Abstract

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"Fractal Geometry in Architectural Buildings Skin, from Formative Idea to Superficiality"

The emergence of chaos and complexity sciences had an influence on philosophy, art and architecture. Scientists and mathematicians found that fractal geometry provides some explanation for nature complexities. This paradigm resulted in a shift in thought which appeared in architecture. Architects have been interested to connect their work to the universe as Frank Lloyd Wright and Peter Eisenman, and tended to design architecture that is based on fractals. Architects created attractive cellular patterns, growing grains like in natural creations and subdividing elements to smaller units. Fractal geometry with its characteristics of self-similarity, scaling and neverending had a hand in architecture as a formative idea and form generator. Architects, when designing using fractal geometry, tend to use it aesthetically, creating decorative complex patterns which can be perceived by the public. This resulted in use of fractal geometry to design attractive facades. The fractal involvement in the skin design of a building is more apparent than in the architectural morphology of masses and spaces. Patterns generated using fractal geometry are mostly used in skin design which creates the risk that fractal geometry would fall into superficiality and to be applied in a direct and shallow manner. This paper explores the following question is fractal geometry confined by architects in designing skin and facades of building rather than its original vision of achieving complexity? That is achieved by discussing existing international architectural precedents in which designers used fractal geometry in skin design, regardless of the building type. Through analysis, the paper aims to show that the use of fractal geometry in skin design may actually have a relation with functions and spaces, environmental solutions and other design aspects and considerations.