IDEATION:
METAPHORICAL EXPLORATIONS AND DIGITAL MEDIA

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Abstract. Metaphor in architecture involves two distinct paradigms of ideation and visualization: architecture as a virtual metaphor of an idea and virtual models of architecture as metaphors of an architectural intention or vision. Digital media is a powerful vehicle for the generation and expression of both paradigms. The dominant applications of digital media in architecture are drafting and computer simulations as virtual constructs of an architectural intention. This paper will focus on the us e of digital media and ideation, a design process which uses metaphor to link idea and form early in the design process.

Keywords. Design creativity, Design process, Generative design, Innovation, Precedents

Metaphor in architecture involves two distinct paradigms: architecture as a virtual metaphor of an idea and virtual models of architecture as metaphors of an architectural intention or vision. Both paradigms involve ideation and visualization. Ideation conveys an idea by association, or metaphor, to transmit and register the essential elements of the thing described. (Brady and English 1993/94) Visualization links image and idea throughout the design process as visual constructs for the mind and the eye. It is the process of forming a mental picture of something not present to sight, as well as the resulting picture that is formed. (OED 1971) Digital media is a powerful vehicle for the generation and expression of both paradigms throughout the design process.

The effective use of computer applications early in design relies as much on an understanding of the creative process as it does on an understanding of computer applications. The dominant uses of digital media in architecture are for production and presentation - typically at the end of the design process; i.e. drafting and computer simulations as virtual constructs or visualizations of an architectural intention. Digital media also has an important role in the process of creative expression as constructs of ideas.

The limited use of the computer as a design medium and form generator in architecture is perhaps the result of trying to force the creative process to conform to the logic of the tool. Design tools are instruments or devices which perform specific functions that are used to facilitate or do work. Design media are the techniques or means of expressions determined by materials or creative methods. (American Heritage 1973) Digital media link computer applications as a tool with a technique or creative method. The creative method determines the tool to be used - not only what, but when and how.

Design Method

The visualization of idea and form is one of the most difficult and essential acts of creating mean-

ingful architecture. Designers are visualizers in that they form "mental images of invisible things, abstract ideas and conditions." (OED 1971) The term visualization is often used to describe the use of computer applications to create photorealistic architectural simulations to "show" and thus "convince" the viewer of the merits of the proposal. Visualization in the broader sense of the term starts early in the design process. John Dewey in Art and Experience describes it as "the capacity to work a vague idea and emotion over into terms of some definite medium." (Dewey, 1934)

Formgivers

Metaphor and ideation play an important part in the visualization process as animators and identifiers of expressive content or ideas. (Brady and English, 1993/94; Brady 1998) Content is the animating spirit of architectural form. Panofsky defines content, as opposed to subject-matter, as "...the attitude which a work betrays but does not parade." (Panofsky, 1955) Whether identified as "meaningful forms" by Norberg-Schulz, the "spirit in objectified forms" by Frank Lloyd Wright, or the "decorum" of forms by Palladio, the notion of content, or essential idea, is integral to architecture. It gives a work significance by expressing the values, attitudes and philosophies of individuals and cultures.

The linking of idea and form is the result of the intuitive and rational modes of thought acting in unison. The recognition and transference of an idea happens in the intuitive mode. The realization of the idea as an architectural expression is within the rational mode. One is generative while the other is formative. One is creative, while the other is critical. (Vickers, 1978) The ideographic process conveys an idea by association, or metaphor, as a link between the intuitive and rational modes of thought. In this way, the relationship between idea and the generation of form becomes potent and direct.

Metaphor involves the exploration and expression of an idea through vehicles that are the means or form structures, not the ends or actuality, for the essence of a thing. This essence is conveyed metaphorically through isomorphism, as an analogous presentation of an idea via structural, geometric, kinematic, physical or morphological properties, orders and patterns. It may also be conveyed by mimetic analogy as an imitative presentation of an idea based on the mimicry of external appearance. Metaphor as animator of expressive content in architecture enables the idea to be form generating.

Ideation integrates content, design and media. Ideation is a process of identifying and conveying concepts as ideograms, i.e. a diagram of an idea. The poet Ezra Pound (1960) describes the ideogram as a form of picture writing, similar to the Chinese ideograph - a written language of simplified marks that capture the essential elements of the first picture or sight of the thing describe - a tree, a brook, a stairway. However, not all stairs are the same: some are narrow, grand, open, enclosed, etc. The ideogram captures the basic elements of the form, the descriptive adjective is the metaphor. Ideation is a poetic device that links concepts or words and the basic elements of visual forms.

The Vitruvian model of observation and experience is an effective method for integrating metaphorical explorations and digital media in generating design. This can be done via several means. The starting point can be words that evoke visual imagery. The source can be poetry or the adjectives used to describe a function, form or place. Figure 1. Ideation Studies: Text as

Formgiver - Concepts from Samuel Taylor Coleridge "Imagination" in Biographia Literaria

It can also be forms or visual images that evoke descriptive terms. For example, the analysis of precedents are useful vehicles for identifying and understanding distinguishing elements which can be formgivers for a new proposal.

Figure 2. Ideation Studies: Precedent as Formgiver - Master Houses: Restored (L) / Unrestored (R), Dessau, Germany

In the same way that ideograms are used in the initial design stages, they are also useful to visualize concepts and evaluate a project as it is being developed.

Design Tools

Steve Lohr (2003) noted, in an article on New Media, that there is "little natural affinity between software and media." Lohr was referring to the findings by a National Research Council study on "Beyond Productivity: Information Technology, Innovation and Creativity" which noted that programming tools result in programmer-created design, in part due to the difference between using a paintbrush or a piano and programming in a computer language.   Even if the user does not need to program in C++ in order to create with an application, the logic of the computer language can have an impact on the interface and the process. The issue to the effective use of computer applications in the design process is linking the appropriate medium, method and intent. The time to learn and use the program, the types of images and forms that can be produced, even the interface for using the application must be appropriate for the task.

Sketching & Photography

Exploring the link between traditional media and design exploration suggests ways in which computer applications can be effectively introduced early in the process. Digital media used for production and presentation in architecture are closely aligned to its counterpart in traditional media. CADD programs mimic in many ways the process of drafting by hand.   The distinction between the use of digital or traditional media as a presentation vehicle is the degree of realistic simulation, not intent; i.e. digital simulations are similar to the presentations of watercolor or marker renderings and physical models. For digital applications to play a role in the initial stages of design, it is important to identify computer applications that are compatible with the design process; to do so, requires expanding the types of digital media used beyond drafting and rendering, as well as the way in which it is used.

Initial design studies tend to be multiple freehand sketches and study models that are diagrammatic. Free form sketching and the precision of CADD applications are not comparable.   A cordless pressure-sensitive stylus and a tablet in combination with the drawing tools and layers palette in Photoshop is similar to drawing with a pencil on layers of trace. Therefore using the stylus/drawing application may be more appropriate for initial design sketches than using a computer mouse or keyboard and a vector-based drafting application. (11_brady_fig01.tif)

Digital media can also be used in conjunction with traditional media. Digital photography is useful for initial design studies, as well as for final presentations. Physical models are often used early in the design process for quick massing studies. A digital camera or web cam in conjunction with a physical model is an effective means to also study scale, material, and movement (e.g. sun studies or walkthroughs).   The copy - paste - scale - rotate functions in a computer application enable changes to be made more quickly than redoing by hand. If it is preferable to draw on

paper or to photograph with film, digital scanners can be used to translate the images into a format that can be manipulated in a computer application. (11_brady_fig02.tif)   The key is to link the strengths of digital and traditional media as complements to each other.

Conclusion

The process of "what if" is integral to the design process. This requires the ability to identify and visualize the relationship of idea and form, from different points of view and in different contexts.   Metaphor plays an important role in identifying the essential aspects of an idea that is integral to design generation and innovation. Digital applications used as design media can enable and enhance the creative process of metaphorical explorations.

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