

The Geometry of Natural Formation: an Application of Geometrical Analysis for Complex Natural Order of Pomegranate

Authors : Anahita Aris

Abstract : Geometry always plays a key role in natural structures, which can be a source of inspiration for architects and urban designers to create spaces. By understanding formative principles in nature, a variety of options can be provided that lead to freedom of formation. The main purpose of this paper is to analyze the geometrical order found in pomegranate to find formative principles explaining its complex structure. The point is how spherical arils of pomegranate pressed together inside the fruit and filled the space as they expand in the growing process, which made a self-organized system leads to the formation of each of the arils are unique in size, topology and shape. The main challenge of this paper would be using advanced architectural modeling techniques to discover these principles.

Keywords : advanced modeling techniques, architectural modeling, computational design, the geometry of natural formation, geometrical analysis, the natural order of pomegranate, voronoi diagrams

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