

SIMULATION IN EDUCATION: MODELING FOR THE FUTURE

Organizer/Moderator: Joseph L. Sowers
Rutgers - The State University
Camden, New Jersey

Participants: Tuncer Oren
University of Ottawa
Ottawa, Canada

Bernard Ziegler
Wayne State University
Detroit, Michigan

Richard V. Houska
United States Naval Academy
Annapolis, Maryland

Richard Kopka, MAJ, USAF
Electromagnetic Compatibility
Analysis Center (ECAC)
Washington, DC

It is becoming evident to most of us that the computer and its applications have captured the interest of the general public. Computer science departments are being deluged with applicants in a time when most educational institutions are experiencing a decline in enrollments. The usage of computers is not likely to remain solely with specialists, but will become a common tool used by a large cross-section of society. It may, perhaps, be reasonable to identify people today and in the near future as belonging to the "Information Generation." The application of computer simulation and modeling has traditionally been of this multi-disciplinary nature. As such, we feel that it should become a necessary part of the educational process of the future. The field of simulation is, however, not a part of the core curriculum of many of the newly-budded computer science programs being offered nor is it a major part of those institutions which are firmly-rooted in computer science. In many cases, departments offering courses in simulation are other than computer science departments - notably engineering, business and industrial engineering. Often the only reason for a course in simulation being offered is because individual faculty members are interested in this discipline. Is

simulation a sufficiently important field in its own right to take a place in the core curriculum of a computer science major? That is, should every person claiming to be educated with respect to computers have a knowledge of simulation and modeling.

Should we, in fact, make a stronger statement to the effect that simulation be a necessary part of a liberal arts education. If this is so, several questions must be discussed in order to try to resolve which paths educational institutions might take toward implementing computer simulation as a basic part of their programs. Should the emphasis be on discrete or continuous systems - or doesn't it matter as long as the techniques and logic of construction of a computer model are discussed? Should analog and hybrid simulation be discussed as well as digital simulation?

The panel today brings together several outstanding individuals to discuss these points. It is also composed of a cross-section of interests and fields. Computer science as well as engineering, discrete and continuous systems, educators and practitioners. Two of our panelists have distinguished records as simulationists and computer scientists. Tuncer Oren and Bernard Ziegler have

developed some arguments related to the questions asked above which will provide the central theme of our discussion. Professors Oren and Ziegler are proponents of a new approach to the teaching of modeling and simulation. It is based on the idea that simulation is, indeed, a valuable tool for the information practitioner of the future. Their objective is to appeal to students from a wide variety of disciplines - ultimately to establish computer-based modeling as a basic component of the undergraduate liberal arts education. They plan to accomplish this goal by a software-augmented textbook (implemented via microcomputer) emphasizing methodology rather than one of the traditional simulation languages.

The panel will, after a presentation of the Oren/Ziegler approach, discuss whether the field of simulation should, indeed, take place in the core curriculum and whether this approach - or the traditional methods - is most feasible for all fields. There should be time for members of the audience to ask questions or, perhaps, voice opinions or additional approaches to the place of computer simulation and modeling in the educational process of the future.