Chapter 1
The Language of Architecture

ABSTRACT

This chapter provides a background to the common “linguistic” analogies in architectural thinking, which are concerned with the “grammar” of form and the “syntax” of space. The chapter then links these linguistic properties to the classical Vitruvian architectural values of firmness, commodity, and delight. Thereafter, the chapter introduces the two most well-known computational design approaches, Shape Grammar and Space Syntax, and briefly outlines the general applications of each. In addition, throughout this book, new grammatical and syntactical approaches are typically demonstrated using the domestic architecture of Andrea Palladio, Frank Lloyd Wright, and Glenn Murcutt. Thus, this chapter also introduces these three architects and their architectural languages.

BACKGROUND

A typical definition of the general concept of a “language” has three components. First, it is a set of well-defined verbal or visual elements. Second, these elements must be combined in accordance with an agreed structure and usage to communicate a message. Third, the way these elements are combined within the structure determines the “style” of the language and its expression. As such, language is the combination of formal elements, structural relations and stylistic expressions. Given this definition, it is not surprising that throughout history architecture has been repeatedly described as a language. Architecture relies on the use or adaption of various recurring

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elements (like walls, columns and beams), which are combined in stable or consistent ways (to create shelter or serve a specific function), with the result having a distinct style (and aesthetic and experiential presence). While architectural linguistic analogies of this type have many practical limitations, they remain a pervasive and useful way of examining and understanding the built environment.

The oldest known example of the linguistic analogy in architecture is found in the work of Vitruvius, a first century (BC) Roman architect and military engineer. Vitruvius described how the architectural orders (the Doric, Ionic and Corinthian architecture of ancient Greece) provide the architect with a set of parts and a proportional system to combine them in, and thereby create an ideal assemblage. As such, the orders use form and structure to create a harmonious outcome. While the Classical Greek orders are no longer used in this way, Vitruvius offered a definition of architecture that is still in use today and is closely associated with linguistic analogies. Vitruvius argued that architecture has three properties—firmitas, utilitas and venustas—which are translated as either soundness, utility and attractiveness or firmness, commodity and delight, respectively (Rowland & Howe, 1999; Smith, 2003). In the late twentieth century, when discussions about the language of architecture were revitalised by computational design researchers, firmitas, utilitas and venustas were reconceptualised as, respectively, the grammar, syntax and style of architecture.

Firmness (firmitas) is associated with the tangible presence of architecture, which is more commonly known as the “form” of a building. Form refers to the shape, dimensionality and actual or intended physical properties of a design (Gelernter, 1995). Architectural form is the part of a building that can be seen and touched. As the forms are the recurring elements that make up the corpus of a language, they can also be thought of as the “grammar” of architecture.

Commodity or utility (utilitas) is the property of a building that facilitates “faultless, unimpeded use through the disposition of space” (Rowland & Howe, 1999, p. 26). The word “utility” suggests a degree of usefulness or functionality and the adjective “commodious” refers to things that are generous, capacious or accommodating. Both of these readings confirm that the second component of Vitruvius’s definition is concerned with spatial rather than formal properties. Architectural space is the void enclosed by the walls of a room, or the area around the form of a building. It is the part of a building that can be walked through, looked into or over and inhabited. As spaces and
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