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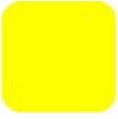
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COMPUTATIONAL DESIGN TOOLS IN ARCHITECTURAL EDUCATION

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Abstract

Architecture is a discipline that continuously produces information through research in the field of education and professional practice. This process of 'knowledge generation' is also influenced significantly by the act of developing new technology and digital tools as well as by an interdisciplinary approach to architecture. In the framework of digital technologies, 'Computational design' provides an innovative alternative to design researches. This method makes it possible to design innovative forms and building systems based on environmental data and also helps us understand the architectural/historical outcomes within a different perspective by using digital tools. These tools are also useful for obtaining and processing the data gathered from direct and indirect sources.

According to architectural design ontology, the cognitive process of design is defined by the interaction between the designer and the phenomenon or artefact that she is working on. This interaction is explained by a loop system consisting of the phases of designer's perception and her decision of intervention. The loop system can be done in a logical way only if the data is processed correctly in a controllable way by the designer. Computational design methods make it possible to achieve this goal and to control the outcomes by different parameters provided by its dataset.

Digital tools influence today's architecture, from the design process to investigating materials and from collecting environmental data to understanding relevant sources. Thus, this method makes the designer think in a more integrated framework with simulation, visualization and the spatialization of outcomes. The reflection of this interaction in architectural education is inevitable. Besides, in architectural education, analysis-oriented design studies that are compatible with the built and natural environment are essential phases. But, such studies can only be possible with a holistic view. An architectural education based on this method allows us to understand the qualitative and quantitative results of a design process. In other words, such studies in architectural education give the future architects the possibility to design with a holistic view.

In short, the aim of this paper is twofold; the first one is to introduce the 'Computational Design' as a methodology. And the second one is to investigate the pros and cons of this methodology on the architectural education.

Keywords: Computational design, Digital tools, Database, Architectural education, Design research

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