

Origins of Geometric Computational Design in Architecture

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Abstract

The changes that the computer is bringing to architecture are one part of a revolutionary social upheaval. Tools not only change individual patterns and behaviour, but also cause transformations in institutions. Just as other tools have in the past, the computer is in the process of conditioning our understanding of the world and our perception of our place in it. The application of computers to architecture is more than a new sophisticated tool that can be manipulated like a pencil or pen. It is rather, “the culmination of the objectifying mentality of modernity and it is, therefore, inherently perspectival. The tyranny of computer-aided design and its graphic systems can be awesome: because its rigorous mathematical base is unshakable, it rigidly establishes a homogeneous space and is inherently unable to combine different structure of reference.” Digital space is quantified by a programmer, who enacts a simplification of reality through a process of abstraction in which empirical that does not fit the chosen conceptual framework is discarded.

The aim of this paper is to investigate and track the origins of the core concepts of geometrics in the history of architecture and to designate its basic conceptual applications that could be probably using the same concepts and processing steps that are used today with computers. The gained benefits of this investigation could help in boosting new methodologies in architectural design regarding form generation. Comparative analysis shall be the methodology used to reach these theoretical origins, and, the royal palace of the Alhambra will be the main case study together with related styles from Islamic architecture.

International Conference on Engineering, Technology and Computer Science 2016, February