

Neapolis University

HEPHAESTUS Repository

<http://hephaestus.nup.ac.cy>

School of Architecture, Land and Environmental Sciences

Conference papers

2015

Nature Inspired Form Finding Strategies Assessment using Genetic Algorithms

Antoniou, Dimitrios

IEEE Computer Society

<http://hdl.handle.net/11728/6655>

Downloaded from HEPHAESTUS Repository, Neapolis University institutional repository

Title:	Nature Inspired Form Finding Strategies Assessment using Genetic Algorithms
Year:	2015
Author:	Demetris Antoniou, George Artopoulos, Nikolaos Bakas, Ioakeim Liassides, Nikolaos Varlagkas, Giannis Georgiou, Katerina Demetriou, Savoulla Karagiannidi
Abstract:	<p>In this work, several topology generation procedures have been implemented on architectural surfaces combined with urban forms. Delaunay triangulation, Voronoi diagrams and the recently proposed [1, 2, 3] Voronax diagram, assessed in terms of nature adaptive forms. This is achieved using structural analysis criteria such as mean and maximum compressive stresses in each step of the optimization procedure. The methodology is based on a robust genetic algorithm [4] connected with structural analysis software [5] and form finding code, while their interconnection establishes the proposed framework for generative solution of form finding complexities. Several general three and two dimensional artifacts have been analyzed and designed using the proposed methodology. The suggested approach and the results achieved constitutes a novel framework for such issues.</p>