

ABSTRACT

Title of Thesis: FRAMEWORK FOR A DESIGN REPRESENTATION
 SYSTEM AND RATIONALE REPOSITORY (DR³)

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The purpose of this thesis is to investigate an application of a synthesis of design representation perspectives. Design representation systems have progressed significantly since the paper and pencil drawings of the past. Not only is design represented through form, but it is also perceived via its behavior and function. Technological advances have made three-dimensional digital models, function structures, and behavior analyses commonplace. They are all important perspectives through which to view design. Additionally, the data, information, and knowledge contained in the perspectives are critical to understanding a design.

Though there has been significant research into the perspectives individually, there has been little research in combining all three into one body. What is presented here

is a multi-perspective system and matching implementation framework. Through examples, it will be established that practical design processes, as used in industry, do not take advantage of the full power of representations. It will also be established that utilizing a sophisticated framework that takes advantage of the three representations will aid the design process by giving knowledge access to the designer in a new way.