EDFAB PHASE 2: IS A DIGITAL REVOLUTION POSSIBLE FOR CONSTRUCTION?

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As the noise and furore surrounding digital fabrication dissipates, where do we as designers and builders find ourselves? Contrary to media hype there is not a factory in every garage, nor are designers and builders becoming unnecessary. On the contrary, new models of manufacturing are emerging and new ways to design are developing in other industries where these innovations are not only profitable but radically improve the consumer experience. With early adopters well seasoned and leveraging benefits from digitally sponsored fabrication, where does this leave design and construction? In this paper we outline EDFAB: eco-digital fabrication, a research project partly funded by Transforming Cities to develop new consumer-friendly forms of design and construction. Our aim is to challenge conventional processes and relationships, proposing radically new viable alternatives that address problems of affordability, space adaptability, energy performance and indoor comfort. To do that, the project develops a system that introduces both process and product innovation. It combines enhanced construction technologies, new materials and digital fabrication methods to produce distinctive, high quality, healthier and cost effective residential buildings that conform to international Passivehaus standard. The paper discusses the specific contribution to the project of the different involved research areas – building technology, architecture and sustainable design and digital fabrication – and presents the early achievement of the research: a 10m^2 prototype domestic scale 'sleepout' designed and built using digital fabrication, and novel plywood construction methods that are very easy to build and handle. We are developing easy to use software for consumers to tailor designs and an expert interface that automatically creates the building components, considering boundary conditions to deliver site-specific comfortable and energy efficient solutions. Contrary to popular myths, our research points to material skill and traditional craft and knowledge being more important than ever in the imminent digital revolution for construction.

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