

## Islamic geometric decorations as a source of modern ceramic jewelry design

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### Abstract:

Modern designers have great and special interest in Islamic art, as it includes all products of applied arts and architecture. How we could benefit from Islamic geometric motifs to design ceramic jewelry? And introduce various design solutions in the field of modern ceramic jewelry? Hence the idea of the research is using Islamic geometric decorations as an inspiration to design modern ceramic jewelry that match trends of modern design and confirm the importance of role of arts in enhancing cultural exchange among various civilizations. It is characterized by its various decorations, including Islamic geometric designs, which have many characteristics such as repetition, continuity and symmetry in a regular system of geometric shapes in an endless repetition which show the beauty of architecture and applied art products. Jewelry is of particular importance to different societies and civilizations since the dawn of history, it contains many studies of design, technology and marketing, the ceramic jewelry has many technical and aesthetic features that make it a good area for creativity, hence the goals are about introducing design solutions inspired from Islamic geometric motifs to produce modern ceramic jewelry, and linking various civilizations through the use of Islamic geometric decorations in production of modern ceramic jewelry and highlighting aesthetics of Islamic geometric decorations and their role in developing modern designs. The assumption of the research is using Islamic **geometric decorations as a source of modern ceramic jewelry design** that are being consistent to modern design trends, which underlines the importance of the role of the arts in promoting cultural exchange among different civilizations. **The research follows the experimental, analytical approach by explaining some Islamic geometric decorations and study some modern designs in ceramic jewelry and introducing some design and experimental suggestions for the use of Islamic geometric decorations in the design of modern ceramic jewelry.**

### Key words:

Islamic geometric decorations - Modern ceramic jewelry- jewelry design.

### ملخص البحث:

يحظى الفن الإسلامي بأهمية كبيرة وخاصة لدى مصممي العصر الحديث، حيث يشمل جميع منتجات الفنون التطبيقية والعمارة، ولكن كيف يتم الاستفادة من الزخارف الهندسية الإسلامية في الحضارات المختلفة لتصميم الحلي الخزفية وتقديم حلول تصميمية متنوعة في مجال الحلي الخزفية الحديثة؟ ومن هنا فإن فكرة البحث تستخدم زخارف هندسية إسلامية كمصدر لتصميم الحلي الخزفية الحديثة التي تتوافق مع اتجاهات التصميم الحديثة، والتي تؤكد على أهمية دور الفنون في تعزيز التبادل الثقافي بين الحضارات المختلفة. وتتميز الزخارف الإسلامية بأشكالها المتنوعة، بما في ذلك الزخارف الهندسية الإسلامية، والتي لها العديد من الخصائص مثل التكرار والاستمرارية والتماثل في نظام منتظم من الأشكال الهندسية بتكرار لا نهاية له، والذي يظهر جمال العمارة ومنتجات الفنون التطبيقية. وللحلي أهمية خاصة بالنسبة للمجتمعات والحضارات

المختلفة منذ فجر التاريخ، حيث أنها تحتوي على العديد من الدراسات المتعلقة بالتصميم والتكنولوجيا والتسويق، وتتميز الحلي الخزفية بالعديد من الميزات الفنية والجمالية التي تجعلها مجالاً خصباً للإبداع. تتمثل أهداف البحث في تقديم حلول تصميمية مستوحاة من الزخارف الهندسية الإسلامية لإنتاج الحلي الخزفية الحديثة، والربط بين الحضارات المختلفة من خلال استخدام الزخارف الهندسية الإسلامية في الحلي الحديثة وتبسيط الضوء على جماليات الزخارف الهندسية الإسلامية ودورها في تطوير التصميمات الحديثة. يفترض البحث أن استخدام الزخارف الإسلامية الهندسية يمكن من ابتكار حلي خزفية تناسب العصر الحديث وأن الحلي الخزفية التي تنتج عن استخدام الزخارف الإسلامية الهندسية والتصميمات الحديثة يمكن أن تلعب دوراً هاماً في التبادل الثقافي بين الحضارات المختلفة لتحقيق الأهداف البحثية، ويتبع البحث المنهج التحليلي التجريبي من خلال توضيح بعض الزخارف الهندسية الإسلامية ودراسة بعض التصميمات الحديثة في الحلي الخزفية وتقديم بعض المقترحات التصميمية والتجريبية لاستخدام الزخارف الإسلامية الهندسية في تصميم الحلي الخزفية الحديثة.

### الكلمات المفتاحية:

الزخارف الهندسية الإسلامية - الحلي الخزفية الحديثة - تصميم الحلي.

### The Research problem:

- How different civilizations are approached together through using the Islamic geometrical decorations in designing the ceramic jewelry?
- Do Islamic geometrical decorations give various design solutions in the field of modern ceramic jewelry?

### The Research objectives:

- Giving creative design solutions of the Islamic geometric decorations to produce modern ceramic jewelry.
- Linking among different civilizations through using Islamic geometric decorations in modern jewelry.
- Highlighting aesthetics of the Islamic geometric decorations and its role in developing modern designs.

### The Research hypotheses:

- Usage of geometrical Islamic decorations enables to create ceramic jewelry designs that suits the modern era.
- The ceramic jewelry that results from using geometrical Islamic decorations and modern designs can play an important role in cultural exchange among various civilizations.

### The Research Methodology:

The research follows the experimental analytical approach through the following points:

#### Clarification of the terms of the research through:

1. The study of some Islamic geometric decorations.
2. The study of the modern designs in the ceramic jewelry.
3. Presenting some conceptual and experimental proposals for the use of geometric Islamic decorations in the design of modern ceramic jewelry.

## The Research outlines:

### Introduction:

Cultural exchange among various civilizations plays an important role in the development of creations and innovations in various fields, Islamic civilization is rich in its arts and decorations which is considered an important source for any designer seeking creative modern designs that carries the scent of Islamic civilization. From this point on we find that using geometric Islamic decorations and what it carries with strong reduced lines in geometrical shapes with endless repetition that fits in a great way with modern designs and is considered an important addition to it, geometric Islamic decorations has been linked to applied arts and architecture to add some richness in formation to them. The jewelry is considered from the products commonly used throughout the ages and different civilizations where the materials used in manufacturing them are the raw materials available in the environment, also the ways of forming them according to the used tools and the available resources. Ceramic jewelry remains one of the oldest jewelry throughout the ages where is the availability of clay and easiness of manufacture, designers in the modern era are doing their best to present jewelry that keeps up with the worldwide fashion lines while maintaining the identity. The research was concerned to assure the idea of cultural exchange among different civilizations through the use of Islamic geometric decorations in designing modern ceramic jewelry.

### The Research Terminology

#### A. The Islamic geometrical decorations:

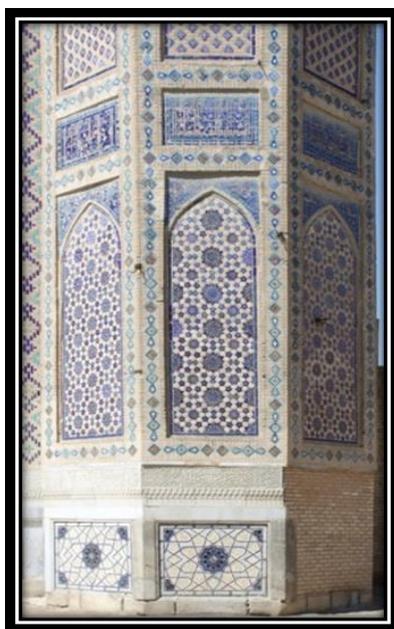
Through the ages, the geometrical decorations appeared in different civilizations with various shapes, but it was more distinguished in the Islamic civilization than the other ones. The Islamic decorations in the Islamic art are characterized with undull repetition of groups of shapes and strong geometric lines overlapping and interlocking as Arabesque art, and various shapes of mosaics, the used geometric shapes have varied widely, starting from stars and simple rhombus in the third Hijri century to a various group of shapes that have from six to thirteen sides in the seventh Hijri century then the stars that have fourteen to sixteen sides in the tenth Hijri century. Geometric decorations have been used in the field of applied arts and Islamic architecture.

Islamic geometric decorations have been transferred to the west and prevailed among craftsmen and artists in the twentieth century as well as math and physics scientists. <sup>(1)</sup>

We can find that the circle plays a fundamental role in the structure of Islamic geometric motifs, where there can be a composition of many geometric shapes with equal sides and angles like a hexagon, octagon, triangle, square and pentagon by using a ruler and compass. Pic. No (1). Where by repeating, interlocking and overlapping circles and squares regularly in complex models, some spaces are filled and others are kept empty to form creative decorative shapes.

The octet stars have been used frequently in the Islamic tiling works, other polygons too have been used like pentagons and octagons, besides adding these shapes together to form complex patterns through various shapes of symmetry like reflections and rotation which can extend infinitely, which makes the Islamic geometric decorations the ancestor of modern algorithmic art, and in these decorations there was an order used where the geometrical grids were divided into symmetrical repeated units regularly, and this is through dividing the area into squares and hexagons similar in size, a geometric shape is drawn within each unit which is considered a base of the grid on which the diagram of the unit will be built on, and each unit is connected

from all sides with other identical units to form the overall shape for this area. This way helped in enlarging and minimizing the decoration layouts easily, based on the relative relationship among the geometric shapes.



**Pic. No (1) :Picture of the minaret base of the Bibi Khanum Mosque in Samarkand, Uzbekistan. The vertical arches are decorated with different geometric motifs including pentad, octet, tenth stars. (2)**

It is octagons and rhombuses that include squares inside them in the Mosque of Uqba ibn Nafi in Tunisia Pic. No (2), they are considered of the oldest geometric shapes in the Islamic art which goes back to 221 AH / 836 AD. then started another phase in the development of Islamic geometric decorations by spreading the sextet and octal stars after their appearance in 265 AH / 879 CE in Ahmed bin Tulun mosque in Cairo, and in the year 478 AH / 1086 AD, the adjacent Sextuple and tenth motifs appeared in the mosque of Isfahan, and then the tenth spread in the Islamic world except Andalusia, then the nine-eleven and thirteen sides appeared in Isfahan Pic. No (3), also in year 490 AH / 1098 CE, but it was rarely used outside Persia and Central Asia. In the year 617 AH / 1220 AD, the eight and twelve side decorations appeared, then the sixteen decorations appeared in the Hassan Sadaka Mosque in Cairo in 715 AH / 1321 AD and in Sultan Hassan Mosque in 764 AH / 1363 AD, and in the Alhambra Palace in Andalusia in the 8th century. Hijri. Finally, the fourteen-side decorations appeared in the mosque at Fatehpur Sikri Mosque in India at the end of the 16th century.

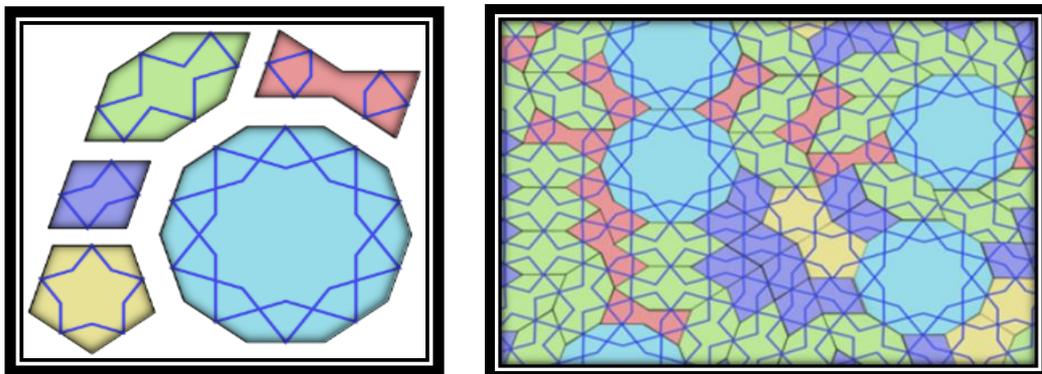


**Pic. No (2): Simple geometric motifs at Oqba Ben Nafi Mosque, Tunis. (1)**



**Pic. No (3):** Mausoleum of Nematollah Vali Shah in Iran its date goes back to 1431 AD. The blue dome consists of a tile adjacent consisting of sequences of forms with 5, 7, 9, 12, 11, 9, 10 consecutive points. Eleven-side stars are rare in Islamic art.

The adjacency is an example to complex geometrical drawings which scientists call semi-crystal, which was used in the Islamic buildings in the fifteenth century Pic. No (5), modern design yet has symmetry and doesn't repeat itself. Pic. No (4). The West was the first to discover it in the 1970s thanks to the description of British mathematician and physicist Roger Penrose.



**Pic. No (4):** Example of the five adjacency, collection of examples of adjacency.



**Pic. No (5):** the mosaic ceiling of the compartment that covers the tomb of Hafiz Shirazi, this design follows the adjacency system.

## B. The modern ceramic jewelry:

What is meant by modern ceramic jewelry is the jewelry that is being manufactured from different kinds of clay which are characterized by simplicity in formation, abstraction, vivid colors, lightness in weight and matching with different styles of fashion besides it keeps up with the modern era with its different design directions. Here are some examples for the modern ceramic jewelry:

**Model (1):** Modern ceramic jewelry produced by Rosenthal-Latvia, established in 2016. Pic. No (6)



Pic. No (6): Two pictures of handmade ceramic porcelain jewelry painted with black and white glossy glass paint for earrings and pendants with gilding part.  
Rosenthal Jewelry (8)

**Model (2):** Modern ceramic jewelry produced by Rosenthal-Latvia, established in 2016. Pic. No (7)



Pic. No (7): Picture of a porcelain earrings made of porcelain painted with a glossy pink glass with a gilding part of it - and the design is shown in a geometrical way - and it is characterized by its Lightweight which varies from 2-3 g, with dimensions of 3.5 cm \* 1.8 cm  
Rosenthal Jewelry (9)

**Model (3):** Modern ceramic jewelry produced by ROSENTHAL Studio Germany Rosenthal is a German ceramic manufacturer founded in 1879. Pic. No (8)



**Pic. No (8):** black and silver porcelain brooch - width is about 5 cm - Studio Rosenthal 1980 (10)

**Model (4):** Modern ceramic jewelry produced by the German Rosenthal Studio. Pic. No (9)



**Pic. No (9):** Zigzag Porcelain Brooch painted in Glossy White Paint with Black and Blue Geometric Shapes Surrounded by Gold Stripes - Made by Rosenthal Germany - 1987 (11)

**Model (5):** Modern ceramic costume produced by Studio Rosenthal Germany. Pic. No (10)



**Pic. No (10):** Triangle porcelain brooch decorated with geometric motifs in black, blue and gold with random gilding on the sides of the triangle, with a hollow triangle in the middle - Rosenthal Germany (12)

### Analysis of modern ceramic jewelry models:

- It is characterized by simplicity in shape and using geometrical lines and shapes, which shows the influence of Islamic geometric decorations in the design.
- Using one color to three as a maximum for the processing of the surface, which characterizes the design of modern jewelry.
- Painting parts of the surface of the jewelry with gold or silver to add aesthetic value to the jewelry.
- Using light weight clay in the formation especially porcelain so as to suit the function of the ceramic jewelry.
- The modern ceramic jewelry is characterized by simplicity in the formation and merging of various ideas.
- Through using Islamic geometric decorations, innovative jewelry can be designed to suit the fashion of the current age.

### Some conceptual and experimental proposals for the use of Islamic geometric decorations in the design of modern ceramic jewelry:

#### The First proposal:



Pic. No (11): A proposal of a piece of ceramic jewelry of a base of a coated porcelain painted with a matte black glass glaze, with a three-dimensional white shape inspired by Islamic geometric decorations.



Pic. No (12): Examples for Islamic geometric decorations used in design of modern ceramic jewelry.

**The Second proposal:**



**Pic. No (13):** Modern necklace consisting of a metal rectangular frame and inside it a square of ceramic and on the surface some colorful geometric decorations inspired from the Islamic star.



**Pic. No (14):** Design for the same piece with adding protrusion to the intersected lines and covering it with platen.



**Pic. No (15):** Design for the same piece using the black geometric lines over the ceramic white base.

**The Third proposal:**



**Pic. No (16):** Using intersected straight lines with golden color inspired by the Islamic geometric decorations in the design of porcelain earrings coated with white glass paint.

**The Fourth proposal:**



**Pic. No (17):** Design of a ceramic necklace inspired by the Islamic geometric decorations on ceramic tiles with interpenetration of copper as a substitute to gold.



**Pic. No (18):** Design of a ceramic necklace inspired by the Islamic geometric decorations on ceramic tiles with interpenetration of glass and stones.

**The Fifth proposal:**



**Pic. No (19):** Design of a piece of ceramic jewelry inspired by the Islamic geometric decorations, porcelain is coated with yellow glass, the surface is covered with geometric decoration that depends on repetition with the change of size.

**The Sixth proposal:**



**Pic. No (20):** Design of a piece of ceramic jewelry inspired by the Islamic geometric decorations that depends on overlapping two pieces of ceramic one is white with geometric motifs on the surface, resulted from the intersection with lines in the black color, above it ceramic piece of molten red glass whose edges merge with the blue glass paint which is similar to the lines that define the Islamic geometric decorations.

**The Seventh proposal:**

**Pic. No (21):** Design of a piece of ceramic jewelry from white clay in a simple handmade formation and on the surface there are decorations inspired from the Islamic star, besides adding colors to highlight the decorations which connects the Islamic civilizations with modern fashion.

**The Eighth proposal:**

**Pic. No (22):** Design of a modern ceramic necklace which represents part of the Islamic geometric decoration and is characterized by its strong simple lines and bold colors.

**Results:**

- Using Islamic geometric decoration in the design of ceramic jewelry contributes in highlighting the progress of science and mathematics in the Islamic world.
- The modern ceramic jewelry is similar in many of its properties, one of which is its capability of expressing certain civilization.
- The modern ceramic jewelry can play an important role in the cultural and civilization exchange.

- The Islamic geometric decorations are considered sources of design that keeps up with the modern fashion.

### Recommendations:

- Caring to use the Islamic geometric decorations in the design of ceramic jewelry to emphasize the role it plays in highlighting our civilization.
- Caring about the local and international marketing of modern ceramic jewelry that holds Islamic geometric decoration in its design which keeps up with the international fashion lines.

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