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MIS Legitimacy and the Proposition of a New Multi-dimensional Model of MIS

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DEFINING MIS

This article continues the tendentious debate of the definition of Management Information Systems (MIS) and the legitimacy of MIS as an academic discipline. While not professing ultimate solutions to the debate, this article presents a theory and model of MIS as a discipline which should provide benefit to MIS academicians in discussion MIS as a discipline. Before entering the debate on the legitimacy of the profession, this article first attempts to define the concept of MIS. Then, a discussion of the legitimacy of the MIS discipline is presented, which is followed by a presentation of the multidisciplinary natures of MIS methods and methodologies. Finally, a multi-dimensional model of MIS is proposed to facilitate discussion and analysis of the MIS discipline.

Many definitions of Management Information Systems (MIS) have been proposed in technical and business literature over the past three decades. Such definitions refer to specific technologies and techniques that may not be broadly applicable to the practice and applications that researchers and MIS professionals consider MIS. Widely used definitions include broad statements about the structure of MIS being composed as entities that are subjects of research. While debate continues within the academic MIS community as to the proper roles of reference disciplines and business practices, a survey of introductory MIS texts resoundingly agrees with the tenets of an MIS definition offered by Brabb (Brabb 1987):

“A management information system is the complement of people, machines, and procedures that develops the right information and communicates it to the right managers at the right time.”

The inclusion of people, machines (technology), procedures (process), information, communication and management in this definition serves to illustrate the complex, interdisciplinary nature of MIS. One may argue that since management information systems themselves are interdisciplinary, as are the practitioners who build them, any scholarly discipline purporting to advance MIS concepts must be interdisciplinary as of necessity. This argument raises a key debate that has been raging for many years: can MIS retain legitimacy as an interdisciplinary science?

MIS, MULTIDISCIPLINARY LEGITIMACY?

One reason for the debate of the legitimacy of MIS is that multidisciplinary programs are relatively new to postwar academia. Leaders of traditional disciplines (e.g. Mathematics, physics, chemistry) tend to view multidisciplinary programs with disdain--as threats, competitors, a-theoretical, self-serving, and anti-academic. These perceptions and characterizations of MIS and other multidisciplinary programs appear to be held as strongly today as they were in 1980, when Peter Keen presented his class MIS paper at the First ICIS (Keen 1980). Hence, the legitimacy of MIS as an academic discipline is still not established for the much of academia.

This controversy even perpetuates within the MIS discipline. On one side, Robey (Robey 1998) argues that it is the nature of multidisciplinary studies that creates these disputes and also the opportunity to

examine or even resolve them by including different perspectives. Robey, and others, see the diversity of MIS as a strength because it expands the MIS knowledge base, it attracts talented people to the discipline, it advances creativity and academic freedom (Benbasat and Weber 1998).

On the other side, Benbasat and Weber (Benbasat and Weber 1998) dispute Robey's claim that diversity in methods and methodologies is a source of strength for the MIS discipline. Benbasat and Weber call for common MIS research methodologies and methods because they see the continued dependence on the reference disciplines as a threat to MIS. They point out that founding researchers have deserted the field, that reference disciplines are poaching on traditionally MIS research themes, and that there are serious disputes within the field over the validity and theoretical content of different research methods (Benbasat and Weber 1998). In fact, Weber has argued that "...our reliance on reference disciplines will prove to be a fundamental strategic blunder—one that will lead ultimately to the demise and disintegration of the IS discipline..." (Weber 1987)

METHODS AND METHODOLOGIES

While Benbasat and Weber are correct that much MIS research is characterized by the wholesale adoption of methods and methodologies from its reference disciplines, an evolution has been occurring where methods and methodologies have been adapted to the unique needs of MIS research. One typical approach is to use survey methodology. Pinsonneault and Kraemer's critique of survey research in MIS includes suggestions for a uniquely MIS methodology to ensure the quality and validity of research (Pinsonneault and Kraemer 1993). Their approach is an extension and expansion of Detmar Straub's call for validation of research instruments (Straub 1989).

At the same time, in order to address the concerns of researchers with a natural sciences background, Allen Lee (Lee 1989) proposes a case study methodology that "satisfies the standards of the natural science model of scientific research." In order to address concerns that case study research in general is a-theoretical, Kathleen Eisenhardt (Eisenhardt 1989) describes a process for building testable, empirically valid theory using case study research.

Reflecting the multidisciplinary nature of MIS, many researchers believe the use of multiple methodologies and methods is a strength not a weakness. Kaplan and Duchon's call to combine quantitative and qualitative methods and perspectives to a single research problem lets researchers gain insights that a single methodology or method cannot provide (Kaplan and Duchon 1988). Orlikowski and Baroudi (Orlikowski and Baroudi 1991) found common threads among research methods and methodologies used and also call for a multidisciplinary and multi-methodological approach to IS research.

Another important approach to MIS research is Jay Nunamaker's system-building approach, which is explicitly multi-methodological and provides a map for building systems that test assumptions, and includes observation, theory building, experimentation and case studies as necessary elements (Orlikowski and Baroudi 1991)(Nunamaker 1997)(Nunamaker 1992). The elegance of Nunamaker's model is it recognizes that fact that in most cases MIS research does not require a specific starting point, and proposes systems building as a legitimate component to MIS research. One can start with theory, system building, etc., and eventually end up at the same end point. This type of flexible thinking about research embraces the diversity of the MIS field and builds its diversity into strength.

PROPOSED MIS MODEL

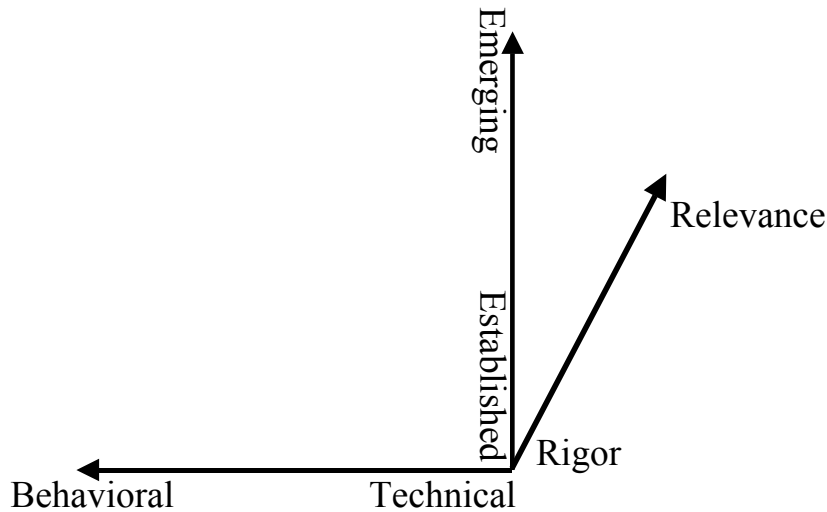
Our proposed model of the MIS discipline builds on the strength of the discipline's multidisciplinary nature, and adds some basic assumptions about the field: First, an MIS model should reflect both research streams and historical literature for the field. Second, an MIS model should capture primary areas of research, their relation to each other, the reference disciplines and their theoretical differences, and trends in research. This model is intended for an academic audience, and reflects our need as academics to understand this multidisciplinary field; to understand how our research interests are connected to key concepts and researchers in MIS. It is not intended to be a comprehensive picture of the MIS field, but a manageable starting point.

As a result, we have developed a flexible, multidimensional model of MIS that can be used to help define the MIS field, MIS theory, and MIS researchers. Since MIS theory is a reflection of the theoretical underpinnings of its reference disciplines and the emergent stream of IS research, we have adapted concepts proposed by Marcus and Robey (Nunamaker 1992) as a basis for our model. Because much IS research is grounded in the conflicting theories and methodologies of the reference disciplines, we limited ourselves to basic MIS theory. There are three main schools of thought and research streams:

1. The Technological Imperative school assumes that information technology changes behavior. Researchers from this school often refer to the "impact of technology" (Nunamaker 1992).
2. The Organizational Imperative school assumes that rational actors choose technologies and apply them to information needs (Nunamaker 1992).
3. The Emergent school assumes that the intersection of technologies and people creates complex interactions (Nunamaker 1992).

Our proposed MIS model has three dimensions as represented in figure 1: (1) Behavioral versus technical, which represents research according to its focus on the behavioral or technical aspects of MIS (2) relevance versus rigor (Orlikowski and Baroudi 1991), where rigor refers to the basis and methods of research; for example, research that relies heavily on mathematical proofs and/or controlled laboratory experiments would be considered more rigorous. Relevance, refers to the applicability of the research for practitioners. It is possible to have research that is both relevant and rigorous. (3) emerging versus established, which is intended to show changes in the direction of research over time and the growth of new streams within the research area. Systems Analysis and Design is an example of an established focus area, while e-commerce is an example of an emergent area.

Figure 1: Proposed MIS Model Dimensions

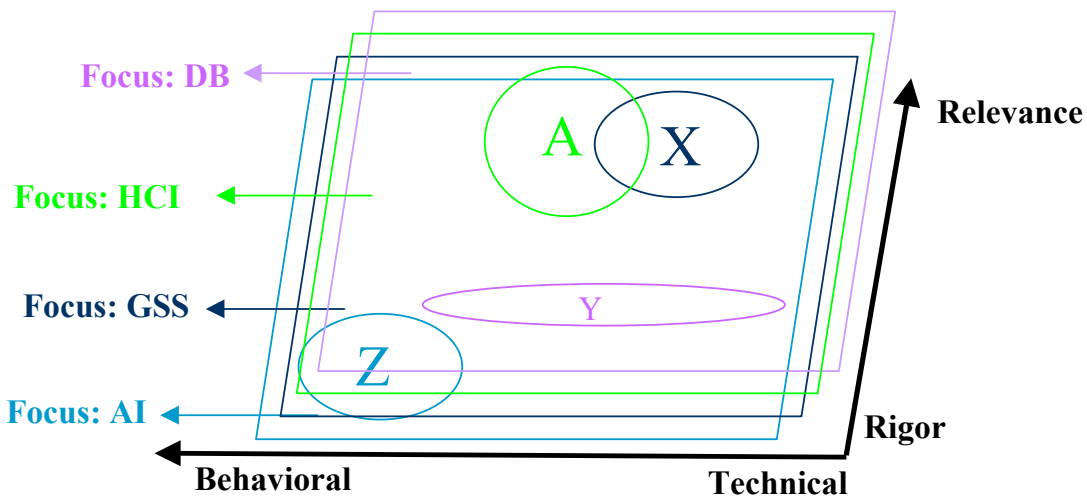


Building on the above-listed dimensions, our model divides MIS into the following research or focus areas for further categorization, based on our high-level review of most common MIS research areas found in MIS literature:

- Economics of IS / Econometrics / Decision Science/ OR
- Knowledge Management /AI / IR / Visualization
- HCI / Psychology / Cognitive Science
- International MIS / Multicultural MIS
- Social Issues / Ethics / Social Factors
- Databases / Data Management / Data Warehousing
- Collaborative technologies / Groups / GSS / CSCW / GroupWare
- Data Communication / Security / Networking
- Systems Analysis and Design / Packages / ERP
- E-Commerce / E-Business / Internet / Communications / Media

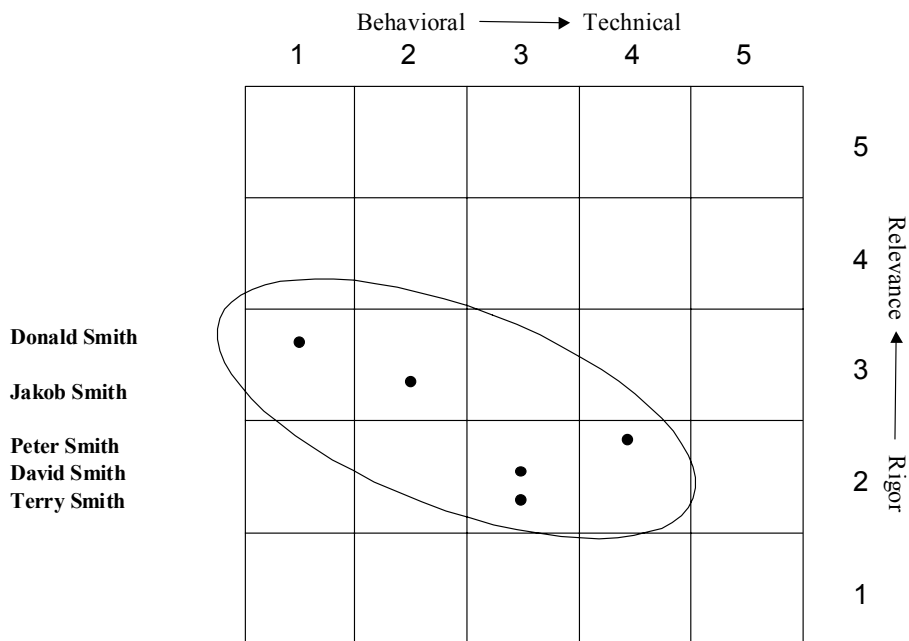
As MIS evolves the definitions of these focus areas can change. Furthermore, these focus areas can be added, dropped, or rearranged by the third axis (established versus emerging). The layers representing focus areas can be superimposed on each other to show overlaps, give an overview of the field, and show interrelationships among researchers and research streams (see figure 2). Color, distance, and groupings aid in the interpretation of the model. New layers can be created as research areas are established and layers can be retired, as they become part of the core of the discipline.

Figure 2: Layers of the Model



Part of the contribution of this model, is that it provides a new way to look at researchers and their body of research in the MIS field, which embraces the diversity and rapid change of the discipline. For example, a given researcher can chose to be constrained to a particular emerging focus area such as e-commerce and only conduct behavioral research which is highly rigorous; or a researcher can conduct work, in several emerging and established focus areas, which has a range of relevancy and rigor. For example, Figure 3 shows a sample categorization for researchers in the Systems Analysis Focus area.

Figure 3: Sample Categorization



CONCLUSION

Given our review of MIS research methods, methodologies, and theories we embrace the diversity and continuing evolution of the MIS discipline, and believe artificial elimination of the contribution from reference disciplines is defeatist. Our view is that scholars should not think in terms of rigid boundaries. Thus, as an emerging discipline we have the duty to push and continually redefine the boundaries of our field. As long as an endless supply of relevant research issues exists, why should restrictive boundaries be erected? How can defining set boundaries evoke traditional academicians to view us as any more legitimate?

The legitimacy of the MIS discipline must be proven out through the talent attracted to the field and primarily by quality of research produced by MIS researchers. This is why we believe the MIS discipline should attract "outsiders" from new reference disciplines to continue its exciting evolution; and such newcomers should not be viewed as poachers. Congruent with this view, we have proposed a model of MIS that embraces its diversity and allows an ebb and flow to occur as new research areas (i.e. e-commerce) emerge, and older areas (i.e. Y2K) stagnate. This model embodies our belief that MIS is the complex, interdisciplinary study of systems, people, processes, and technologies that are relevant to society at a given time.

The field of MIS is rapidly evolving and growing, with or without us, it is simply our choice as to whether or not we join the evolution. The "Big Bang" of the MIS field was recent; and thus our MIS universe is rapidly expanding out into reaches we cannot begin to foresee. In fact, in twenty years we will likely have a new moniker for the MIS discipline that better reflects its breadth; such as "Info science", "Informatics", "Info-ology". But why should semantics matter? We simply need to continually position our research to be in the forefront so that it is not lost as background noise in the din of the newly born universe.

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