Abstract

The scope of this Study has been to translate paradigms in science, and to see how such paradigms have influenced architects and builders in the perception and description of space. More specifically, it goes against Cartesian notions of space, and argues for a new paradigm of perception afforded by a new science termed Chaos.

This branch of science called Chaos was developed to look at how complexities in nature may be reexamined and understood. This look at Chaos is not to philosophize about the impact it may have on a theoretical level, but to see how it may help in the practical formulation of Architecture. For this, the study has been directed at the more geometrical aspects of chaos theory, i.e., Fractal Geometry.

The arguments open on why we should adapt fractal geometry into architecture. We also look at how Cartesian geometry have simplified our notions of space and mass, and how fractal geometry may re-inject a more subjective notion of space based on man's physiological needs, notions of beauty, and spatial perception.

How this is done is to look at the growth characteristics of Fractals, and compare this with natural growth organism. These analyses are aided by an architectural theory of trees, and how we may find a "genotype" of space by comparing it to an organic unit, and further using the work of Thompson Wentworth D'arcy, show how space then may be related in an organic manner, and may be transformed morphologically.

The analysis further breaks down the organic unit of space into quantifiable properties such as Proportions, Scale, structural Rhythm, such as can be found in the governed constructs of fractal geometry, and which has a parallel in natural systems. We see also how natural systems change in response to their environment, which would govern their change of form, may be translated in parallel to the architectural program, which would govern the space and form of the building.

Apart from the program, the use of fractal geometry also helps in describing zones of attraction that governs its forms of space, thus giving a subjectivity of space that neutralises the objectivity of Cartesian space.

From these is derived a synthesis of subjective spatial perception, governed by rules of organic proportions, scale, rhythm. Thus is the new paradigm by which Architecture is hoped to be re-examined. This paradigm is tested on two building types, a Chinese temple, and a Gothic cathedral. From these, the proof of the paradigm is derived.

These mappings are only the first steps toward Architecture in a new direction. This dissertation does not touch upon social cultural or intellectual issues that may be integral to the cause of architecture. It is to be hoped that this dissertation may be a useful supplement to such issues.