1988

PANEL 6 COGNITIVE PSYCHOLOGY: FROM THE LABS TO INDUSTRY AND EDUCATION -- CURRENT AND FUTURE EFFECTS ON INFORMATION SYSTEMS

Marianne J. D'Onofrio
Utah State University

Gerry Gingrich
University of North Carolina, Wilmington

PANEL 6

COGNITIVE PSYCHOLOGY: FROM THE LABS TO INDUSTRY AND EDUCATION -- CURRENT AND FUTURE EFFECTS ON INFORMATION SYSTEMS

Panel Chairs: **Marianne J. D'Onofrio**, Eccles College of Business, Utah State University
Gerry Gingrich, Cameron School of Business Administration, University of North Carolina, Wilmington

Panelists: **Bill Curtis**, Director, Software Technology Program, Microelectronic and Computer Technology Corporation
Paul E. Johnson, Carlson Professor of Decision Sciences, University of Minnesota
John Kruse, Principal Research Engineer, Honeywell, Inc.
Marilyn Mantei, Professor, University of Toronto

Cognitive psychology is the study of the mental structures and processes of human beings. At its inception, it was primarily an experimental laboratory science. In the past decade, however, it has emerged from the confines of the laboratory and moved into industry and commerce through the vehicle of information systems (IS). The panel members will trace this movement, reviewing and discussing the principle areas of IS which have borrowed from cognitive psychology. They will also share with the audience prototypes and/or products which were generated in the labs and are now finding their way into industry and education. In addition, those areas most likely to be influenced by cognitive psychology in the future will be explored.

In the 1950s and 1960s the cognitive psychology paradigm borrowed heavily from the field of computer science with respect to both terminology and paradigmatic concepts. Thus it is interesting and appropriate that the scientific formalisms and findings of cognitive psychology are now being shared with the field of IS.

Beginning with some of the earliest cognitive psychology discoveries and formalisms, such as short-term memory, pattern recognition, and chunking, and ending with some of its more recent formalisms, such as knowledge representation, the field of cognitive psychology has influenced the development of both IS theory and technology. For example, screen design and layout have been using cognitive psychology formalisms in recent years. Computer screens are designed to avoid information overload on the human processor while maximizing the powerful capability of information chunking. Similarly, software engineering is beginning to incorporate the concepts of short-term memory and pattern recognition.

The theory and technology of decision support systems (DSSs) have continually acknowledged the contribution of Simon and Newell in the areas of human problem solving and decision-making. Finally, artificial intelligence technologies have built strong communication ties with the field of cognitive psychology. For example, cognitive psychology and the area of expert systems continue to influence one another with respect to knowledge structures, such as scripts, frames, and schemas, and knowledge processes, such as production systems.

From software design to DSSs to expert systems, cognitive psychology has influenced the academic and commercial development of IS. Furthermore, it is likely that this trend will continue. The individuals assembled for this panel are uniquely qualified to trace the actual and potential influence of cognitive psychology on information systems. The panel includes members from both academia and industry and members with formal education in both information systems and cognitive psychology.