

Creativity of Design for Alternative Invisible Geometry (Girih) The Formation of Interior Elements through Growth Repetitive Patterns in Architecture and Islamic Arts before the Penrose Patterns

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Abstract

The creative designer always finds significant relationships among a set of facts to bring into an intellectual content for the purpose of achieving aesthetic pleasure. On the other hand, the creative Muslim designer, perpetually in a state of worship, had other important visions in the expression of the Islamic perception; honesty and truth. The creativity of design for the Muslim artist is based on a state of unity and harmony with the faith and glorifying of the Creator. Geometry has been able to impose its sovereignty over architecture and Islamic Art, and Muslims managed to extract a variety of geometric patterns and infinite networks, which led to pioneering produce of art from the depth of scientific knowledge. This breakthrough enabled the Muslim designer to take the first step towards advanced technical design methods. With this level of advanced geometry (the girih) which can only be understood by the geometric properties of shapes, polygons, crystals, and quasi-crystals one could construct invisible patterns to yield visible patterns. The Islamic girih system is an intricate way to build visible patterns by constructing invisible shapes that could be compared to a photo negative. By the 14th century Muslims have already developed a technique in the installation of the girih system. This alternative geometry was only discovered by the west in the second half of the twentieth century and was attributed to the world by contemporary physicist Roger Penrose and named Penrose pattern, the magnificent system enabled him to create complex patterns of quasi-crystalline forms.

Research Questions What are geometric shapes, crystalline, and quasi-crystalline Islamic Girih system and how to apply it? What is Penrose's properties? What is the system? What is the archaeological proof that shows pioneered advanced knowledge of the Islamic civilization over the west? How to take advantage of the system of the Islamic grihi in the work of contemporary complex patterns in the elements of interior design?

Research Objectives To demonstrate the revival of the Islamic civilization through the study of the Islamic girih patterns and to show their impact on western knowledge. Furthermore, integrating complex girih and Penrose systems on contemporary interior design.

Research Methodology The research follows the analytic descriptive method to answer the research questions, and demonstrate objectives to achieve the results.