

The Tool Sculpting The Designer

Cognitive Influence of Digital Tools in Shaping Contemporary Architectural Practice

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I. EXTENDED ABSTRACT

Architecture, and the consequent individual and social performance it situates within itself, first springs up as a response in the architect's mind to the design task at hand. Computer aided assistive technologies for design (Bhatt, Borrmann, Amor, and Beetz, 2013) have not only revolutionized the architecture of the contemporary era, but have also totally changed the ways in which architecture is conceived, designed, realized, viewed, and evaluated (Bhatt and Schultz 2015; Bhatt, Schultz, and Huang, 2012). These digital cognitive assistive technologies have enabled the architect to perform many of their tasks easier; for instance, through a variety of tools, assistive technologies present analytical information to inform design decisions and help design and create building documentations of built forms with previously unthinkable sophistication.

Indeed, it is conceivable that in the process of cognitive assistance, assistive technologies in particular, and computer aided design tools in general, have also influenced the creative thinking and analytical problem solving process of designers. More broadly, this also has ramifications on architectural discourse, practice, and aesthetics of contemporary architecture.

In this ongoing research, an attempt is made to make an overview of various assistive technologies in architectural design that are employed by students of architecture design school. Furthermore, we also strive to critically evaluate the cognitive impact of these tools on the intuitive creative process as well as logical design thinking. This study uses the fundamental principles of human Visuo-Spatial Cognition, Cognitive Science, and Human Computer Interaction, and recent researches reviewed (Eberhard, 2008a, 2008b, 2009; Mallgrave, 2010) in these areas to analyse the influence of assistive digital tools in the design process of young architects and their designs. We also study possible approaches in informing the future design and implementation of human-centered assistive design technologies that are minimally intervening in the early creative stage of the architect.

Keywords: Assistive Tools in Architecture Design, Cognition in Design Education, Human Centered Design, Human Computer Interaction, Computer Aided Design

2. REFERENCES

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3. AUTHOR BIO

Sangeeth S Pillai is a Research Scholar enrolled into the Ph.D. Program in Architecture at the Indian Institute of Technology (IIT), Roorkee, India (<http://www.iitr.ac.in>). His research tries to look at the interface between Architecture, Human Computer Interaction and the overlapping domains of mind and brain sciences, including applied neuroscience, cognitive science, psychology etc. He as the Lead Architect with his team won the Velux Most Progress Award for their entry in 'Rethink Cities Challenge 2011' at CDIO Academy, held at Technical University of Denmark. He has an experience in teaching Architectural Design and Computer Aided Design as a faculty at college of Architecture Trivandrum, while also has been practicing architecture ever since 2011. He holds a Bachelor's Degree (B.Arch.) from the University of Kerala and a Master's degree (M.Arch) in Architecture from IIT Roorkee. Sangeeth has a passion for research oriented design and teaching, and engages in sculpting and painting in his free time.

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Mehul Bhatt is Professor within the Faculty of Mathematics and Informatics at the University of Bremen, Germany; and Stiftungs Professor at the German Research Center for Artificial Intelligence (DFKI Bremen). He leads the Human-Centred Cognitive Assistance Lab at the University of Bremen, Germany (<http://hcc.uni-bremen.de/>), and is co-founder of the research and consulting group DesignSpace <http://www.design-space.org>. The authors bring in a mixture of expertise from design, research and teaching in Architecture, Cognitive science, Human Computer Interaction, Assistive Technologies for design etc. This enables a cross disciplinary study, across the domains of Architecture Design, Software Design, Cognition in Design etc., looking at more human centered and intuitive approaches to evolve Assistive Technologies for a more humane Architecture.

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