

(In)Forming: the Affordances of Digital Fabrication in Architectural Education

by

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Abstract

This research focuses on the effect of technology on the culture of architectural education through the lens of digital fabrication (CAD/CAM). As the computer was introduced into design education long before digital fabrication was accessible, design culture has prioritized image over material experience. Digital fabrication enables a material feedback loop into the digital design process which effects not only how architecture is produced, but how architecture is conceived and the values shaped within design education. As digital fabrication becomes standard practice in design education, conventions of use are quickly becoming established which thwart the opportunities these tools were meant to engender.

Through the theory of affordances, attention shifts from what the tools produce to what the tools afford the designer in the context of design practice. Affordances combine the directionality of tools, their material affordances, along with the intentionality of the user; their perceived affordances. Developing a designer's engaged agency occurs at the intersection of these material and perceived affordances in the context of design practice. This research develops through three research modes. First, through a series of tool-driven research projects I developed a critical perspective on the place of digital fabrication to calibrate between material and geometry. Second, I conducted a series of micro-experiments in digital fabrication at three architecture schools with distinct school cultures. These studios are assessed through ethnographic methods to make visible the perceived affordances of digital fabrication from the students' perspective. Finally, a critical reflection on the affordances of digital fabrication in design education is developed through over 30 interviews with recognized practitioner/educators whose teaching and research engage digital fabrication. Collectively, this research situates the affordances of digital fabrication in the culture of architectural education to project an image of practice as an abstract workshop.