Chapter 18
Architecture and Media

ABSTRACT
This part of the book explores how architects and urban developers apply computational solutions and create a fusion of architecture and media. The use of new technologies for communication, sustainability, functionality, and economy of resources is discussed next. Issues that are relevant to computational methods in design, urban aesthetics, ambient computing, sustainable habitats, novel materials, biology-inspired projects, and many others all pertain to innovative solutions that we can observe in architecture. Themes related to some of the tools and technologies, models of architectural structures, intelligent buildings, and sustainable and green architecture complete this chapter.

INTRODUCTION
It seems the title of this book: “Computational solutions for knowledge, art, and entertainment: information exchange beyond text” could serve perfectly as a description of current trends and patterns one can perceive in architecture. The reader is encouraged to actively respond with own projects to the issues under discussion. Architects and urban developers find computational solutions to add programmable elements to the façades, which often results in a fusion of architecture and media. Placing electronic display on a façade (which is sometimes called mediatecture) adds entertainment to city life. The use of new technologies for communication and sustainability may lead to dissolving the boundaries between building categories and functions, whether the structure serves art, media culture, entertainment, commerce, or advertising. Issues that are relevant to computational methods in design, urban aesthetics, ambient computing, sustainable habitats, novel materials, biology inspired projects, and many others, all pertain to innovative solutions that we can observe in architecture. As a result, encounters with architectural creations offer the users and visitors complex multimodal experiences.

Figure 1, “Exits” implies some similarities in the connectedness existing in architectural detail and composition of art works.

A bridge connects us with faraway places. A triptych gives a notional link with the absolute. Borders enclosing an icon invoke meanings contained in our inward frame. Elaborate portals lead someone up the path of choices. Let others build their frames for interpretation.

DOI: 10.4018/978-1-4666-4627-8.ch018
Many times architects apply an ability to think abstractly as an opportunity to perceive problems with a bird’s eye view perspective and examine an imaginary bird’s view of a new complex before drawing its detailed blueprint. According to Paivio, (1970) spatial skills necessary for architectural drawing are visualization, mental rotation, transposition of 3-D objects to 2-D paper, and cognitive mapping. Images of architectural solutions may have persuasive power because they act rhetorically upon viewers and participants of discussions in social media (Hill & Helmers, 2004/2008). Authors of innovative architectural projects organize and structure the core message of their projects in a meaningful, sometimes metaphorical way. Most of metaphors we encounter or create are shaped upon natural forms. On the other hand, the principles behind the historical development of the architectural details oscillated between aesthetics and pragmatic structure. As Hironori Yoshida (2012, p. 81) points out, “building with adobe bricks has over 9,000 years of history, and the Egyptian pyramids are made of millions of standardized stones. It is no exaggeration to say that throughout history, people have continuously flattened and standardized the diverse natural materials into regular, uniform, repeatable, measurable forms.” Later on, forms and patterns gained in variability and architectural aesthetics has been considered intrinsically tied to development of many computer-assisted architectural design systems.

Cognitive scientists hold that natural metaphors reside in thought as instinctively understandable concepts. Mateo and Sauter (2007) present diverse design approaches taken by the cross-disciplinary teams that address theoretical, material, and artistic challenges by finding correlations between nature and architectural design. Forms and patterns – natural metaphors that are present in architectural details – are often derived from common and universal live forms such as helices (formed by climber plants or present in the DNA molecules), snail shells, fossil ammonites, and natural knots (Mateo and Sauter 2007). Architecture and cell biology have been examined in terms of biosemiotics (Ferreira, 2011), with architectural structures discussed as context-dependent semiotic objects with functional and/or aesthetic values. Both the natural and man-made environment can be perceived as locus, place, site, or a part of a mental map of a cultural framework. (see Table 1)

The way we design and build architectural structures can be compared to biological forms, and the relation of these structures to their surroundings can be examined in terms of cellular motility in the extracellular matrix environment. The study of Lucia, Sabin, and Jones (2011) extends across architecture and the biological sciences in terms of the information theoretical