Chapter 14

Concept as the DNA for Morphogenesis:
A Case Study of Contemporary Architecture

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ABSTRACT

Form in architecture is a product of a complex set of layers and generators. One major generator of these is the design concept. In this context, a concept can be considered as the nexus that orchestrates all considerations and layers to keep them coherent and consistent. Furthermore, the concept represents the clearest semantic message conveyed by the designer through the building to the viewers and users. Similar to the role of DNA, concept functions as the hidden molecule that carries the instructions that the design needs to emerge and evolve. This chapter discusses the structure of form as a language, and its various generators, with a focus on the role of concept in the resultant morphological output. The discussion of form is followed by another of concept. The discussion of the impact of concept on design is supported by a contemporary case study. The case study is used to illustrate the role of a concept as a driving force and its implications in the design derivation, as well as its impacts on the various layers of the final morphology.

INTRODUCTION

Design represents a core activity in the professional practice and education of architecture. A major phase in design processing is concept derivation. This chapter discusses some methods of concept derivation and introduces a theoretical model for concept translation into design.

The chapter consists of seven sections. Following this introductory section, the second section discusses form and morphology in architecture. The third explains nine generators of form in architecture. The fourth focuses on the role of concept as a generator of form in architectural design. It introduces some common definitions of the term “concept” and explains some concept formulation methods. The fifth

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section introduces a theoretical model of concept structure that can be used to guide concept translation and precedent analysis in building design. The sixth applies the theoretical model on a case study of contemporary architecture. The seventh and final section summarizes the conclusions of this chapter.

**Form and Morphology in Architectural Design**

To help understand its structure, architectural form can be viewed as a human-made language. The analogy between visual languages and verbal ones is well-established (e.g. Eilouti, 2017; Natapov et al, 2016; Summerson, 1966). The generation of complex structures out of a set of primitive elements and using a set of grammatical rules is based on Noam Chomsky’s generative grammars (Chomsky, 1956, 1965; Gandelzonas, 1983). Influenced by Chomsky, Peter Eisenman designed a series of residential designs which he called ‘cardboard architecture’. In these designs, he objectified what he referred to as ‘deep structure’ to explore the concept of visual syntax. In Eisenman’s architecture, the process of designing is associated with a process of research into formal structures and fractal geometric forms (Eisenman, 1983; Gandelzonas, 1983). Using the language-based approach, Peter Eisenman (2015) graphically analyzed twenty Palladian villas for which he illustrated the evolution of Palladio’s villas from those that exhibit earlier classical symmetrical volumetric structures.

As in natural languages, the structure of architectural form has many synchronized layers that are integrated together and collectively define a cohesive construct. These include the morphological, semantic, pragmatic and semiotic layers (Eilouti, 2017). The structure of this formal language is illustrated by Figure 1, where the hierarchy of form language consists of four main categories and multiple sub-categories of each. These are:

*Figure 1. A language-based framework for form structure in architecture*