Fractals between theory and practice and its use in enriching the field of design

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Abstract:
Nature is a source of inspiration for artists, designers, also in design field, as it includes an infinite number of design elements characterized by continuous change in their appearance. Man, by nature tends to organization and arrangement, as this brings comfort and reassurance.
Several theories such as (fractals) have emerged through the geometric and mathematical relationship of the elements of the environment. The geometric organization and self-formation in nature follows growth and expansion system. It is an evident that the mathematical system is the highest level of integration, performance, and function, as all organisms are governed by the natural law of growth and order. It reflects an integrated system from which the designer extracts ideas to express with his own vision, using innovative capabilities in understanding the different relationships of the cosmic phenomena around him, as well as the geometric arrangement and coordination. The research problem determines to what extent the fractal theory can be used to create new designs solutions to enrich the entries of artistic formation in design to keep pace with the times developments according to the Saudi Vision 2030 and employ it in designing printed women's clothing fabrics.
The research aims to enrich the design field through new design entrances from the fractal theory, and employ the computer's capabilities. The significance of the research is to take benefit from scientific theories in design field, shed light on (fractals) theory in the field of design and employ it to design printed women's clothing fabrics. The research assumes that the (fractals) theory gives advantages which broaden the designer's perceptions and enrich the fields of textile printing and decorative design to create innovative design solutions for women's clothing fabrics. The research boundaries are divided into time limits: studying the structural systems of the fractals theory nowadays, and objective limits: focusing on benefiting from fractals theory and an experimental study to develop innovative design solutions that enrich the fields of textile printing and decorative design and employ them to design women's clothing fabrics. The research adopts a descriptive, analytical, and experimental approach through presentation and descriptive models from (fractals) theory to create and analyze innovative artistic designs. Research results suggest that innovative design solutions can enrich designing fields through (fractals) theory and their use of printed women's clothing fabrics. The research recommends emphasizing the adaptation of modern theories, especially (fractals) theory as an integrated system that opens a new field to enrich design field in general and textile printing field especially women's clothing fabrics.

References:
3- Muhammad Al-Amin Musa: An Introduction to Graphic Design. Sharjah, University of Sharjah, 2011.
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