Architectural References in the Design Studio: Is a Digital Model Worth a Thousand Pictures?

Ivanka Iordanova, Temy Tidafi and Giovanni De Paoli
GRCAO, Université de Montréal, Canada

email:Ivanka.Iordanova@umontreal.ca

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Abstract:

This communication addresses the use of a new type of references database in the context of an architectural design studio. It will discuss the results of design experiences held with the objective to study the cognitive effects of a teaching approach based on precedents and metaphors available as interactive and reusable digital models to students.

The introduction of the reference-based approach is inspired by three major principles: One is the largely accepted fact that the creative work of architects is highly supported by referring to precedents and metaphors. Reconsidering references form a digital point of view, brought up the idea of "augmenting" their role by providing digital models rather than only text and pictures. Based on previous work, these models are encapsulating "chunks" of architectural know-how and making it available to students.
A second principle applied to the reference-models is the introduction of algorithmic architecture generation. This pursues a double objective: educating students in a new way of design thinking (based on process rather than on result) that could be complementary to traditional methods of design; as well as introducing architectural know-how linked to "performative" architecture.
A third main inspiration was the constructivist methodology giving the grounds for the educational approach, as well as for the digital modeling techniques taught to students. This way, interactive "chunks of knowledge" serve as references during the process of design. Students can work with them in order to operationalize the knowledge that they represent.

In the implementation of this approach, we have taken into account some recent studies on new computer methods for architectural education that look for a way to integrate precedents into the architectural studio in an intelligent and intuitive way. But rather than proposing computer assistance based mainly on visual information on precedents, combined with keywords and “concepts” manipulation and association, the digital-models reference database offered in our approach is directly linked to a modeling program, and allowing for knowledge transfer from a precedent to the new design.

The observation experiences in the design studio were held with methodology based on some previous research work, but developing a validation protocol and a coding scheme aiming at finding out some cognitive effects of the design teaching approach. This way, a special attention is paid on the level of success of the know-how transfer via the modeled references. Another point of interest is the degree of novelty in the designs where reference-models have been reused. In order to evaluate this delicate aspect, “new-design” criteria have been defined. Finally, a link between the cognitive type of each student and his/her attitude to the references is investigated.

The communication will consist of four main parts: a first one giving the background for the study; a second one, discussing the methodology used; a third one presenting the observations held, and a general conclusion on the results and the future avenues they may open.

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