European Glass and Ceramics in Oriental style

Introduction*

In the 19th century European craftsmen realized that the handicrafts produced until then did not meet the requirements of the times. Through the French revolution new strata of society had become the main consumers of handicrafts. Thus the production of industrially made goods at low prices commenced, so as to cope with the larger number of consumers. Private producers as well as state–run enterprises realized that a wide–ranging reform movement had to come about in the field of handicrafts. Only thus could national styles be promoted at a time of emerging nation states. In the course of this development state–run schools for commercial art were founded. For the promotion and display of national styles and of international commerce, World Exhibitions were held from 1851, where not only European countries participated but also countries from the Far and Near East and other parts of the world. Thus the art of Islamic countries was discovered as something particularly exemplary. Art objects from these countries were bought by the many schools of arts and crafts and by the newly established museums of handicrafts. This also led to the emergence of large private collections and collections by business firms. Artists and theorists took note of all the genres of art and studied material technology, systems of decoration and colour design. Every new theory requires publications in order to propagate and explain the exemplary pieces by select specimens. Thus a market arose for pattern books meant for further education. The most well–known works were those by Christopher Dresser,1 Adalbert de Beaumont and Eugène Collinot,2 Albert Racinet3 and Achille Prisse d’Avennes,4 which followed up Owen Jones’ Grammar of Ornament.5 Ceramics and glassware were the materials which had a great influence on the European market. Ceramic tiles were popular for decorating houses and apartments (Minton Hollins & Co., Tiles, Inventory No. J 360, v. infra, p. 200). However, the products of European firms were not only sold in the European market but found a clientele in the Orient as well. Thus it is known that the Egyptian Khedive gave commissions to the ceramic makers Ulisse Cantagalli (Florence), William de Morgan (London), Vilmos Zsolnay (Pécs) and to the New York glassware artist Louis Comfort Tiffany. The Ottoman Sultans commissioned ceramic artists like Théodore Deck for decorating their palaces and mausoleums, and also their mosques. In 1865 Eugène Collinot (Paris) received a medal of honour from Naṣiraddin, the Shah of Persia, for his services in the revival of Persian ceramics. Hippolyte Boulenger (Choisy–le–Roi) was consulted for furnishing a part of the Yeni Cami («New Mosque») of Istanbul.

When we look today at European ceramics and glassware with regard to their relationship to the Islamic world, the results are striking: the majority of pieces produced by European companies were executed in the Ottoman style and in forms of decoration derived from it. That was primarily because the floral ornamentations of Ottoman art were captivating due to their exemplary manner of two–dimensional drawing. Moreover, European buyers found them attractive because they [178] could recognise the flowers used in ornamentation (such as roses, hyacinths, carnations and tulips). Such motifs of ornamentation could either be directly adopted or their details could be incorporated into one’s own compositions.

* Introduction and the description of the objects by Annette Hagedorn, Berlin; edited at the Institute for the History of Arab–Islamic Science.
4 L’art arabe d’après les monuments du Kaire depuis le VIIe siècle jusqu’à la fin du XVIIe siècle, Paris 1869–1877.
In the collection of the Institute for the History of Arab–Islamic Science, there are examples of the basic possibilities of transfer of the art forms of the Islamic world to Europe. These will be mentioned here: a plate like the one by Théodore Deck (Inventory No. J 358, see below, p. 198) originated in close proximity to Ottoman ceramics of the 10th/16th and 11th/17th centuries. Ph. J. Brocard produced a copy of Mamlık glass work (vase J 340, see below, p. 180). In other pieces, only some elements were directly copied from the prototypes, but these were put together in a manner that was the maker’s own achievement. Such objects were often used for the didactic purposes of learning from the prototypes, for understanding the principles of their ornamentation in order to be able to create something new on this basis. Significantly, the firm of Lobmeyr mentioned in each case the German translation of the Arabic texts on the underside of their glassware, thus endowing them with an academic character.

What was innovative and decisive for the future of European handicrafts were the technologies newly developed at this time, and these could be developed only because of such an intense encounter with oriental objects (cf. Th. Decker, plate J 361, see below, p. 201; Lobmeyr, various forms: J 343–345, 347 and 349, see below, pp. 184–186, 188, 190).

The third variant of the transfer is documented by specimens, for the ornamentation of which such motifs were borrowed which were traditionally part of the total design in Islamic art, but which were converted here into a free–standing single motif. Thus these were virtually «monumentalized». Such decorations corresponded to the spirit of the period of historicism. An example of this is the goblet by the firm Pfulb & Pottier in the collection of the Institute for the History of Arab–Islamic Science (Inventory No. J 342, see below, p. 183).

In the fourth type of transfer, the craftsman conspicuously drew upon Islamic prototypes, created nevertheless something of his own, such as the vase of the firm of Fritz Heckert (Inventory No. J 348, see below, p. 189) and the vase of the firm De Porceleyne Fles from Delft (Inventory No. J 363, see below, p. 202). These pieces in particular show that the designers had a more profound knowledge of Islamic art. For this they travelled throughout Europe and studied the objects in public and private collections, but they also went to countries of the Islamic world in order to improve their knowledge of the subject. Important pieces in the collection, which show a further advance towards the art of modern times, have their own style even though they show a conspicuous link to Oriental art. In this process, it is striking that the inspiration came not only from the art of the Islamic world but also from that of East Asia. In the case of the specimen from the production of Clément Massier, it is obvious how great an influence Arabic script could have on modern ceramics when it served as a repertoire of abstract patterns, detached from its original meaning (Inventory No. J 364, see below, p. 203). On the other hand, the long–necked vases of the firm of Lobmeyr (Inventory No. J 357–1 and 357–2, see below, p. 197) display influences from the East–Asian area and are very close to art nouveau in their ornamentation.

On the whole, the items of the collection provide examples of the path from direct copying of the prototype during the period of historicism to the new forms of ornamentation which already correspond to the forerunners of art nouveau. They show the importance of the art of the Islamic world and of East Asia for the development of a modern style of ornamentation in European arts and crafts.
Vase
in the form of a hanging mosque lamp

Anonymous, probably from France, Second half of the 19th c.
Colourless glass, mould–blown.
Enamel painting in blue, red and gold.
Red contour lines.
On the base trademark or the name of the firm ground off.
Height: 23.5 cm; Diameter: 19.5 cm.
(Inventory No. J 339)

The vase follows the common shape and ornamentation of Egyptian mosque lamps of the 8th/14th and early 9th/15th centuries. In this period hundreds of hanging lamps for mosques were commissioned by rulers and members of the nobility in Mamlūk Egypt.1 Because of the quality of the technique of enameled glass and gold painting, the mosque lamps had been admired in Europe since the Renaissance. In the 19th century many of the lamps were brought from Egypt to Europe and sold, particularly at the Paris art market. Thus they were included in private collections, but were also sought-after objects of study for the newly emerging arts and crafts museums all over Europe. The lamps were either copied by many European glass manufactories or imitated more or less freely, following the Mamlūk style. In the late 19th century, vases were finally made in the form of mosque lamps with completely new European ornamentation. The ornamentation of the vase can be associated with an original mosque lamp of the Spitzer Collection in Paris, which Pfülb & Pottier could have personally seen at the Paris collection.2 This hanging lamp was made around 760/1360 in Cairo. Here the external shape was borrowed as also the two bands of writing and the medallions with floral motifs. The ornamentation was altered. The vase is heavily decorated with gold, and at the beginning of the neck a band of quatrefoil blossoms was added in gold. This motif is often also used in the surface design of Mamlūk mosque lamps, though not with a gold background.

Similar mosque lamps were often copied in the 19th century. The well-known and larger glassware producers like Brocard (Paris),3 Lobmeyr

1 Gaston Wiet, Lampes et bouteilles en verre émaillé, Cairo 1912 (= Catalogue générale du Musée Arabe du Caire).
[180] (Vienna), Heckert (Petersdorf), Gallé (Nancy) and Inberton (Paris) stamped their copies with their signatures. But other firms made unsigned specimens as well. Often these reached the art market subsequently as counterfeits. The object described here originally had a trade mark on the base in a circular shape with a surrounding band. However, this signature was ground off at an unknown point of time so that the item could be sold as an original piece.


Ausstellung im Haus Schlesien, Königswinter 1992, Cat. No. 50.

Cf. Nancy, Musée de l'Ecole de Nancy, Inventory No. 171 (illustration in: Doris Moellers, Der islamische Einfluß auf Glas und Keramik im französischen Historismus, Frankfurt/Main etc. 1992, Cat. No. 56).


Vase

Philippe-Joseph Brocard, Paris
Free-blown, greenish transparent glass.
Enamel painting in red, blue, white and green.
Gold lines within the enamel ornamentation.
On the base signature in red lettering:
Brocard Paris 1869.
Height: 31.8 cm
(Inventory No. J 340)

The egg-shaped body of the vase rises from a low profiled foot-ring and turns, without any transition, into the straight upright neck, which is profiled at its upper end with a pinched ring and terminates with a bowl-like spout.
The vase is decorated with two horizontal bands containing ornaments of tendrils with bifurcating leaves, executed in red, blue and green enamel.
The broader lower band on the body of the vase is interspersed with three medallions on a white background; its ornamentation also consists of tendrils with bifurcating leaves. This motif had arisen in a succession of stages of development since Late Antiquity and was incorporated into Islamic art. It was employed in the entire area of the Islamic world as an ornament in architecture, in book illumination as well as in the ornamentation of many types of applied art.
[181] From the medallions on the body plant motifs emerge which terminate in stylized animal heads. Such motifs had been developed since the 5th/11th century in Seljuk art and had belonged since that time to the repertoire of ornamentation of all genres of Islamic art.

The vase is a copy of a long-necked Mamlūk vase of the 8th/14th century. At the time when Brocard made his copy, this Mamlūk vase belonged to the large art collection of Baron Edmond de Rothschild (1827-1905) in Paris. While visiting the collection, Brocard probably noticed the vase.

Brocard's vase is in its shape a true copy of the Mamlūk model. The ornamentation also follows the original in its structure. But Brocard changed the elements of the ornamentation by simplifying the line-work of the plant motifs within the ornament bands and medallions. An identical piece (but without the signature) was acquired for the Österreichisches Museum für angewandte Kunst at the World Exhibition of Vienna in 1873. Since the vase in the collection with which we are dealing here was produced earlier in 1869, it follows that Brocard, once he had found suitable prototypes, copied them for many years. Whether the manufacture of pieces without signature allows the conclusion that Brocard glassware was either given as presents or sold by some of his customers as genuine Oriental glassware cannot be established, but is conceivable. In some important glassware collections in museums or in private possession such glassware as the one discussed here was assessed as genuine medieval glassware. Such glassware was also in the collection of Baron Edmond de Rothschild.

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Bowl

Philippe-Joseph Brocard
Free-blown,\(^1\) colourless glass.
Enamel painting in red, blue, white and green. Within the enamel ornamentation, some decorative elements are executed in gold.
On the base signature in red lettering:
J. Brocard, Meudon\(^2\) (1867 and later).
Diameter: 20.5 cm; height: 11.5 cm.
(Inventory No. J 341)

Without a foot ring, the bowl rises, protruding a little, beyond that up to a vertical strip; the wall of the bowl goes up steeply, drawn inwards. The upper end is formed by a narrow, vertical strip as well as a narrow, profiled rim of the mouth.

With this bowl Brocard drew upon Syrian metalwork of the 8th/14th century, without copying these outright.\(^3\) Although in the case of this vessel he was inclined towards a common bowl shape used frequently in Syria and Egypt, he changed the Islamic ornamentation in a supposedly «improved Oriental style» (an expression popular in the 19th century). In the Islamic art of previous centuries the overlapping of ornamentation motifs like medallions and cartouches was unusual. These were placed next to each other and only interlinked by encircling rims. Multiple layers occurred only in the decoration of individual segments of facets. An interweaving such as Brocard used it in this piece was sought after and used only in Spanish-Moorish art. Good examples [183] of this are the stucco decorations of the Alhambra. In his Grammar of Ornaments

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\(^1\) K. Morrison McClinton, Brocard and the Islamic Revival, op. cit., p. 280.
\(^2\) South-east of Paris. Here, in an ancillary building of the castle, Madame Pompadour established in 1756 the factory for refined glass, «Cristalleries des Sèvres». After her death, her brother continued the factory under the name «Royales de Sèvres». In 1870 the firm became the property of Alfred Landier and Charles Haudaille. The signature is meant to show that J. Brocard also worked at Meudon.
\(^3\) A comparable piece for the shape is a water basin from the 8th/14th century from Syria/Egypt (Berlin, Museum für Islamische Kunst, Inventory No. I.921; see Klaus Brisch (ed.), Islamische Kunst, Mainz 1985).
Glass Goblet

Pfulb & Portier, Paris and Nice
Colourless glass, mould-blown.
Coloured enamel painting on golden background.
On the base, signature in red enamel colour:
A. Pfulb 1877 170 [number of the model].
Height: 25.0 cm.
(Inventory No. J 342)

For the glass goblet of Pfulb & Pottier, a shape was developed that cannot be traced back to any actual prototype. Upon a wide foot, a glass cup was set up which rises almost at right angles from a foot ring. Although the shape of the upper part of the drinking vessel recalls Syrian straight glasses of the second half of the 7th/13th century, it should be noted that the proportions are changed here, as the glass cup was shaped narrower and taller. The decoration consists of five fields in gold, which are extended on to the foot and the cup, with enamelled ornamentation motifs. The main motif of the goblet is a medallion of interwoven stars with the terminations rounded up at the top.

Other objects of the firm in other collections:
Comparable pieces: In the same shape but with different ornamentation and larger size: Stuttgart, Württembergisches Landesmuseum, Inventory No. 1981-3.\(^1\) In a somewhat modified form: Paris, private collection.

\(^1\) cf. Frankfurt, Museum für Angewandte Kunst.
\(^2\) Illustration D. Moellers, *Der islamische Einfluß*, op. cit., illustration 15.
Plate

J. & L. Lobmeyr, Vienna (No. 3873)¹
(Design Johann Machytka and Franz Schmoranz 1878)
Colourless, so-called «crystal glass».²
Gold painting, blue enamel painting.
On the base, Lobmeyr monogram in white enamel paint.
Diameter: 38.0 cm.
(Inventory No. J 343)

The ornamentation of the plate consists of 12 pointed oval fields, the edges of which partly intersec−
t with one another in the lower half. The pointed ovals are alternately decorated with blue enamel or gold ornaments. The blue fields are covered with abstract script, which proceeds inwards from the two ends; the patterns incorporate geometrical knots. The gold fields are filled with floral ornamentation constituted by two palmette blossoms, standing one above the other; on the sides there are other fanciful blossoms of gold and blue colour. In the spandrels between the pointed ovals there are simi−lar floral ornaments. The blue ovals are surrounded by ornamentation with script in gold painting.
The centre of the plate is covered by a circular field formed by an ornamentation made up of a six−lobed star. The spandrels at the tips of the star are each intersected by circle−like formations. A script band runs around the field with the text: «Reason is the best foundation and the fear of God the best gar−ment.»³ The twelve pointed oval fields are framed with the following inscription: «He who says something about a matter that does not concern him hears what he does not like.»⁴

¹ Vienna, Österreichisches Museum für angewandte Kunst, Catalogue of Lobmeyr’s work, vol. XV, page P.
² Information on a design sketch, Vienna, Österreichisches Museum für angewandte Kunst.
³ The author wishes to thank Mrs. G. Helmecke (Berlin, Museum für Islamische Kunst) and Professor A. Karoumi (Berlin) for reading the inscriptions and for providing their literal translation. On the design sketch in Vienna, Österreichisches Museum für Angewandte Kunst, Catalogue of Lobmeyr’s work, vol. XV, page P, the following (incorrect) translation is given: «Intelligence is the best foundation and the fear of God the most excellent trait of human beings.» On the back of the plate the following (likewise erroneous) translation is given in white enamel paint: «Intelligence is the most powerful support of man and honesty is his best trait.» It is not known who suggested this translation in the 19th century. In both cases instead of lihāš (dress, garment) an−nūs (human being) was read.
⁴ This inscription is translated in the same design sketch as follows: «He who interferes in other people’s affairs will suffer for it.»
Plate
in «Arab style» (No. 5524)

J. & L. Lobmeyr, Vienna
/design J. Machytka and F. Schmoranz 1878/
Colourless glass.
Gold painting, blue enamel painting.
On the base Lobmeyr monogram in white enamel paint.
Diameter: 29.0 cm.
(Inventory No J 344)

The plate is decorated by a system of two bands of script (on the edge and around the centre) which are connected to each other by four circles which intersect the script friezes. The centre of the plate is covered with a star motif on undecorated glass. The areas between the circles are covered with enamel ornaments of tendrils with bifurcating leaves. The style of the ornamentation goes back to Mamlûk metal or glass work. Prisse d’Avennes had already reproduced such a plate in his work on the medieval art of Cairo. It is not known whether the large plate described here is copied from an actual original prototype, or whether it is a pastiche of several Mamlûk originals studied by Machytka and Schmoranz. The ornamentation motifs of the script bands and the tendrils of bifurcating leaves were so well known at the time of production of this plate from many pattern books and also from originals preserved in the Kunstgewerbemuseum in Vienna that the designers could choose a combination of motifs and put them together as ornamentation. The combination of the blue and gold colours is known from the Spanish ceramic art of the 15th and 16th centuries and may have inspired the colour design of objects like the plate discussed here. Examples of Spanish ceramics of the 15th and 16th centuries, which were particularly popular in German-speaking countries, were to be found in all museums of arts and crafts. In their designs Machytka and Schmoranz probably tried to combine different styles of the Islamic world in order to improve on the original models. The inscription in the middle of the plate runs as follows in translation: «The power is God’s, the only one, the conqueror.» On the edges of the four circular medallions it says twice each: «Save us from hypocrisy!»


2 Prisse d’Avennes, *L’art arabe d’après les monuments du Kaire*, see illustration in *The Decorative Art of Arabia*, op. cit., pl. 84.

3 The extensive collection of the Musée de Cluny, Paris, which was studied by all European producers of industrial art in the 19th century, was last published in: Robert Montagut, *El reflejo de Manises: cerámica hispano-moresca del Museo de Cluny de Paris*, Madrid 1996.

4 A free translation is given on the back of the object in white enamel paint in German: «Gott ist leutseelig. Gott ist gut – rette uns vor der Heuchelei,» which translates as: «God is affable. God is good – save us from hypocrisy.»

5 The author wishes to thank Mrs. G. Helmecke, Dipl.-phil. (Berlin, Museum für Islamische Kunst) for reading the inscriptions of this object and for the literal translation.
Plate

J. & L. Lobmeyr, Vienna
(Design by J. Machytka and F. Schmoranz 1878/79)
Free-blown, colourless glass.
Gold and enamel painting in blue.
On the base Lobmeyr monogram in white enamel paint.
Diameter: 18.0 cm.
(Inventory No. J 345)

The ornamentation of the plate is structured from elements of the so-called boteh patterns (Persian, written būtah, pronounced böte). The boteh pattern is an important motif in Persian art of carpets and textiles. In its shape it recalls the tip of a tree bent to one side, or a drop; the word means bush.
The plate belongs to a group of models, designated as «Arab. decorirt [sic]» on the design sketches.¹

¹ Vienna, Österreichisches Museum für angewandte Kunst, designs in the Catalogue of Lobmeyr’s work, vol. XV. Walter Spieg, Glas des Historismus, Brunswick 1980, p. 264, classifies an identical plate as «in Persian style». Although some of the design sketches by Machytka and Schmoranz are referred to as «Persian», the designs are different in respect of their floral ornamentation.
Vase

J. & L. Lobmeyr, Vienna

Colourless glass,
Gold painting, enamel painting in light and dark blue.
On the base, Lobmeyr monogram in white enamel paint.
Design ca. 1878.
Height: 13.5 cm; Diameter: 14.5 cm.
(Inventory No. J 346)

Small vase on a broad foot with a cylindrical body, slightly widened in the upper part, which terminates in a wide extended brim.
The ornamentation of the vase followed designs which Machytka and Schmoranz called Persian but without mentioning the prototype. In this vase, the foot was decorated by a tendril with bifurcating leaves, which is interspersed with stylized motifs of leaves. The decoration of the body begins with a tendril with motifs of stylized blossoms. This tendril is repeated as the end of the body with denser foliage. On the body medallions alternate with compositions of leaves and blossoms in gold paint. The medallions are filled with arabesques. They are framed by a band of golden circles. In the areas containing painted leaves and blossoms, some abstract circular rings are added with enclosed pearl-like shapes. The rim of the vase is decorated by a wave-like tendril, filled with rosette blossoms. The special feature of the ornamentation is the juxtaposition of diverse Oriental and European motifs. What is characteristic of the design is, moreover, the fact that the arabesques, inspired by Moorish art, were also executed by the artist in his own manner, since he filled the area symmetrically and with wide intervals in between.

1 Vienna, Österreichisches Museum für angewandte Kunst, Catalogue of Lobmeyr’s work, vol. XV, e.g., folio FF.
Vase with double handles

J. & L. Lobmeyr, Vienna (probably designed in 1878 by Johann Machytka and Franz Schmoranz).\(^1\)
Free-blown, colourless glass,
Gold and enamel painting in light and dark blue, pastel green, red and yellow.
On the base Lobmeyr monogram in white enamel paint.
Height: 22.5 cm.
(Inventory No. J 347)

The vase belongs to the glassware in oriental style distributed by Lobmeyr. It is related to the series in Arabic style,\(^2\) but no model number is known for this vase. Often Lobmeyr also produced trial specimens as well as items sent as gifts to European and Oriental museums. Such specimens were not meant for sale; they served to demonstrate the firm’s potential, and the museums used these gifts as study specimens.

On to a low foot is set the wide body of the vase, which terminates in a profile ring and then continues in the cylindrical neck that goes straight upwards. The vase terminates with a profile ring and a rim at the edge that is made wider towards the outside. Two undecorated handles join the body and the neck.\(^3\) Because of the gold terminals the handles seem to be held by metal supports. The neck and the body are decorated with fields surrounded by golden frames. The surfaces of the body and the neck are structured with fields framed by blue bars with inset pastel green squares. The fields are decorated alternately with shrubs whose stems, rising up in curves, have pastel green stylized leaves and yellow rosette blossoms; or by shrubs with a kind of stylized carnation blossoms on stems from which deep blue leaves are growing. Both types of ornamentation go back to the art of Ottoman ornamentation of the 10th/16th to 12th/18th century.\(^4\)

The foot and the profile rings are decorated with geometrical motifs of ornamentation. The entire ornamentation consists of images juxtaposed to each other.

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\(^1\) The designer team worked from 1878 to 1880 (or longer) for the firm. Among the items mentioned in the archives of Lobmeyr’s firm in the Museum für Angewandte Kunst at Vienna there is no design sketch of the vessel discussed here. Therefore it can only be inferred from stylistically similar objects by Machytka and Schmoranz that they were the designers. For comparison, design sketches of glassware of the same shape but with other ornamentation derived from Ottoman art are likewise preserved in the museum mentioned above.


Vase

Fritz Heckert, Petersdorf/Piechowice, District of Hirschberg/Jelenia Góra (formerly Silesia, now Poland) 1879/80 up to 1900.

Colourless glass, mould-blown. Enamel painting in blue, green, mauve, Gold paint in incised contour lines. On the base signature in gold: FH Co 67 [Serial number].

Height: 24.0 cm; diameter of the body of the vase: 17 cm.

(Inventory No. J 348)

Vase with a circular body and two decorative handles at the neck. The vase is covered all over the available surface with enamel paint in red, blue, yellow, and leaf-green as well as by gold contour lines in a dense, colourful ornamentation.

All elements of the plant motifs are realized in a very flat two-dimensional style. For the decoration of this object Heckert turned to Indo-Persian art for inspiration, whose elements he independently composed into a well-structured system of ornamentation. In the colours used for this vase Heckert obviously followed the theories developed by Owen Jones in his Grammar of Ornament. There Jones emphasized how important it was to use of the three basic colours red, blue and yellow, which could be enriched with secondary colours only in exceptional cases. Here Heckert used a light leaf-green as subdued colour for Tilling in the less important motifs. He did the contour lines of the details of the ornaments in gold, in accordance with Jones’s instruction: «Where different colours are used against a coloured background, the ornament is differentiated from the background […] with outlines of gold.»

This colour scheme is used primarily for the central area.

Further objects of the firm in other collections: Important examples for comparison of Heckert’s, even though in completely different shapes, are to be found today in various museums of arts and crafts.


3 There is a large collection in the Kreismuseum at Hirschberg. In an exhibition in «Haus Schlesien» (Königswinter) in 1992, 101 objects of Silesian glassware of the 19th and early 20th centuries of the museum (among them 26 Heckert glasses) were on display and catalogued in an accompanying brochure, cf. Schlesisches Glas … Königswinter 1992. Important specimens in Islamic style are owned by the Kunstgewerbemuseum, Berlin, v. Barbara Mundt, Kunsthandwerk und Industrie im Zeitalter der Weltdaustellungen, Berlin 1973 (= Kataloge des Kunstgewerbemuseums, Berlin, vol. 6), Cat. Nos. 70, 71, 72.
Vase with double handles

J. & L. Lobmeyr, Vienna (Design J. Machytka and F. Schmoranz, 1878/79)
Colourless glass,
Gold painting, enamel painting in light blue, black and green.
On the base Lobmeyr monogram
in white enamel paint.
Height: 17.5 cm.
(Inventory No. J 349)

On a gold covered foot ring is set a vessel with a flattened spherical body, which is fully covered with rich ornamentation. On both front sides there is, at the centre in each case, a multi-lobed medallion with a flowering shrub of tulip and carnation motifs executed in enamel paint against leaves painted in gold. In the spaces between the medallions carnation motifs were placed in different colour combinations. The stems are coloured realistically green, the flowers white and light blue. On the neck of the vase, a tendril with similar motifs was painted.

The shoulder is surrounded by a broad band with script which carries four times the words mà ʂà’ Allāh («what God wishes»), an exclamation of admiration.\(^1\) The two round handles are affixed on the shoulder band.

\(^1\) On the base appears in white enamel the translation in German «Der Wille Gottes geschehe», which in English means “God’s will be done.”
Occasional Table

with two sheets of glass held by a brass frame

Philippe-Joseph Brocard, Paris
Opaque glass.
Enamel painting in blue, light blue, white, red, green.
On the edge of the lower sheet, signature in red lettering: Brocard 1876 achat.
Total height: 78.0 cm.
(Inventory No. J 350)

Each of the two sheets with a curved twelve-lobed outline is decorated with a ring of medallions, consisting of eight circular forms, with two different types of patterns alternating with each other. In the middle of each sheet, parallel to the outline of the sheet, there is a curved twelve-lobed cartouche filled with arabesques.

The ornamentation elements of abstract plant motifs, which appear to be Arabic, are situated within a style of decoration which is selected from motifs of Ottoman Iznik ceramics of the 9th/15th-10th/16th centuries. The most striking elements of this decorative composition are the various fanciful flowers which grow on swinging stems with rich foliage. Parts of the foliage are leaves corresponding to the Ottoman sîz motif.

This unusual table, for which so far no comparable specimens are known, shows how large the variety of forms was which Brocard could supply to his customers.
Cylindrical Jug with Handle

J. & L. Lobmeyr, Vienna, around 1875
Free-blown, colourless glass.
Gold coating, enamel painting in blue, white.
On the base Lobmeyr monogram in white enamel paint.
Height: 15.0 cm
(Inventory No. J 351)

The jug follows a form which had been developed since the 16th century in German-speaking areas and is called a «Humpen», i.e. tankard. The ornamentation in the lower part of the jug consists of multi-lobed arches filled with floral elements. Although the jug reveals its origin in the period of historicism, it draws attention to the possibilities that existed to deviate from exuberant ornamentation and to decorate very plainly.¹

The vase with retracted foot, protruding body and funnel-shaped neck is decorated with a combination of motifs of varying provenance. The body of the vase and the neck are covered with a composition of multi-lobed medallions into which quatrefoils are inserted that are open at the lower part. Four bands of ornamentation encircle the vase. The friezes on the foot of the vase and on the transitional zone from body to neck are antique geometrical motifs: on the foot, intersecting hexagons which are open on the top and into which two gable forms are inserted. On the neck a meandering motif was added. The frieze on the body of the vase shows a tendril with bifurcating leaves, on the neck there is a frieze of similar tendrils. The motifs of this vase are such that could be copied from pattern books. Each motif leads a life of its own, there is no connection between the different registers of patterns. Thus there is no unified concept for the entire vase.
Bowl

Probably J. & L. Lobmeyr, Vienna, ca. 1880, not signed.
Freely blown, colourless glass.
Gold painting, enamel painting in blue and white.
Height: 10.0 cm;
径 of the drinking bowl: 10.5 cm.
(Inventory No. J 353)

The most striking feature of this glass is the verse executed in attractive calligraphy within the two rectangular narrow script friezes (see illustration, second half of the verse). It is the oft-quoted verse from the beginning of a ghazal (gazal) by the Persian poet Ḥāfiz of Širāz (d. 792/1390 or 791) which runs in translation thus: «Inspire, cup-bearer, our goblet with the light of wine. Sing, singer: ‘The affairs of the world run according to our wishes’».

The shape starts with a wide foot from which a short broad tube rises. Directly under the bowl a profile ring divides the tube, which terminates on the top in a flat drinking bowl. The ornamentation of the glass is formed by brown tendrils reminiscent of lustre. The drinking bowl appears as if it was held by a wreath of blue stick-like pattern segments.
Pitcher with two glasses

J. & L. Lobmeyr, Vienna, ca. 1885
Free-blown, medium blue glass.
Incised, gold and silver ornamentation.
On the base incised Lobmeyr monogram.
Height: pitcher: 26 cm; beaker: 10.5 cm.
(Inventory Nos. J 354-1, 354-2, 354-3)

The glassware described here was produced in differently coloured varieties of glass. Glassware in the colours medium blue, yellowish and green are known.
The ornamentation shows upright branches of blossoms in fields separated by bars. On the pitcher the branches of blossoms grow out of a shrub created by bands. On the beakers the ornamentation is enclosed above and below by decorative strips that go around. On the pitcher these decorative bands run across the foot, above the plant ornamentation on the body as well as on the neck of the vessel.
Glassware like this was also sold in various Oriental countries or presented as diplomatic gifts. We know, for example, of a gift by the firm to the Ottoman Sultan ‘Abdülhamic II (r. 1293/1876-1327/1909).

J. & L. Lobmeyr, Vienne, dessin vers 1875

Vase and Pitcher
with Gold Net Ornamentation

J. & L. Lobmeyr, Vienna, design ca. 1875.
Slightly iridescent, colourless glass,
blown in gold net.
On the base Lobmeyr monogram in gold.
Vase: Height: 14.5 cm.
(Inventory No. J 356)
Pitcher: Height: 29.5 cm.
(Inventory No. J 355)

A bulbous bowl-like body is set up on the retracted and ascending foot of the vase. The short neck terminates in a wide-swinging brim.
In the upper part, the vase is decorated with a gold net with stylized tassel trimmings which give the appearance as if the net was thrown over the body of the vase.
At the upper end a decorative band is formed by a row of compressed circles put together. The foot is decorated by a band of intersecting oval forms. In literature, glassware decorated like this is assigned to the style of Neo-Renaissance.
In comparison to similarly decorated glassware of the Lobmeyr Trm, this vase is attractive due to the economy and the stylized elements of ornamentation.¹
The pitcher belongs to the same series.

¹ W. Neuwirth, *Lobmeyr*, op. cit., p. 377, illustrates examples of the series «brown, green striped with enamel net blown in». Here the tassels of the trimmings are still three-dimensional.
Pair of Matching Vases

J. & L. Lobmeyr, Vienna, end of the 19th c.
Matt glass.
Gold painting, coloured enamel painting.
On the base Lobmeyr monogram
in white enamel paint.
Height: 42.0 cm.
(Inventory Nos. J 357-1, 357-2)

In their basic form the vases correspond to the long-necked vases known from the China of the 18th and 19th centuries.¹ The specimens discussed here consist of a slightly oval body set up on a foot ring. A perfectly circular neck rises vertically from the body of the vase. The foot of the vase is decorated with a band of swirling motifs. Inside this band there is a motif reminiscent of East Asian scripts. The swaying floral decoration on the body consists of small irregularly swirling blossoms on stems with circular leaf formations. The blossoms painted on the vase have slightly curved tips. The neck is adorned with motifs that rise like columns and are juxtaposed geometrically. The motifs seem to be inspired by the East Asian art which reached the European and North American market after the opening up of some Japanese ports after 1854. For this reason in 1867 Owen Jones published a supplementary volume² to his Grammar of Ornament of 1856 and consequently revised his earlier rejection of East Asian art.

A narrow band of diagonally positioned motifs of bifurcating leaves goes around the upper end of the neck. The individual sections of the vase are separated by five gold bands. Because of these gold bands the tectonics of the vase are completely thrown out of balance. The enamel colours are not painted thickly in a single shade as in other Lobmeyr glassware, but are partially shaded in an artistic manner.

² Owen Jones, Examples of Chinese Ornament selected from Objects in the South Kensington Museum and other Collections, London 1867.

The ornamentation of these vases is composed of elements of Islamic motifs (at the rim of the neck) and of East Asian motifs. Although their prototypes continue to exist, pieces of glassware like these with their decorations are very close to art nouveau. They are an example of the fact that designers continued to develop their own decorations on the basis of prototypes they had once seen, and now created new types of ornamentation. The ornamentation on the body comes close to the linear swinging floral ornamentation of art nouveau, and the geometrically abstract motifs of the neck of the vase come close to the purist variations of art nouveau ornamentation. Thus the vases show the path traversed by Lobmeyr’s into modern times.
Plate

Théodore Deck, Paris, ca. 1860/65
Fritware.
Polychrome painting under glaze.
On the back engraved signature TH
• Deck •
Diameter: 30.5 cm.
(Inventory No. J 358)

The plate was created by Deck in the style of Ottoman Iznik ceramics; he follows examples as they were produced around 970/1560. In the 19th century, examples of these ceramics were much sought-after objects of collections because of their well-balanced ornamentation and their perfect technique of glazing. The ornament field in the mirror of the plate is framed by a decorative band on the rim of the plate. The majority of Ottoman plates and bowls also have ornaments around the rims for the enrichment of the decoration. With its extreme stylization, the ornamentation on this part of the plate created by Deck does not correspond to Ottoman prototypes. Here Deck tried to introduce innovative elements.

Further objects of the Trm in other collections: Ceramics by Théodore Deck in Ottoman style are to be found in many collections in Europe. In Germany important specimens are preserved in Berlin (Kunstgewerbeuseum) and Cologne (Museum für Angewandte Kunst).


2 cf. the examples in N. Atasoy and J. Raby, op. cit., passim.
Flat square Bowl with retracted corners

The composition is put together from elements of decoration of Turkish Iznik ceramics of the 10th/16th century without directly copying any specific prototype. Instead, Deck put together his own combination of popular motifs of Iznik ceramics here. For his bowl he chose a composition of tulips, carnations, plum blossoms and a flower with six parts that cannot be identified more closely. Against this motif a circular rosette blossom is placed in the centre. The flower shrub follows the Ottoman typology. There too intersections of individual elements of ornamentation occurred somewhat arbitrarily.1 The shape of the bowl is unusual in Islamic art and leads us to assume that it was inspired by East Asian art. Because of the square shape the bowl could also be compared with tiles. However, in Ottoman tile ceramics, ornamentation which is complete in itself is unusual because the individual tiles were mostly part of a larger system of ornamentation. On the whole the bowl with its composition consisting of diverse styles can be rated as a typical example of European historicism of the 19th century, where Deck demonstrates his familiarity with different types of non-European styles.

Further objects of the firm in other collections: ceramics by Théodore Deck with ornamentation derived from Ottoman art are to be found in a number of collections in Europe. Until now a specimen comparable in shape is unknown. We know, however, that Deck produced wall plates and other decorative ceramics in very diverse styles and shapes.2

1 At some unknown period, Ferdinand Levillain was among the staff of Th. Deck’s studio (see Sandor Kuthy, Albert Anker. Fayencen in Zusammenarbeit mit Théodore Deck, Zürich 1985, p. 23).


Field of tiles
of four tiles
in a frame
of more recent times

Minton, Hollins and Co.
Stoke on Trent
Pressed clay.
Colours of the glaze in red, blue, yellow, reddish brown, pink, bluish green, leaf-green on white.
On the back pressed-in stamp:
Minton, Hollins & Co.
Patent Tile Works,
Stoke on Trent.
Each tile 20.0 × 20.0 cm.
(Inventory No. J 360)

The field consists of four square tiles. Apparently, the ornamentation follows models from the Islamic world. By the plasticity of the leaves and flowers and also by the strong colours the tiles clearly show their European provenance.
The division of the surface consists of two pointed oval systems of patterns which are filled with palmette and lotus flowers, rosettes and lancet leaves. Although details of the ornamentation are reminiscent of Ottoman and Mughal Indian types of the 10th /16th and the 11th/17th centuries, this new creation is nevertheless successful because of the free treatment of the sources of inspiration and above all because of a totally individual palette of colours.¹
The design of the tiles could neither be traced within the large archival material of Minton’s at Stoke on Trent among the preliminary sketches, nor could it be identified in the sales catalogues preserved. Since the new concept of ornamentation is so successful, it is possible to classify it as an early work by Christopher Dresser when he worked as a designer for Minton’s. In his designs Dresser translated the Oriental models into very stylized forms. The example discussed here combines prototypes from Ottoman and Indian art into a unified surface design. The colour design of the tiles is very close to the Mughal Indian examples, and shows how well acquainted English artists and art historians were with the art of that part of the Islamic world.
The example from Minton’s is a pastiche of different artistic styles of the Islamic world.

¹ Examples of Turkish and Indian art were known to 19th century designers from the above-mentioned (p. 177) pattern books by Jones, Racinet, Collinot/Beaumont, Prisse d’Avennes and Parvillée. However, many of them had also travelled in the Islamic world.
Two Flat Bowls
with a broad, flattened rim

Théodore Deck, Paris, ca. 1865
Fritware. Polychrome painting under the glaze.
Flat relief ornamentation in the central circular field, three surrounding decorative bands.

1. In dark and light blue, dark purple, red and honey-coloured, two white bands to separate the patterns. On the back an unstructured pattern of lines in the same colours as in the front. Diameter: 22.0 cm.
(Inventory No. J 361)

2. In dark and light blue, two white bands to separate the patterns.
Monochrome back. Diameter: 21.5 cm.
(Inventory No. J 362)

On the base of both pieces the stamp mark THD in dark purple, the letters joined together.
In the ornamentation of the bowls different elements of Mamlûk art of Egypt from the time around 665/1265 were combined with one another. But the band with a free-standing motif of ornamentation on the outer rim was probably an invention of the workshop of Théodore Deck: a leaf is tied in such a way that it can be depicted as standing freely on the stem.
The main element of the plate is a script band in Nasḫi style. Here the name of the Mamlûk Sultan as-Sulṭān al-Malik az-Zâhir (Baibars, ruled 658/1260-676/1277) is mentioned twice each with the addition «the righteous one, the fighter for the faith», before the inscription concludes in a jumble of letters without any meaning. It seems as if the Deck studio worked on the basis of specific models or illustrations from pattern books. Since until 1865 only the first edition of the work by Beaumont and Collinot was published¹ and since the model for the piece by Deck does not agree with the examples in this work, it is possible that Deck may have worked with originals, in any case he did not work on the basis of this pattern book.² In the centre of the plate, in a circular field, there is a tendril made up of vine leaves and grapes. Into the centre of this tendril a free-standing swirling rosette was incorporated. Between the script band and the vine creeper, bands of single leaves were inserted. These leaves are also known from the repertoire of Mamlûk ornamentation, but here they are stylized.
Since Deck’s studio also produced samples for the ornamentation and the colour scheme, we may assume that these specimens were such didactic pieces, because of the differing colour scheme.

Comparable piece in other museums:
An identical piece in dark blue and white is to be found in Guebwiller, Musée Florial.

¹ A. Beaumont and E. V. Collinot, Recueil de dessins pour l’art et l’industrie, Paris 1859.
² The author wishes to thank Stefan Heidemann, Chair of Semitic Philology and Islamic Sciences, University of Jena, for the evaluation of the inscription.
Vase
in the shape of a Persian or a Syrian Ewer

De Porceleyne Fles, Delft (Netherlands), after 1910
Earthenware, lustre ornamentation
(Nieuw Delfts Luster), under glaze colours in white, turquoise. On the base signature in blue and the trademark of the firm in the form of a bottle without spout, under a line: Delft.
Height: 15.0 cm.
(Inventory No. J 363)

In shape and colours, the vase follows Iranian ceramics of the 6th/12th-7th/13th centuries. The spout matches that of a pitcher from the 6th/12th century from Kāšān (Iran). At that time in Kāšān and in other cities of Iran a large number of new ceramic technologies and shapes for vessels were developed, but despite the variety of Iranian vessels of that period no exact parallel piece could be located. It is to be assumed that the designers of the firm of De Porceleyne Fles developed their own decoration from many study objects.

Further pieces of the firm in other collections:
The Hague, Gemeentemuseum (various pieces).
Museum of the firm of De Porceleyne Fles, Delft (various pieces).

Vase
in the form of a water basin

Clément Massier, Golfe−Juan (near Cannes)
Fritware.
Lustre glaze over an ochre coloured engobe, having a similar lustre glaze.
Height: 23.0 cm; diameter 38.0 cm.
(Inventory No. J 364)

The shape of the vase can be derived from the im−laid water basins produced in Iran and Egypt from the 7th/ 13th to the early 9th /15th century.1 Massier alters the shape in such a way that it looks altogether more elegant, and he achieves a more unified concept of the shape.

The decoration consists of elements that come close to the characters of Arabic script but they do not result in a legible text; rather, the characters give the impression of fragments of words and characters poured onto the vase. Because of the employment of Arabic script, an orientalised ornamentation emerges, which, however, reveals by its completely free use of the prototype models the possibilities for the development of a modern style of ornamentation. Arabic script now became the basis for abstract motifs of ornamentation. The encounter with Arabic script was also made use of by painters of the early 20th century for alienation effects.2

The technique of glazing with its combination of lustre applied in two layers had been employed by Massier since the World Exhibition of 1889.3

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Agricola, Georgius, De re metallica, translated by Herbert Clark Hoover and Lou Henry Hoover, New York 1930.


Baer, Eva, Metalwork in Medieval Islamic Art, Albany, N.Y., 1983.


Beck, Theodor, Beiträge zur Geschichte des Maschinenbaues, Berlin 1899.

Berlin Museum für Islamische Kunst, see Islamische Kunst, Loseblattkatalog…

Brisch, Klaus (ed.), see Islamische Kunst, Loseblattkatalog…


Dijkstra, Eduard Jan, Archimedes, Copenhagen 1956 (Acta historica scientiarum naturalium et medicinallum, 12); (reprint Princeton 1987).


Gerland, Ernst and Friedrich Traummüller, Geschichte der physikalischen Experimentierkunst, Leipzig 1899 (reprint Hildesheim 1965).


BIBLIOGRAPHY

Hauptmann, Almut, Metall, Stein, Stuck, Holz, Elfenbein, Stoffe see Islamische Kunst, Loseblattkatalog…
Hill, Donald R., Arabic Water-Clocks, Aleppo 1981 (Sources and studies in the history of Arabic–Islamic science. History of technology series).
Hill, Donald R., The Book of Knowledge of Ingenious Mechanical Devices, see al-Ḡazārī
Hill, Donald R., Islamic Science and Engineering, Edinburgh 1993 (Islamic surveys).
Hill, Donald R., Islamic Technology, see al-Hassan, A.
Horwitz, Hugo Th., Über das Aufkommen, die erste Entwicklung und die Verbreitung von Windrädern, in: Beiträge zur Geschichte der Technik und Industrie (Berlin) 22/1933/93–102.
Huuri, Kalervo, Zur Geschichte des mittelalterlichen Geschützwesens aus orientalischen Quellen, Helsinki and Leipzig 1941 (Studia Orientalia, 9,3); (reprint in: Natural Sciences in Islam, vol. 81, pp. 1–272).
Issa Bey, Ahmed, Histoire des bimaristans (hôpitaux) à l’époque islamique, Cairo 1928.
Jacob, Georg, Quellenbeiträge zur Geschichte islamischer Bauwerke, in: Der Islam (Strassburg) 3/1912/358–368.
de Joinville, Jean, Histoire du roy saint Loys, Paris 1668.
BIBLIOGRAPHY


Khalili Collection, see Savage-Smith, Emile, Science, Tools & Magic.


Kröger, Jens, Glas, see Islamsche Kunst, Loseblattkatalog…


Lamm, Carl Johan, Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten, 2 vols., Berlin 1929–1930 (Forschungen zur islamischen Kunst, 5).


al-Maqrîzî, Kitâb as-Sulûk li-ma’rifat duwal al-mulûk, ed. Muhammad Muṣṭafâ Zîyâdâ, Cairo 1939.

Maṭûf, Nâqu, Târîf ‘ulamâ al-Mustanṣîriya, part 3., Cairo n.d.

Masterpieces of Islamic art in the Hermitage Museum, Kuwait 1990.


Migeon, Gaston, Arts plastiques et industriels, Paris 1927 (Manuel d’art musulman, 2).


Schreibweise und Leitlinien für die Spiele der XX. Olympiade, München 1972, pp.80–93.

al-Maqrîzî, Kitâb as-Sulûk li-ma’rifat duwal al-mulûk, ed. Muhammad Muṣṭafâ Zîyâdâ, Cairo 1939.

Maṭûf, Nâqu, Târîf ‘ulamâ al-Mustanṣîriya, part 3., Cairo n.d.

Masterpieces of Islamic art in the Hermitage Museum, Kuwait 1990.


Migeon, Gaston, Arts plastiques et industriels, Paris 1927 (Manuel d’art musulman, 2).


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Schöler, Thorkild, Roman and Islamic Water-lifting Wheels, Odense 1973 (Acta historica scientiarum naturalium et medicinalium, 28).


Schmidtchen, Volker, Mittelalterliche Kriegsmaschinen, Soest 1983.


Terzioglu, Arslan, Türk-islâm kültür çevresinde IX. – y.y. dan XVIII. yy. sonuna kadar üçma denemeleri ve teknîque ait el yazyma eserler, in: İlim ve sanat (İstanbul) 8/1986/54–63.


Veranzio, Fausto, Machinæ novæ [réimpr. de l’édition Venise, vers 1615], Munich 1965.


Vernet, Juan, Un texto árabe de la corte de Alfonso X el Sabio. Un tratado de autómatas, in: Al-Andalus (Madrid, Grenade) 43/1978/405–421.


Welch, Anthony, Calligraphy in the arts of the Muslim world, Folkestone 1979.


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