

CREATIVE DESIGN BETWEEN REPRESENTATION AND SIMULATION

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Abstract. Milestone figures of architecture all have their different views on what comes first, form or function. They also vary in their definitions of creativity. Apparently, creativity is very strongly related to ideas and how they can be generated. It is also correlated with the process of thinking and developing. Creative products, whether architectural or otherwise, and whether tangible or intangible, are originated from 'good ideas' (Elnokaly, Elseragy and Alsaadani, 2008). On one hand, not any idea, or any good idea, can be considered creative but, on the other hand, any creative result can be traced back to a good idea that initiated it in the beginning (Goldschmit and Tatsa, 2005). Creativity in literature, music and other forms of art is immeasurable and unbounded by constraints of physical reality. Musicians, painters and sculptors do not create within tight restrictions. They create what becomes their own mind's intellectual property, and viewers or listeners are free to interpret these creations from whichever angle they choose. However, this is not the case with architects, whose creations and creative products are always bound with different physical constraints that may be related to the building location, social and cultural values related to the context, environmental performance and energy efficiency, and many more (Elnokaly, Elseragy and Alsaadani, 2008). Remarkably, over the last three decades computers have dominated in almost all areas of design, taking over the burden of repetitive tasks so that the designers and students can focus on the act of creation. Computer aided design has been used for a long time as a tool of drafting, however in this last decade this tool of representation is being replaced by simulation in different areas such as simulation of form, function and environment. Thus, the crafting of objects is moving towards the generation of forms and integrated systems through designer-authored computational processes. The emergence and adoption of computational technologies has significantly changed design and design education beyond the

replacement of drawing boards with computers or pens and paper with computer-aided design (CAD) computer-aided engineering (CAE) applications. This paper highlights the influence of the evolving transformation from Computer Aided Design (CAD) to Computational Design (CD) and how this presents a profound shift in creative design thinking and education. Computational-based design and simulation represent new tools that encourage designers and artists to continue progression of novel modes of design thinking and creativity for the 21st century designers. Today computational design calls for new ideas that will transcend conventional boundaries and support creative insights through design and into design. However, it is still believed that in architecture education one should not replace the design process and creative thinking at early stages by software tools that shape both process and final product which may become a limitation for creative designs to adapt to the decisions and metaphors chosen by the simulation tool. This paper explores the development of Computer Aided Design (CAD) to Computational Design (CD) Tools and their impact on contemporary design education and creative design.

References

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