

**THE THREE MAJOR METHODOLOGICAL ISSUES IN A
SOUND SIMULATION STUDY AND HOW TO ADDRESS THEM**

Averill M. Law

Averill M. Law & Associates, Inc.
4729 E. Sunrise Drive, #462
Tucson, AZ 85718, USA

ABSTRACT

Many people still believe that simulation is largely an exercise in computer programming when, in fact, programming should only represent 25 to 50 percent of the work in a sound simulation project. In this talk we discuss and give solutions for what are arguably the three major methodological issues that need to be addressed in any successful simulation study, namely, validation of the model, selecting input probability distributions, and the design and analysis of simulation experiments. For model validation we give the most-important techniques to help ensure validity. In the case of input modeling we demonstrate software that can select an appropriate distribution both when system data are available and otherwise. Finally, for simulation output-data analysis we discuss an effective statistical technique that can utilize multi-core processors and cloud computing.