

Shape Grammars: Style Generators in CAAD

Samir Sadek Hosny . ,Single Author

Professor

Abstract

Just as grammars for natural languages use rules to form grammatical sentences from a dictionary of words, grammars for architectural design use rules to make structures from a dictionary of shapes, properties, labels and other elements. Shape grammars are concerned with the generation of form through the application of defined rules which constitute a grammar, and which can be used to express the way that elements of a design are composed in a style. This paper addresses the concept that shape grammars, considered as one of the CAAD (Computer-Aided Architectural Design) generation tools, may be used to help the designer generate and evaluate design concepts after a specific style during the conceptual phase of the design process. An example of architectural grammar after Kisho Kurokawa's style for museum design is presented. Five examples of Kurokawa's museum designs are analyzed. The extraction and formation of his architectural grammar is presented. The implementation of the grammar is introduced through a set of rules governing the Kurokawa's style for museum design, these are put in a shapes matrix through which different design ideas, concepts and configurations are generated and explored. The paper also opens up new frontiers for future research work in this field.

Journal of Eng. & Applied Science-Cairo Univ. Vol.50 Part1, Feb2003 - 2003, January