

The Golden ratio and its impact on Architectural design

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Abstract:

Proportionality is a concept that refers to the importance of the relationships between the parts of the same geometric shapes in terms of a mathematical ratio, which is represented here by the golden ratio, and relying on mathematical principles in art and architecture gives the human mind the ability to perceive and understand the relationships between blocks and spaces in a simpler way. Therefore, balance, proportionality and symmetry are among the basic principles in Architectural Design. Proportionality in this way can be considered a numerical value expressing how the design elements are located within its general framework. Therefore, the research was interested in studying the concept of golden ratios and their relationships with basic geometric shapes through mathematical relations represented in the Fibonacci sequence and its applications in architecture throughout the ages through the use of the deductive approach and then the use of the inductive approach in order to find a mathematical technique that helps architects achieve golden proportions in their architectural designs through find an architectural module (grid) that achieves the Fibonacci sequence and thus achieves the golden ratios in the form of the relationship between the sides of the architectural spaces. Then the research used the experimental method to apply the proposed technique to an existing residential villa by studying the design spaces of the villa before applying the proposed architectural module, then modifying the architectural design of the villa according to the proposed architectural module and then drawing conclusions and recommendations.

Keywords:

Golden ratio, Architectural Design, Fibonacci sequence, Architectural Module (Grid).

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