

## Keepers of the Geometry

*Architects in a Culture of Simulation*

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### Summary

"Why do we have to change? We've been building buildings for years without CATIA?" Roger Norfleet, a practicing architect in his thirties poses this question to Tim Quix, a generation older and an expert in CATIA, a computer-aided design tool developed by Dassault Systemes in the early 1980's for use by aerospace engineers. It is 2005 and CATIA has just come into use at Paul Morris Associates, the thirty-person architecture firm where Norfleet works; he is struggling with what it will mean for him, for his firm, for his profession. Computer-aided design is about creativity, but also about jurisdiction, about who controls the design process.

In *Architecture: The Story of Practice*, Architectural theorist Dana Cuff writes that each generation of architects is educated to understand what constitutes a creative act and who in the system of their profession is empowered to use it and at what time. Creativity is socially constructed and Norfleet is coming of age as an architect in a time of technological but also social transition. He must come to terms with the increasingly complex computer-aided design tools that have changed both creativity and the rules by which it can operate.

In today's practices, architects use computer-aided design software to produce three-dimensional geometric models. Sometimes they use off-the-shelf commercial software like CATIA, sometimes they customize this software through plug-ins and macros, sometimes they work with software that they have themselves programmed. And yet, conforming to Larson's ideas that they claim the higher ground by identifying with art and not with science, contemporary architects do not often use the term "simulation." Rather, they have held onto traditional terms such as "modeling" to describe the buzz of new activity with digital technology. But whether or not they use the term, simulation is creating new architectural identities and transforming relationships among a range of design collaborators: masters and apprentices, students and teachers, technical experts and virtuoso programmers. These days, constructing an identity as an architect requires that one define oneself in relation to simulation. Case studies, primarily from two architectural firms, illustrate the transformation of traditional relationships, in particular that of master and apprentice, and the emergence of new roles, including a new professional identity, "keeper of the geometry," defined by the fusion of person and machine.

Like any profession, architecture may be seen as a system in flux. However, with their new roles and relationships, architects are learning that the fight for professional jurisdiction is increasingly for jurisdiction over simulation. Computer-aided design is changing professional patterns of production in architecture, the very way in which professionals compete with each other by making new claims to knowledge. Even today, employees at Paul Morris squabble about the role that simulation software should play in the office. Among other things, they fight about the role it should play in promotion and firm hierarchy. They bicker about the selection of new simulation software, knowing that choosing software implies greater power for those who are expert in it. Architects and their collaborators are in a continual struggle to define the creative roles that can bring them professional acceptance and greater control over design. New technologies for computer-aided design do not change this reality, they become players in it.

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