Design patterns from empirical studies in Computer-Aided Design

Rongrong Yu $^1$ and John Gero $^2$

$^1$The University of Newcastle
rongrong.yu@uon.edu.au

$^2$George Mason University and University of North Carolina at Charlotte
john@johngero.com

Abstract. This paper presents the results from studying the effect of the use of computational tools on designers’ behavior in terms of using design patterns in the conceptual development stage of designing. The results are based on a protocol study in which architectural designers were asked to complete two architectural design tasks with similar complexity, one in a parametric design environment and one in a geometric modeling environment. To explore the development of design patterns during the design process, the technique of 2nd order Markov model was used. The results suggest that there more design patterns were adopted in the parametric design environment than in the geometric modeling environment. Also, there are more design patterns related to structure in the parametric design environment than in the geometric modeling environment.

Keywords: Design pattern, Markov model, protocol studies.