

Biomimetic Paradigms in Architectural Conceptualization: Science, Technology, Engineering, Arts and Mathematics in Higher Education

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Abstract : The application of algorithms in architecture has been realized as geometric forms which are increasingly being used by architecture firms. The abstraction of ideas in a formulated algorithm is not possible. There is still a gap between design innovation and final built in prescribed formulas, even the most aesthetical realizations. This paper presents the application of erudite design process to conceptualize biomimetic paradigms in architecture. The process is customized to material and tectonics. The first part of the paper outlines the design process elements within four biomimetic pre-concepts. The pre-concepts are chosen from plants family. These include the pine leaf, the dandelion flower; the cactus flower and the sun flower. The choice of these are related to material qualities and natural pattern of the tectonics of these plants. It then focuses on four versions of tectonic comprehension of one of the biomimetic pre-concepts. The next part of the paper discusses the implementation of STEAM in higher education in architecture. This is shown by the relations within the design process and the manifestation of the thinking processes. The A in the SETAM, in this case, is only achieved by the design process, an engaging event as a performing arts, in which the conceptualization and development is realized in final built.

Keywords : biomimetic paradigm, erudite design process, tectonic, STEAM (Science, Technology, Engineering, Arts, Mathematic)

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