The View of Systems Thinking of Dr. James Courtney, Jr.

By David Paradice, EiC of IJITSA

IJITSA is pleased to continue its interview series in this issue an interview by including the insights of Dr. James (Jim) Courtney, Jr. Dr. Courtney is Professor of Management Information Systems at the University of Central Florida in Orlando. He formerly was Tenneco Professor of Business Administration in the Information and Operations Management Department at Texas A&M University. He received his Ph.D. in Business Administration (Management Science) from the University of Texas at Austin in 1974. His academic experience also includes faculty positions at Georgia Tech, Texas Tech, Lincoln University in New Zealand and the State University of New York at Buffalo. Other experience includes positions as Database Analyst at MRI Systems Corporation and Visiting Research Scientist at the NASA Johnson Space Center. His papers have appeared in several journals, including Management Science, MIS Quarterly, Communications of the ACM, IEEE Transactions on Systems, Man and Cybernetics, Decision Sciences, Decision Support Systems, the Journal of Management Information Systems, Database, Interfaces, the Journal of Applied Systems Analysis, and the Journal of Experiential Learning and Simulation. He is the co-developer of the Systems Laboratory for Information Management (Business Publications, 1981), a software package to support research and education in decision support systems, co-author of Database Systems for Management (Second Edition, Irwin Publishing Company, 1992), and Decision Support Models and Expert Systems (MacMillan Publishing, 1992). He is editor of the electronic journal Foundations of Information Systems: Toward a Philosophy of Information Technology (http://www.bus.ucf.edu/jcourtney/FIS/fis.htm), and serves on the editorial boards of International Journal of Knowledge Management and IJITSA. His research has been published in Decision Sciences, MIS Quarterly, Journal of MIS, Management Science, IEEE Transactions on Systems, Man, & Cybernetics, Decision Support Systems, and numerous other academic journals. He is currently a member of the Governing Council of the Knowledge Management Consortium Institute. His present research interests are knowledge-based decision support systems, knowledge management, inquiring (learning) organizations and sustainable economic systems.
IJITSA: What do the terms “systems approach,” “systems thinking,” or “systems paradigm” mean to you? When did you first begin to believe these concepts were particularly important to understanding information systems?

Dr. Courtney: To me these terms relate to thinking and analyzing in terms of wholes. Systems are sets of objects related in such a way as to achieve some goal. Examples are machines (composed of parts), organizations, societies and natural systems. One of the most distinctive aspects of systems is the notion of synergy, that the whole is greater than the sum of its parts. This goes back to at least Aristotle and more recently has led to the concept of emergence in complex adaptive systems. The behavior of such systems emerges from the interaction of many agents acting on the basis of simple rules.

I first got interested in systems theory when I studied Stafford Beer’s book *Decision and Control* in my MBA program at the University of Texas at Austin in about 1968. Beer is credited as being the first to apply systems thinking to management.

After that I entered the Ph. D. program there and the first book I studied then was Churchman, Ackoff and Arnoff’s book *Introduction to Operations Research*. The first few chapters of that book were concerned with systems theory. As people who know me are aware, Churchman’s work has had a tremendous influence on my thinking ever since.

IJITSA: Do you see the “systems approach” as a scientific methodology? If so, how does it guide scientific inquiry, in your opinion? If not, how would you describe the relationship between a “systems approach” and scientific inquiry?

Dr. Courtney: Yes, I definitely see it as a scientific methodology. Systems modeling is one of the very basic cornerstones of science, both theoretical and applied. For example, the UN Intergovernmental Panel on Climate Change has developed and used models of climate change to show that global warming is at least in part due to human activity. These are very sophisticated models of natural systems that have been extremely useful in studying a phenomenon that affects everyone across the planet. These models have been used to study not just the effects of global warming on natural systems, but also on political, social and economic systems and to analyze steps that might be taken to mitigate negative impacts. Being able to model and predict the behavior of systems is a fundamental property of science from physics to biology to medicine to management and social science.

IJITSA: You once conducted NSF-sponsored research on decision making in a municipal government setting. Was the idea of a “systems approach” evident in that research? How?

Dr. Courtney: Yes, it absolutely was in a very fundamental way. This project team was tasked with studying the behavior and interaction among the natural, built and social systems in the city of Houston, Texas and to design decision support systems to help manage the city. We had a large and diverse team consisting of engineers, social scientists, political scientists, natural scientists and information scientists. We developed questionnaires for five different stakeholder groups and many of the questions were based on the paper on inquiring organizations that I published in *Decision Support Systems* in 2001. This paper presented a multi-perspective deci-
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