Abstract

19.11.2008

The component based construction is a structural system of material, time production, assembly. In this research,I would like to take a substance from nature and define as a component which is a honeycomb.The reason to distinguish this element is the repetition inside, modularity, systematic and also it can adapt the volumetric modifications by its flexibility in origin. After characterising this specific substance as component, changing the parameters, it will be an experiment to constitute a structural building skin and also a modular system that can be responsive and adaptible to a specific environment relating to the variables .

The discussion of an algorithm to construct that parametrical system leads to use Voronoi pattern as a tool. As it is used in site analysis; finding the nearest neighbour search or largest empty circle for a construction site,in geometry modeling;finding the good triangulation of 3D surfaces, in engineering; having optimization cost saving in real engineering applications,in architecture; organising the plan site based on Voronoi pattern. Moreover, by using the 3D Voronoi pattern_tiling system,on the roof structures and walls, there are created voids to get the light and air in.

The aim of the research is by using Voronio pattern, researching the materials used before, this Voronoi cell structure will respond to the environmental stress and dynamic loading as they can work independently, but definening them as a high-rise building by changing variables for the floors and also manifest itself as a skin for the roof relating to the global effects.

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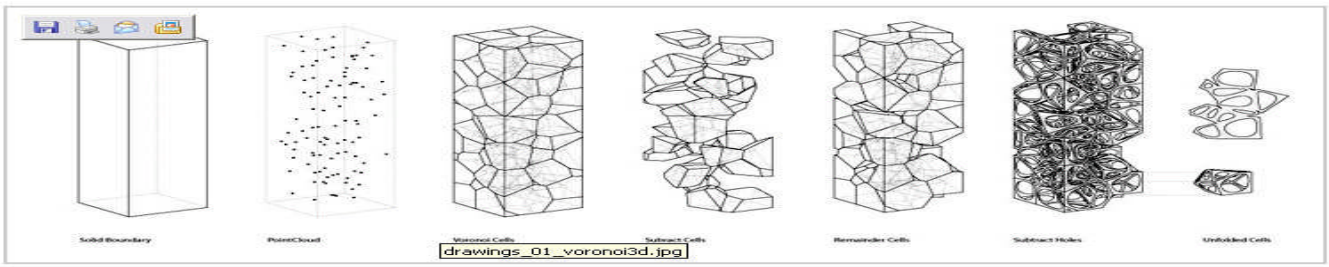

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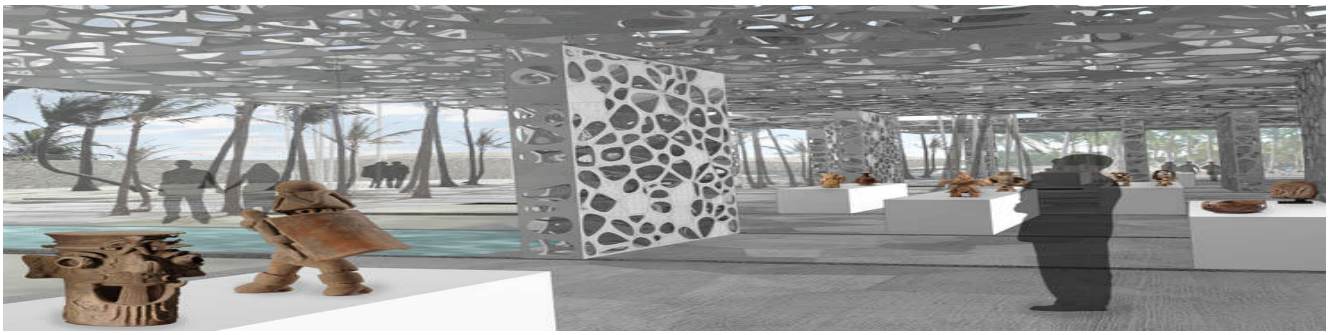

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