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SESSION 2

THE FUTURE OF INFORMATION SYSTEMS AS AN ACADEMIC FIELD: YOUR FATE IN 1998

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The academic study of information systems is dynamic and exciting. It tends to have very fluid boundaries. Researchers in information systems venture into problem areas associated with such diverse fields as computer science, communications, cognitive psychology, and sociology. Information systems are studied in the context of innovation, organizational change, and competitive advantage. The changing technology provides new and revisited opportunities for investigation and problem solving.

Until quite recently, the information systems faculty were the custodians in schools of management of most of the technical knowledge of organizational computing. That technical knowledge is being rapidly diffused to the entire faculty. Faculty in accounting at one time fled from computers; they now embrace them. The same is true of other functional areas in schools of management. What will happen to the academic field of information systems when the computer expertise is shared by most faculty members?

AN ANALOGY TO START THE DISCUSSION

There are several academic fields that have been started in the recent past that have not been successful or have shrunk in size and purpose. The one that may be the most interesting for our purposes is Operations Research. It presents a disturbing analogy (somewhat oversimplified for the purposes at hand). In the late 1950s, there was an innovative change in problem solving and the use of quantitative techniques. It began under the name of "Operations Research" and, after various mutations, is now often called "Management Science," "Decision Science," or another similar title. The Gordon and Howell (1959) report on the status of management education made strong recommendations that business schools should introduce quantitative methods and techniques. This led to the formation of departments or groups within schools of management specializing in these methods. At the same time, students being trained in doctoral programs were provided with significant knowledge of these techniques. Faculty members in accounting, finance, marketing, etc., were trained in quantitative analysis, modeling, etc. The domain of operations research and its siblings began to shrink. The exciting field of operations research, which had roamed confidently across a wide variety of problem domains, began to fade. Why bring in an operations researcher to model a finance problem when a finance graduate can do it? The operations research journals focused on more technical problems and sharpening of techniques. The teaching method of the quantitative group was reduced to elementary quantitative techniques courses and esoteric advanced courses. Not everyone may agree with the characterization or the resulting analogy, but there are some lessons to be discussed.

One issue is the relationship between business functional organizations and academic fields in schools of management. Business organizations define functions in order to deal effectively with operations, problems, and resource management. The fact that businesses establish a function does not require that business schools have a corresponding academic area, but it strongly suggests the need. If this proposition is accepted, a very significant strength in information systems as an academic field that was not present with operations research is the existence of a strong business function for information systems; there never was a solid operations research function within most organizations.

THREE FACTORS FOR DISCUSSION

There are three factors that should be considered in this discussion:

- The future of information systems as a business function.

- The interdisciplinary nature of information systems as an academic field and the rejection of a single dominant underlying or reference discipline and research paradigm.
- Information management and information systems in the management school curriculum.

THE FUTURE OF INFORMATION SYSTEMS AS A BUSINESS FUNCTION

If one strength of information systems as an academic discipline is a corresponding business function, then the nature and status of that function must be considered in evaluating our fate in 1998. Also, for an applied field such as MIS, the domain of interest that establishes the research agenda is the business function of information systems and its relationships to groups and individuals.

The future of the information function is being studied by the Center for Information Systems Research (CISR) in a project at the Massachusetts Institute of Technology: Management of 1990s Project. The insight from this research suggests that the future of information systems in organizations is the management of enabling technology and providing and maintaining technology and support infrastructures as well as providing information technology expertise and education to line management so that the appropriate systems can be developed. The traditional systems development process will continue to be a major role of IT, although it will be done in somewhat different ways. The function will need to be redesigned and retooled to support organizational change related to information technology and use.

THE INTERDISCIPLINARY NATURE OF INFORMATION SYSTEMS AS AN ACADEMIC DISCIPLINE

Two of the recurrent questions for information systems in academia are "What is your reference discipline?" and "What is your research paradigm?" There are some hidden agendas in these questions. Many of the academic areas in schools of business have identified one reference discipline (or at least one that is dominant) and one dominant research paradigm. Our view is that this is an unfortunate decision for some and it should not be forced upon information systems as an academic area.

The basis for the alternate view is based on a concept of the business school relative to business and the resulting relationships in the university. Schools of management are organized into areas of teaching and research that reflect the major functional areas of organizations and business/management activity. The academic field of information systems has the information systems function and industry practice relative to information systems and information technology as its domain of interest. Good applied research requires outward involvement to understand the information management function and information use in industry and inward university involvement with relevant reference or underlying academic fields.

A university tends to be organized on a discipline basis around phenomena or constructs. The discipline basis also causes a tendency for a dominant research paradigm to be favored by each discipline. The fields and disciplines of the university do not map one for one into areas of application in the external world. The academic study of information systems needs to draw upon and utilize knowledge from a number of underlying university fields and reference disciplines. In our research, we need to use a variety of research paradigms. It is an unnecessary restriction on the research agenda for information systems to require that there be a dominant reference discipline or a dominant research paradigm.

A few examples of the need for different reference fields and different research paradigms in information systems are research in individual behavior in human/machine information systems interaction (using Psychology as a reference field), research in group behavior in designing information systems (using Sociology as a reference field), research in management of system performance (using Computer Science as a reference field), and research into economic analysis of information systems (using Economics as a reference field).

The way in which information systems draws upon other basic and applied fields can be viewed as a necessary condition for the field and a feature of strength. These connections at the present range from strong to weak, and the underlying or reference fields range from basic to applied. The matrix presented in Figure 1 is suggestive of the range of connections and involvement.

	BASIC	APPLIED
STRONG	<ul style="list-style-type: none"> • Cognitive Psychology • Organizational Psychology 	<ul style="list-style-type: none"> • Management and Organization • Strategy and Policy • Organizational Behavior • Expert Systems (A/I) • Decision Science • Computer Science (Data Structures and Database) • Software Engineering
WEAK	<ul style="list-style-type: none"> • Economics • Linguistics • Anthropology 	<ul style="list-style-type: none"> • Computer Science (Algorithms) • Accounting

Figure 1: Underlying or Reference Fields for Information Systems Classified According to Strength of Connection and Basic versus Applied

The research paradigms for these fields differ significantly resulting in information systems having more than one paradigm. For example, the dominant paradigm for cognitive science is experiment; for sociology, field investigation; and for computer science, algorithm development. Most of the information systems research that intersects any reference field could have been done by researchers in that discipline. The good news from this situation is that the field of information systems is dynamic, innovative, and open. The bad news is that a researcher in information systems frequently has to cross academic boundaries with all the attendant risks of doing so.

This discussion also suggests that the relevant question to be addressed to information systems academics is not "What is your reference discipline and research paradigm?" but "What is your research agenda?" Researchers in other fields can then examine the research agenda in terms of its relevance to industry and its use of a variety of reference fields and research methods.

INFORMATION MANAGEMENT AND INFORMATION SYSTEMS IN THE MANAGEMENT SCHOOL CURRICULUM

Computer literacy is accepted as a requirement for an educated person in business. The current and emerging issue is information literacy. In other words, what should a well educated person, especially a graduate of a school of management, know about information and related tools and techniques. Although every graduate of a management school should have familiarity with a knowledge-work toolkit with which to select, analyze and manipulate data, information literacy is not the toolkit. Information literacy is a set of intellectual skills and conceptual knowledge that allows a person to be effective in obtaining, processing and evaluating information.

One recommendation of the Porter and McKibbin (1988b) study of business schools commissioned by the American Association of Collegiate Schools of Business was for attention to six areas, one of these areas being the information/service society. "Business schools need to undertake a comprehensive examination of how an information orientation can be incorporated more pervasively throughout the entire curriculum (not just in the area of management information systems) and into major research activities" (Porter and McKibbin 1988a). The report is quite vague on the meaning and logic behind this recommendation, but it suggests the general recognition that information literacy needs to pervade the curriculum.

If all fields within the school of management include information concepts and processes in their fields, what does this do to the field of information systems with respect to teaching and research within the school? One can argue that it increases the opportunities. The fundamental information management concepts are probably best organized into one or more basic courses rather than being haphazardly inserted into traditional courses. Also, the richness of the field of information systems suggests the need for more advanced courses. In addition, there is a solid academic base in the

need for education of analysts, application developers, and future managers for the information systems function. The trend in the function favors better, more broadly educated development personnel to elicit and analyze requirements, develop applications, interface with technical personnel, manage projects and operational processes, and do strategic information resource planning.

SUMMARY

In summary, the future cannot be foretold with certainty, but we can gain insight into the future direction of information systems as an academic field by considering the analogy of operations research and by examining three critical factors that may affect the future: the future of information systems as a business function, the interdisciplinary nature of information systems as an academic discipline, and the likely role of information management and information systems in the management school curriculum.

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