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Design has long been an area of particular interest for AI researchers. Herbert Simon's 1968 Karl Taylor Compton lectures on the sciences of the artificial included substantial material on design. However, only recently have design researchers embraced paradigms from AI and AI researchers chosen design as a domain to study.

Design research is a relatively new field, commencing in the 1960s with developments in design theories and methodologies. Although the results of the early design research produced domain-independent approaches to understanding and structuring design, the designers themselves were more comfortable with research that was specific to their own discipline. Research in design soon became analytic and mathematical and specific to a particular domain. Rarely, for example, did a design researcher in mechanical engineering reference work from a design researcher in electrical engineering. Recently, the use of AI in design research has brought us back to the early approaches. Researchers, each individually coming to the problem from his/her own discipline, are once again interested in domain-independent approaches and models of design.

AI, also a relatively new field, has its roots in the effort to try to understand and structure intelligent behavior, an area of which is problem solving. This research on modeling intelligent behavior is of particular relevance to design research. Similar to design research, AI research produced general theories and models of domain-independent problem solving in its early days. The results of these theories and models were not as useful as was hoped, and some researchers turned to domain-specific problems to study and model intelligent behavior. The expert system is an example of where AI researchers turned to domain-specific knowledge to produce intelligent behavior using computers. The recent interest of the AI community in design has led to an area of problem solving that is both complex and difficult to model but is, once again, domain independent. Design, as studied by AI researchers, provides insight into modeling intelligent behavior beyond general problem solving.

In this issue of *AI Magazine*, we collected a set of articles from researchers interested in both AI and design, but each author or group of authors comes to this area from a different background. John Gero combines backgrounds in architectural and civil engineering design and design research to use AI as a backdrop for representing design knowledge. Hideaki Takeda, Paul Veerkamp, Tetsuo Tomiyama, and Hiroyuki Yoshikawa come from a mechanical engineering background and look at AI as a way to develop tools for building intelligent computer-aided design systems. Mary Lou Maher comes from a civil engineering background and looks at advances in AI problem-solving models to make design problem solving operational. Chandrasekaran comes from a computer science-AI background and looks at design as a complex problem-solving activity. Richard Coyne comes from an architectural design background and examines AI models of intelligent problem solving to understand design. What is interesting to note from this collection of researchers is that notwithstanding their disparate backgrounds, many of them are moving in the same direction, saying many of the same things about design theories, models, and problem solving.

Mary Lou Maher and John S. Gero