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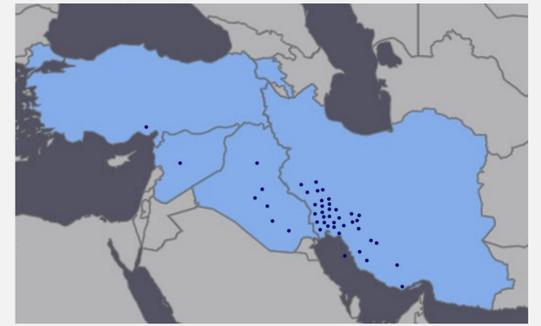
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Abstract

During the Islamic period developed a wide variety of dome types which reflect dynastic, religious and social distinctions as much as different construction techniques. Muqarnas dome is a kind of conical dome such that in Iraq, south-western Iran and Syria during the Seljuk, Ilkhanid and Timurid, and which spread for some time even after it.

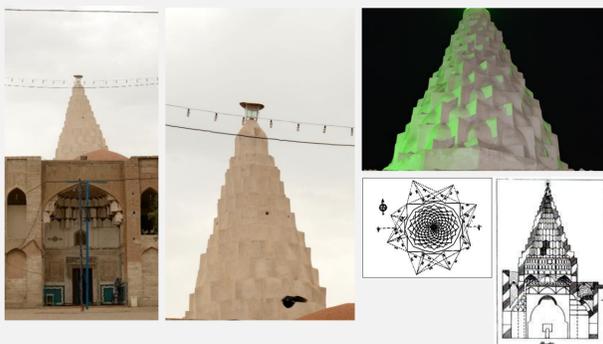
The sudden appearance of an architectural form at such an advanced level of development has posed the importance and necessity of investigating about this form for architectural historians.

This study discusses the architecture of muqarnas domes to better understand the architectural history. It is necessary to specify in detail how it took shape and to describe its features. The use of a fractal structure to respond to the totality of structure of building in muqarnas dome is a unique example of architectural history in the region of Mesopotamia.



Introduction

Muqarnas dome consist of multiple tiers of horizontal elements in the form of polygon, which are scaled down gradually from bottom to top to build a conical shape.



Imamazadeh Abdullah, Shushtar, Khuzestan, 629/1231

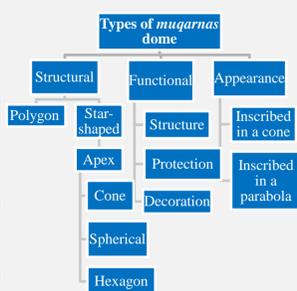
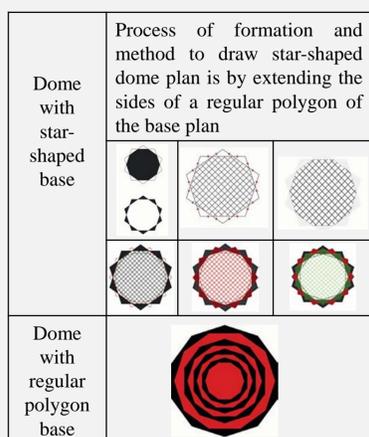
The main feature of muqarnas dome is that it is ridged so that each cell of the dome of the main base plan is repeated in the cell underneath. The dimension of the plan is less than the dimension of the base plan in the lower cells. The height of this dome is usually higher than other domes. To build muqarnas dome, at first the conical template of wood on top of the roof is made and then behind it from the inner base of dome that was the main base, the dome is arranged with bricks.

Using the template had given the possibility to the architects to maintain the balance of the dome.



Mausoleum of Yaghub leis Safari, Dezful, Khuzestan

Almost all of these domes are made of brick and consist of a single or two shells and the interior articulations of the main base are reflected on the exterior.



In technical term, the most important characteristic in muqarnas dome structures is its balance. Architects placed a heavy weight in the last cell as apex for balancing of the dome.

Muqarnas dome in terms of space structure, shape of plans and geometric relationship between the inside and the outside of the dome are divided into two categories: domes with star-shaped plan and domes with polygon plan.

Materials and Methods

Typology of structure could be used to understand muqarnas dome by establishing types according to the geometric shape of muqarnas dome, the number of cells, its outward form, number of floors, height, type of material and the cover. With the typological interpretation of historical evolution, the reconstruction of the evolutionary continuum of this building is intended. By investigation of the shape and form of muqarnas dome based on temporal sequence, its development can be understood. The historical documents of Islamic architecture, especially, visual documentation are one of the most important documents in the study of history of architecture.

Other visual resources are muralist and bas-reliefs, coins and object obtained of the Achaemenian and Sassanian era.



Discussion and Conclusion

According to what has been mentioned about muqarnas dome so far, it is reasonable to inquire for discussion about the reasons for making muqarnas dome. Addressing the dome-building techniques, cognition of it, structural performance review, stylistics, executive methods could be to find the reasons for the formation of the muqarnas dome. According to the geometric relationships and the structure of the form of cells is justified

structural function in the dome and cells are, that drift in dome controlled and inhibited and this type of dome is suitable for a tall dome with an especially small span.

The epistemological origin of muqarnas dome might be the atomist-occasionalist concept formulated by the Ash'ari theology. Cosmological theory of muqarnas or manifestation of theological doctrines, that theoretically resides in structural relation to these geometrical and astronomical parameters, in a manner which forms a coincidence between architecture and the cosmos.

Another point, that can be considered about memorial buildings with muqarnas dome, is that they are located in the region of Mesopotamia and Elam. By review of historical evidence in the Mesopotamia and Elam region, although initially it does not appear to be connected, all the evidence either brings together or could indicate a link to muqarnas dome, but by investigation of all the evidence that muqarnas dome have in common the region between Mesopotamia and Elam, that it is possible to conclude, that the muqarnas dome is a kind of symbolic architectural structure, which rooted in the past and historical symbolic elements in this region.

1		Object obtained from Jiroft, from about 5500 years ago	2		Object obtained from Jiroft, from about 5500 years ago
3		The Hanging Gardens of Babylon	4		The Hanging Gardens of Semiramis, Nebuchadnezzar II
5		Temple of Mesopotamia	6		The Ziggurat at Babylon
7		Chogha Zanbil Ziggurat	8		Denticulated motifs at Persepolis
9		Large Ivan in Taq-e Bostan, Sassanid Period	10		Crown of Sassanid King



Presently it can be assumed that each of the above hypothesis alone cannot explain the origin of these memorial buildings, but each has an impact on the construction of this type of buildings.