

## Studying The Evolution of Lighting Techniques in Islamic Art

**Prof. Faisal Said Ahmed**

Professor and Head of Department of Sculpture, architectural formation and restoration department, Faculty of Applied Arts, Damietta University, Egypt.

**Lect. Ahmed Hassan El shafaei**

Lecturer in Sculpture, architectural formation and restoration department, Faculty of Applied Arts, Damietta University, Egypt.

**Researcher. Mona Tharwat Mohamed Abu Gabr**

Demonstrator in Sculpture, architectural formation and restoration department, Faculty of Applied Arts, Damietta University, Egypt.

[monatharwat92.mg@gmail.com](mailto:monatharwat92.mg@gmail.com)

### Natural lighting

Islamic civilization was the best evidence of the evolution of lighting methods, whether natural or industrial through the product of Islamic teachings and the control of religious intellect, which had a clear effect on the formation of openings and the exploitation of light functionally and aesthetically, and the exploitation of the Islamic artist for natural light from sunlight through dishes which allow the sun to enter the building as we find in the Mosque of Ahmad ibn Tulun. Inside the building, the architect built on Shakshikha, Al-Madawi, Mashrabiya, umbrella, and Al-Malqaf.

#### 1. Wide courtyard :

Islamic architecture relied on obtaining natural lighting on the light reflected from the dome of the sky, in order to avoid direct lighting from the sun because of the problem of vision, and resorted to the Muslim architect to several ways to obtain natural lighting, the most important of which is the dependence on sunlight entering the building through the yards or open dishes by wide open doors.

#### 2. Mashrabiya (bay):

Mashrabiya is a word derived from the Turkish-Arabic word "impregnated" and means drinking place.

The appearance of Mashrabiya in Egypt and the Levant is dated back to the end of the Ayyub period and the beginning of the Mameluke rule.

#### 3. Sunshades:

One of the most important phenomena that was emerged in Islamic architecture, appeared as panels of stone, marble or stucco in the windows, and decorated with unloading geometric and then vegetal and then inscriptions, and then these pieces were developed in the late Fatimid era by placing pieces of colored glass blocked by the blanks, which added to the beauty When it is clouded by dim light.

#### 4. Al-Maqlaf:

Al-Maqlaf, or - Wind Tower - is one of the most important methods used in Islamic architecture to receive air and alleviate the weight of temperatures in the summer. It is an architectural element which its sector is rectangular or square. It works as an air conditioner and its height in the room is not less than two meters so as not to deviate from the wind.

## **5. Al-Shokhshikha:**

Appeared as an architectural solution linked to the situation to achieve better climatic treatment, and the emergence of Rhakkha and development helped to dispense with the gradual and get better ventilation and desired lighting.

### **Industrial lighting:**

Islamic industrial lighting units are still very important in identifying the features of the Islamic arts in Egypt and in Morocco. This is what the research is going through in terms of reference to the most important artifacts of lighting units in Egypt, which were succeeded by the reign of the Mamelukes and Fatimid. Mascots and chimera, which prevailed in the manufacture of several methods of the most important and most prominent method is "knocking " for the formation of copper, silver and gold, and "casting" for bronze.

It was a product of the fusion of Islamic civilizations in Morocco, where the types of illuminations of various forms, including chandeliers and lamps were used to illuminate mosques.

Islamic art has been and still has a great value, especially metal artifacts, they are of great importance in identifying the features of these arts, and the most important of these artifacts chandeliers and complacent and candlesticks that dominated the industry, many of the most important methods and most notably "ways" for the formation of copper, silver and gold, and "casting" for bronze.

The decoration was grooving, drilling, punching, inlaying with gold, silver and others.

Metal artifacts are recorded with the name of the Caliph, the place and date of its manufacture, or religious inscriptions and Qur'anic verses.

### **1. Candles:**

Characterized the Ayyub abundance of metal artifacts inlaid gold or silver or both and have multiple forms and types, there has been many methods for its manufacture, including heating and fermentation to facilitate methods after that, in addition to the method of casting in metal molds where the molten metal is poured into the mold then takes shape of the internal mold after freezing.

### **2. Al-Tananer:**

Industrial and decorative methods developed and flourished during the Mameluke era in Egypt and new types emerged within the means of lighting in which the Muslim artist used methods of slitting, drilling, punching, discharging, casting and sealing. The manufacture was by using copper and bronze.

### **3. The chandelier:**

It is a large lamp that is hanged in the ceiling, its shape resembles a group of stars known by that name, which consists of several saddle glass or copper or other materials.

### **4. Lanterns:**

In the Mameluke period, a new type of lighting means known as lanterns, which was a pyramid-deficient quadrilateral or hexagonal shape. Several cylinders for carrying snails.

## 5. Complaints:

Archaeologists and Islamic arts called the lamps in the Mameluke era in the form of a vase placed inside the same lighting device in order to preserve the flame from the air donations, and to turn it into a light spreading in place, and the lamp was installed inside the lamp by the behavior of attaching to its edge The niche itself was attached to silver or brass chains, clasped with handles that wrap around the niche.

The chandeliers industry spread in the Maghreb in general during the Islamic eras, especially during the Almohad and Marinid periods. Called Stoker.

Moroccan architecture has preserved for us many types and forms of chandeliers that can be limited to the following:

### Chandeliers -

The caliphs and sultans were keen on paying attention to the chandeliers and registering their names and titles on them.

The chandeliers industry has spread in the Maghreb, and it consists in its general form as follows:

1. The chandelier body: a cone consisting of several layers, yellow size from the bottom up, to be the largest bottom and the smallest upper, each layer contains a number of lamps.
2. Dome of the chandelier: It is made of copper in the form of lobes adorned the chandelier and crowned with engraved cuts and plant cuts.
3. the chandelier Tray: It is a tray consisting of internal tapes decorated in its frames with floral motifs consisting of fans and half palmettos, interspersed with cursive and Kufic inscriptions.
4. The chandelier leg: a stand-alone masterpiece, the upper part of the chandelier hanging from a number of lamps and candlesticks connected to the chandelier, inscribed with the names of the caliphs and places and history of manufacture.

### Chandeliers of bells: -

In addition to the chandeliers made specifically for mosques, another type of chandeliers that was not originally made for the mosque was made while the bells of churches obtained by Muslims after their enemies in Andalusia were made. Small in the center of the tray and above the bell, and decorated with all the elements of Islamic decoration.

### Candlesticks and plotters: -

The candlestick was one of the most prominent metal objects that characterized the buildings of Al-Aqsa Maghreb, where the Moroccan artist excelled in its industry, and adorned mosques along with chandeliers.

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