Formal Effects of Photoelectromagnetism and Quantum Theory as an Input to the Construction of Decorative Designs

By

Esraa Ali Hassan Abd Elgawad

Assistant leacher in the Department of Art Education (Decorative designs)

Faculty of Specific Education - Fayoum University

submitted in fulfillment of the requirements for the Doctorate of Philosophy degree in Art Education (Decorative Designs Specialization)

Supervised by

Prof.Assist. Ahmed Mostafa Mohamed

Assistant Design Professor, design Department of art education, Faculty of Specific Education, Fayoum University

Prof.Dr. Emad Farouk Ragheb

Professor of Design and Head of the Department of Visual and Digital Designs - Faculty of Art Education - Helwan University

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Abstract

Decorative arts have undergone a significant transformation with the advancement of modern sciences, particularly influenced by quantum mechanics and electromagnetic waves, opening new horizons for creativity in design. This research aims to explore the aesthetic and structural potentials of these physical theories to develop decorative designs that reflect dynamism and energy. It discusses how light can be utilized as a design tool and how invisible spectra, such as infrared and ultraviolet rays, can enrich contemporary designs. The study also examines the impact of quantum mechanics in introducing decorative patterns that embody dynamism and probabilistic behavior, integrating these scientific concepts with digital technologies to produce precise and innovative designs. Practical applications utilizing advanced software and luminous materials were reviewed, highlighting the importance of merging art and science to create multidisciplinary design solutions. The research concluded that integrating physical theories with decorative design offers boundless creative opportunities. It recommends incorporating these concepts into applied arts curricula, developing interactive tools to simulate physical phenomena, and employing them in various design fields.