94.
  11. *Ibid.*; al-Qadī al-Rashīd (1052–71) informs us of the unfortunate end of this stone — al-Mahdī gave it to his slave girl Hasanah who cut it into two dice for backgammon. See G. H. Qadumi, "A Medieval Islamic Book of Gifts and Treasures: Translation, Annotation and Commentary on the *Kitāb al-Hādāya wa al-Tuhaf*," Ph.D. diss., Harvard University, 1990, p. 180, para. 218; this marvelous story of a light-giving precious stone might derive from the Alexander legend in which Alexander, on his way back from the Land of Darkness, found a luminous stone in the belly of a fish. The stone shone on its own; therefore Alexander made a lamp out of it which he used at night. See J. Ruska, *Das Steinbuch des Aristoteles* (Heidelberg, 1912), p. 8.
  12. Abu'l-Husayn Muhammad ibn Jubayr, *Rihla*, trans. R. J. C. Broadhurst as *The Travels of Ibn Jubayr* (London, 1952), p. 284.
  13. *Ibid.*, p. 96.
  14. *Ibid.*, p. 346.
  15. The Arabic medieval term *būqandalāt* is mentioned in the Geniza letters; see S. D. Goitein, *A Mediterranean Society*, vol. 4 (Berkeley, Los Angeles, London, 1983), p. 133. For an illustration of an Islamic polycandelon, see Richard Ettinghausen, "Sasanian and Islamic Metalwork in Baltimore," *Apollo* 84 (1966): 466, fig. 6. The term *zujaj*, which appears in the cases of the Zamzam Dome and Qasr Saʿd, and the term *ballūr*, in the case of the sanctuary of John the Baptist, were both translated by Broadhurst as "crystal". For the Arabic text, see Abu'l-Hasayn Muhammad ibn Jubayr, *Rihla* (Leiden, 1907), pp. 101, 329, 273.
  16. M. Aga-Oglu, "Remarks on the Character of Islamic Art," *Art Bulletin* 36 (1954): 183.
  17. *Ibid.*
  18. J. Baermann, "Abhandlung über das Licht von al-Haitam," *Zeitschrift der deutschen morgenländischen Gesellschaft* 36 (1882): 216.
  19. Al-Ghuzūlī, *Matālīʿ al-budūr*, 2: 284.
  20. Ahmad ibn Yusuf al-Tifāshī, *Azhār al-afkār fi Jawāhīr al-ahjār* (Cairo, 1977), p. 202; J. Ruska-(C. J. Lamm), "Billawr," *Encyclopaedia of Islam*, 2nd. ed., vol. 1 (Leiden, 1986), p. 1220 (henceforth *EI*<sup>2</sup>).
  21. B. de Montesquiou-Fezensac and D. Gaborit-Chopin, *Le Trésor de Saint-Denis* (Paris, 1977), pp. 62–63, pl. 46.
  22. A fish-shaped rock-crystal lamp, datable to the fifth century A.D., is in the treasury of S. Marco (no. 84): *Il Tesoro*, pl. 64, cat. no. 77; for a color plate, see *Der Schatz von San Marco*, p. 94, with bibliography. A shell-shaped rock-crystal lamp was found in 1544 in the grave of Empress Maria (d. A.D. 407); see G. B. de Rossi, "Disegni d'alquanti vasi del mondo muliebre sepolto con Maria moglie die Onorio imperatore," *Bollettino di Archeologia Cristiana* 1 (1863): 53. Rock-crystal lamps decorated with sea creatures are to be found in the treasury of S. Marco (no. 50); see *Der Schatz von San Marco*, pp. 90–93 (with bibliography); and in New York (Metropolitan Museum of Art, bequest of Mrs. William H. Moore, 1955, 55.135.7); see *Age of Spirituality*, exhibition catalogue, Metropolitan Museum of Art, ed. Kurt Weitzmann (New York, 1979), cat. no. 186.
  23. The Latin name *crystallum* (clear ice) derives from Greek, where it means "to congeal with frost"; see "crystal", *Oxford English Dictionary*, vol. 4 (Oxford, 1989), p. 97; *EI*<sup>2</sup>, s.v. "Billawr."
  24. P. Kahle, "Bergkristall, Glas and Glasflüsse nach dem Steinbuch von el-Bērūnī," *Zeitschrift der deutschen morgenländischen Gesellschaft* 90 (1936): 325.
  25. *Ibid.*, p. 335.
  26. *Ibid.*, pp. 341–42.
  27. *Ibid.*, pp. 355–56.
  28. The poem was translated by Kahle into German: "Siehst du nicht die Wellen des Wassers, wenn sie erscheinen, als ob sie eine Bergkristallschale wären, wenn sie umgedreht ist"; *ibid.*, p. 355.
  29. See above n. 22.
  30. C. J. Lamm, *Die Ausgrabungen von Samarra*, vol. 4 (Berlin, 1928), pp. 30–37.
  31. *Ibid.*; G. M. Crowfoot and D. B. Harden, "Early Byzantine and Later Glass Lamps," *Journal of Egyptian Archaeology* 17 (1931): 196–208, pls. 28–30.
  32. Lamm, *Samarra*, nos. 148.I, N.547; 149.I, N.552.
  33. *Ibid.*, p. 35.
  34. Crowfoot, "Early Byzantine Lamps," pp. 207–8.
  35. Al-Samhudi vividly describes an incident in the mosque of Medina, which goes back to the time of the Prophet. Two persons, Tamim al-Dari and his servant Abu'l-Barrad, brought from Syria lamps, oil, and chains. On Thursday night the lamps were hung in the mosque of Medina, and water, oil, and wicks were put in them by Abu'l-Barrad. On Friday, when the Prophet entered the mosque, he was so astonished by the bril-

- liance of the lamps that he addressed Tamim and said: "You have illuminated Islam, as Allah enlightened your path" (this incident was quoted by M. Clermont-Ganneau, "La Lampe et l'Olivier dans le Coran," in *Revue l'Histoire des Religions* 81 (1920): 259; on the floating-wick lighting system, see F. W. Robins, *The Story of the Lamp (and the Candle)* (London, New York, Toronto, 1939), pp. 75–79; for a color illustration of a tenth-century Byzantine floating-wick lamp, see Ernst Kitzinger, *Early Medieval Art* (London, 1983), pl. 9.
36. *Genesis* 2: 10–12; The word *bdellium* was understood as pearl in the Hebrew translation of the *Stone Book* of Aristode; see Ruska, *Steinbuch des Aristoteles*, pp. 62–65. Rabbinical commentators identify the river Phison in Eden with the Nile, thus the land of Havilah would be Egypt; see Goitein, *Mediterranean Society*, 4: 200, n. 357; St. Jerome identifies the river Phison as the Ganges: F. A. Wright, *Selected Letters of St. Jerome* (London-New York, 1933), p. 403.
  37. *Revelation* 22: 1.
  38. Paul A. Underwood, "The Fountain of Life in Manuscripts of the Gospels," *Dumbarton Oaks Papers* 5 (1950): 48.
  39. Kahle, "Bergkristall," p. 326.
  40. *Ibid.*, p. 329; sura 37: 46–47.
  41. D. S. Rice, "Two Unusual Mamluk Metal Works," *Bulletin of the School of Oriental and African Studies* 20 (1957): 493. The Shi'ite association of rock crystal with paradise could hint at the meaning which might have been attached to royal Fatimid rock-crystal tableware; many pieces of which are in Christian-church treasuries.
  42. J. Ruska, *Arabische Alchemisten II, Ġa'far al-Sādiq, der sechste Imam* (Heidelberg, 1924), p. 118.
  43. B. Carra de Vaux, "Zamzam," *Encyclopaedia of Islam*, 1st ed., vol. 4 (Leiden and London, 1936), pp. 1212–13 (henceforth *EI*).
  44. Though the term *zujāja* (زجاجة) is translated by Palmer as glass, I chose Dawood's translation: N. J. Dawood, *The Koran* (Harmondsworth Penguin Classics, 1990). For a discussion of this verse and especially on the polemical term *mishkāt* (مشكاة, niche?) which could be translated as metal carapace (*mikshāt*) and thereby might suggest a suspended lamp; see Clermont-Ganneau, *La Lampe*, pp. 217–22.
  45. Robins, *Story of the Lamp*, pp. 143–48; for a résumé of the Islamic interpretations of light, see T. de Boer, "Nur," *EI*, 955–56.
  46. Clermont-Ganneau, *La Lampe*, pp. 213–59; for specific interpretations of the mihrab lamp, see E. C. Dodd, "The Image of the Word," *Berytus* 18 (1969): 56; G. Fehérvári, "Tombstone or Mihrab? A Speculation" *Islamic Art in the Metropolitan Museum of Art* (New York, 1972), pp. 241–54; Caroline Williams, "The Cult of 'Alid Saints in the Fatimid Monuments of Cairo, Part I: The Mosque of al-Aqmar," *Muqarnas* 1 (1983): 45–49; R. Blakstad, "A Niche for Lights," *Arts and the Islamic World* 2 (Autumn, 1984): 17–30; Nuha N. N. Khoury, "The Mihrab Image: Commemorative Themes in Medieval Islamic Architecture," *Muqarnas* 9 (1992): 11–28.
  47. S. L. Mostafa, "The Cairene Sabil: Form and Meaning," *Muqarnas* 6 (1989): 34–37.
  48. Psalms 77: 19.
  49. *Ibid.*, 93: 4.
  50. *Habakkuk*, 2: 14.
  51. *Ibid.*, 16: 14; 15: 22; 56: 68–69.
  52. *Ibid.*, 21: 31.
  53. *Ibid.*, 25: 54.
  54. *Ibid.*, 25: 48–49.
  55. The idea of life-giving water can be found in many Christian theological commentaries; see mainly Underwood, "Fountain of Life," pp. 43–138.
  56. Among these spectacular inventions is a fountain of light which was in the eleventh-century house of the Cordovan Samuel han-Naghidh. From the fountain's head, water fell in the form of a dome upon an alabaster floor; lights were set in that "dome" and on its top was a wax light. On this fountain and the glass, water, and light pavilion of Yahya ibn Isma'īl al-Ma'mun from Toledo (1043–75), see F. P. Bargebuhr, "The Alhambra Palace of the Eleventh Century," *Journal of the Warburg and Courtauld Institutes* 19 (1956): 210–12, n. 60.
  57. For Sufis the reflection of the sun in a pool of water was an allegory for being (the phenomenal world) reflected in not-being; see E. G. Browne, *A Literary History of Persia* (London, 1902), p. 439.
  58. Richard Ettinghausen, "The 'Wade Cup' in the Cleveland Museum of Art: Its Origin and Decorations," *Ars Orientalis* 2 (1957): 327–66; D. S. Rice, "Two Unusual Mamluk Metal Works," pp. 487–500; Eva Baer, "'Fish-Pond' Ornaments on Persian and Mamluk Metal Vessels," *Bulletin of the School of Oriental and African Studies* 31 (1968): 14–27.
  59. Ettinghausen, "Wade Cup," pp. 341–56.
  60. Rice, "Two Unusual Mamluk Metal Works," pp. 492–94.
  61. Baer, "Fish-Pond Ornaments," pp. 26–27.
  62. *Ibid.*, p. 27.
  63. Abū Muhammad Ilyas ibn Yusuf Nizām al-Dīn, *Sikandar Nāma, e bara or Book of Alexander the Great*, trans. and annotated H. Wilberforce Clarke (London, 1881), canto 69: 21, 22, p. 801; the term "Fountain of Light" appears in the Dead Sea Scrolls which were discovered in Qumran and are dated to the first century A.D. in *Hodayot* (הודיות), 3: 18–19, the fountain of life became a fountain of light: "And a fountain of light was an eternal source of life, all the wicked will be burned in the sparks of its splendour" (והיה מעין אור למקור עולם לאין הסר, (בשביבי נגהו ובערו כל בני עילה) (...), or in *Serach Hayahad* (סרך היחד), 3: 19, "In a fountain of light are the sources of truth" (במעין אור תולדות האמת). See D. Flusser, *Jewish Sources in Early Christianity* (Tel Aviv, 1979), p. 102 (in Hebrew). The connection between light and the fountain of life is attested in Psalm 36: 9: "Yes, with you is the fountain of life, by your light we see the light." Even the modern glass-crystal lamps, many of which adorn old and modern mosques, keep this tradition of the "fountain of light." The drop-like and sharply cut glass-crystal pieces of which the entire lamp is made recall an elaborate water fountain with its glittering droplets.
  64. Qur'an 13: 14.
  65. Browne, *Literary History of Persia*, p. 462.
  66. W. Hanaway, "The Concept of the Hunt in Persian Literature," *Bulletin of the Museum of Fine Arts, Boston* 69 (1971): 24.
  67. All were translated by Kahle, "Bergkristall," pp. 326–27.
  68. "Der Wein oberhalb der Hände ist wie eine Lampe im übermass von Strahlen und Flammen und Glanz, Wer ihn sieht, könnte ihn wegen seines Einsseins mit seinem [des Trinkers] Becher für etwas halten, das da steht ohne Gefäss," *ibid.*, p. 326.
  69. "Es lief in ihnen [den Bechern] ein gelber karchitischer [Wein aus Karch], [so leuchtend] als ob er in seinem Becher brennte. . .," *ibid.*, p. 327.

70. "Ein gekühlter [Wein] [leuchtend] gleich Sonnenstrahlen in einem Becher, wie eine Luftspiegelung. . ." *ibid.*, p. 327.
71. Robins, *Story of the Lamp*, pp. 75–79; Crowfoot, "Early Byzantine Lamps," pp. 197–99.
72. Guy Le Strange, *Palestine under the Moslems: A Description of Syria and the Holy Land from A.D. 650 to 1500* (London, 1890), p. 149.
73. *Ibid.*, p. 147; perfume-burning lamps were used by Christians as well. See J. Wilkinson, *Jerusalem Pilgrims before the Crusades* (Jerusalem, 1977), p. 83; G. Soulier, *Les influences orientales dans la peinture toscane* (Paris, 1924), p. 60, n. 2.
74. The term *qandil* is more general and refers to any single suspended lamp. *Misbāh* is the specific name for a globular-shaped suspended lamp. For this definition and for the development of the jug lamp, see D. S. Rice, "Studies in Islamic Metal Work V," *Bulletin of the School of Oriental and African Studies* 17 (1955): 206–31.
75. A colorless glass mosque lamp with thread designs on its handles (similar to the one from Copenhagen) was exhibited in the Islamic Art Gallery of the King Faisal Center for Research and Islamic Studies in Riyadh; see *The Unity of Islamic Art*, exhibition catalogue (Westerham, 1985), cat. no. 139. Another one is in Jerusalem in the L. A. Mayer Memorial Institute for Islamic Art, G83, and a simpler one in the Düsseldorf Kunstmuseum, the Hentrich Glass Collection, P. 1973–91. For illustrations and related literature on this kind of mosque lamp, see Axel von Saldern, *Kunstmuseum Düsseldorf, Glassammlung Hentrich, Antike und Islam* (Düsseldorf, 1974), p. 213, cat. no. 324.
76. Lamm, *Mittelalterliche Gläser*, vol. 2, pls. 127 (7), 128 (1–3), 138 (1, 7), 141 (3–5), 163 (4, 5), 164 (1, 2, 6), 166 (7, 8), 167 (4), and a glass lamp decorated with fish, pl. 115 (13). For a discussion of this group of enamel beakers, see W. B. Honey, "A Syrian Glass Goblet," *Burlington Magazine* 50 (1927): 289–94.
77. A similar standing lamp in the shape of a ewer is in the art gallery of the University of Notre Dame; see *Islam and the Medieval West*, exhibition at the University Art Gallery of New York State (New York, 1975), cat. no. 26. On such ewer lamp vessels, see J. W. Allan, *Metalwork of the Islamic World: The Aron Collection* (London, 1986), p. 126, cat. no. 32; G. Fehérvári, *Islamic Metalwork of the Eighth to the Fifteenth Century in the Keir Collection* (London, 1976), cat. no. 54 (both of them point to additional comparative material); and A. S. Melikian-Chirvani, "Les Bronzes du Khorassan 3," *Studia Iranica* 4 (1975): 198–201, figs. 9–11. I would like to express my thanks to Mrs. Ulrike al-Khamis who drew my attention to the Geniza letters where a description of a lamp vase, owned by Yemenite Jews, can be found: "The Jews of San'a, Yemen, had a lamp consisting of an upper smaller container for oil and a wider, hollow, and open base. When not used as a lamp, the vessel was turned upside down and served as a vase for flowers," see Goitein, *Mediterranean Society* 4: 150.
78. Robins, *Story of the Lamp*, pp. 39–43. For a comprehensive discussion of the Islamic boat-shaped drinking vessel, see A. S. Melikian-Chirvani, "From the Royal Boat to the Beggar's Bowl," *Islamic Art* 4 (1990–91): 3–111.
79. For a drawing of this panel, see F. Gabrieli and U. Scerrato, *Gli arabi in Italia* (Milan, 1979), p. 390. For an illustration, see U. Monneret de Villard, *Le pitture musulmane al soffitto della Cappella Palatina in Palermo* (Rome, 1950), fig. 199.
80. Ibn Jubayr, *Travels*, p. 284.