Design patterns of traditional natural lighting in Interior Design and Islamic architecture

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Abstract:

Lighting is an important component of carrying out life activities within architectural spaces, so each activity in life depends on the level of lighting in a vacuum. This level varies according to activities and the interior space. The pursuit of lighting spaces in a manner consistent with the functional and aesthetic dimensions of Islamic interior design is one of the topics worthy of research and study, where it is possible to create lighting patterns in modern interior design by following the principles of lighting used in Islamic architecture, as natural and industrial lighting patterns have functional and aesthetic goals. Lighting tools are as old as the emergence of human civilizations. The primitives needed lighting for the darkness, and the lighting tools industry flourished in Islamic Egypt and developed according to the general development of existing technologies on the one hand, and the development of installations and purposes.
These tools are used on the other hand. The archaeological evidence is full of historical sources, as well as many data on the development of these tools.
The importance of this research lies in studying the effect of traditional lighting patterns used in Islamic architecture on lighting for interior spaces, and how to influence the composition and structure of modern and contemporary spaces by studying the impact of these patterns in controlling the amount and efficiency of natural and industrial lighting in a vacuum through an analytical study of one of these Styles.

Key words:

design patterns, traditional natural lighting, architecture, interior design, Islamic art.

Introduction:

In Islamic arts, crafts related to handicrafts have been published and developed through the development of traditional architectural styles and models that have become distinct from other arts. Architecture flourished from the mother era in the Levant, and in Damascus embodied through beautifully designed and beautifully designed and innovative houses, "Damascus craftsmen unleashed their imagination by introducing new methods in the complex and interwoven decoration in their contradiction. (1-pp. 59-60).
In addition to the most important functional and aesthetic issues complementing the interior design, good lighting sources are available that are commensurate with the space and the architectural space and are integrated with the prevailing architecture and harmony with it and the formation of engineering buildings as an architectural block and countries on the permeability and perception of light in the inner space, and these patterns may be their cohesion with the architectural group to find rhythm and harmony between the inside and the outside, "finding the space or the inner space is the first and last purpose of the construction, in starting each building with the design first, and ending with the allocation of space in the vacuum, which is of course the reason for the existence of this building. (2- p. 90)

DOI: 10.21608/mjaf.2020.31824.1645

The emergence of new patterns in Islamic art led to skill and innovation in Islamic architecture in the manufacture of light and its formation in a vacuum with an abstract decorative tendency that leads to contemplation of the aesthetic rhythms of light through its penetration of hollow decor and openings and its reflections in the space on the surrounding walls.

There is no doubt about the emergence of some traditional patterns in Islamic architecture, which clung to one of the most important principles of Islamic art, which is the principle of unity as one of the most important characteristics of the architectural composition of space and a group of spaces related to formative construction to add to this view of Islamic architecture to adapt to climatic, natural or other inherited patterns. These styles of Islamic architecture are prominent features that reflect the traditional heritage of Islamic architecture and have worked to shed light on the features of Islamic architecture over the centuries. (The architecture unit included the interconnection between the elements of architecture and the interrelationship between space functions and goals. (10 - p. 7)

Research problem

Lack of interest in studying and analyzing traditional lighting methods in Islamic architecture and their suitability to achieve compatibility and harmony in design and interior space.

Research aims

1. Show the importance of traditional lighting patterns in Islamic interior design and their relationship to interior space by studying the relationship between lighting in interior spaces in Islamic architecture, and how to adapt them to interior spaces, by analyzing and extrapolating lighting methods.
2. Reaching the relationship of light to interior space by analyzing different samples of the traditional and natural lighting patterns of Islamic architecture.

Research hypotheses:

The research assumes that traditional natural lighting patterns have an effect on the interior design of Islamic space.

Research methodology: Descriptive and analytical method:

1. Descriptive Approach: Through a description of the design patterns of natural lighting in the Islamic era.
2. Analytical approach: by analyzing one of these patterns.

First: Light and shadow as one of the methods of expression in Islamic architecture:

Light is considered one of the most important methods of expression in Islamic architecture, as it is one of the most prominent elements of formation within voids with its effect on visual elements and shapes. The sun's rays increase brightness or fade depending on the degree of sunlight and the accompanying weather condition throughout the day, and it is repeated that through the light shining on the varied woodwork in mashrabiyas, on stained glass and stucco vases in mosques, palaces, homes, and agencies, they gave impressive formations on the walls, floors, and furnishing elements, and various rhythms were played throughout the day. The optical vibrations were reformulated through works turning the wooden mashrabiya shapes that have created cone among the formations of the vacuum appeared as if they worked as curtains, on the analysis of light and transforming it between brightness and dimness.

If light is considered a positive element, the shadow is the negative contrast to it and it is an inevitable result of the falling of light on the three-dimensional objects and the areas of shadows are those that did not fall on them directly from the light source, although they sometimes receive indirect rays that are reflected different in the degree of their intensity and the angle of their fall, as it creates a gradient of light and shade and creates configurations that enrich the void and give visual comfort and psychological calmness.

Accordingly, the elements of shade and light are two important elements of the design inside the interior gaze, so the designer, whether architectural or interior designer, must be aware of the sources of natural lighting, its quantities and types, and he/she must try to create a balance among the elements of shade and light. (8-p. 4)

Second: The reasons for the Muslim architect taking advantage of the natural lighting inside the buildings and using them in a way that suits the space:

Sunlight varies with time throughout the day, from season to season and from place to place. The sun's light energy varies through clouds and fog. Sky color changes and weather effects are transmitted to illuminated formations and surfaces. Also, the different conditions of the sky affect the different levels of lighting and the distribution of natural light, and therefore its effect on the interior space. (11-p. 196)

There are fundamental differences in the design of natural lighting in buildings according to the nature of that building. Some buildings, such as schools and hospitals, require the nature of the job from users to maintain a near-constant level of lighting to perform their work. It is also essential for natural lighting in those buildings to try to achieve a homogeneous distribution of lighting levels Suitable in all space used and avoiding direct sunspot influences in the interior space.

As for residences and places of worship, the change in the level of internal lighting and the presence of sunspots resulting from it can endow the vital place by changing the levels of lighting, reflecting the changes in the external environment and continuing with it without achieving that direct contact, as they interact with the furnishing elements inside the vacuum and achieve a kind of interconnection between space and furnishing elements, but in some of those places that need a high level of lighting to accomplish some tasks, it is possible to approach windows openings or use industrial lighting.

But one of the important considerations that the designer must take into account is the necessity that natural lighting is free from dazzling, and means od dazzling strong light contrast or that lighting that comes from an incorrect direction, the extreme contrast between the visible external environment of windows and the darker inner space environment may cause dazzling. Direct light or sunlight reflected from the glossy surfaces can be bothersome and obstructive (9 - pp. 2-5)

Third: The effect of light on the interior and exterior surfaces:

Sunlight conveys changing colors and sky conditions to surfaces and shapes that shine on it and enters rooms through windows and openings, falling on the walls of the rooms, so that their colors are vibrant and their texture appears with the change of light and shade patterns that create it, as the sun revives voids and clarifies shapes by intensifying and dispersing light.

Therefore, daylight, the degree of sunshine, dazzling and visibility should be studied when designing the shape, area and location of the opening. Daylight rates and their uses should also be studied, which vary with the purpose of using the space. (6- pp. 58-64)

Fourth: Traditional natural lighting patterns:

1. The open courtyard (courtyard)
2. The openings (windows)
3. Roof openings (rattle)
4. Madawy
5. Mashrabiya

Results:

1. Islamic interior design was not separated by inspiration (light) as an essential aspect of nature, but rather it created a close, stable, balanced and harmonious relationship between man and light.
2. Islamic architecture is an aesthetic way to confirm light, to discover it, and to display it aesthetically. Light has become an aesthetic way to show architecture, its elements, its system, its aesthetic laws, and its reflection on visual movement such as continuity, balance and architectural rhythm.
3. Light works to reduce the weight of the raw material and contribute to its transparency, such as iron, stone, and wood, especially the hollow aesthetic elements that allow light to enter and increase absorption and establish reciprocal relations with it by interfering with light to fill empty spaces of raw materials and specific straight, curved, square, round, and triangular lines, wood, stone, plaster, marble and iron.
4. Industrial patterns in lighting contributed to the delivery of light to the lower areas inside the buildings, especially in areas that are not light enough during the day, and worked on lighting these levels at night.
5. Natural lighting patterns are affected by light levels in terms of clear perception of the interior space. High light levels increased the size of the interior space, and the presence of high apertures helped to identify areas with special events such as sitting or paths in space by relying on natural light reflected from the sunlight at high levels and openings.
6. It was clear that the interior space was affected by the size and shape of the perforated openings in terms of the amount of illumination that passes inside, where it is clear that the space of the vacuum has received organized lighting in the distribution of the amount of light coming from the top of the central point of the ceiling, the high side vents, which worked to control the amount of light passing in and regulate it in the light rays permeating the interior space.

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