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THE SLIPPERY SLOPE OF MIS ACADEMIA: A DISCUSSION OF THE QUEST FOR RELEVANCE IN OUR DISCIPLINE

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ABSTRACT

The MIS discipline faces the need to periodically re-establish its relevance to both academics and practitioners. Evolving technology forces our discipline to change at a rate far exceeding that of other business disciplines. In the workplace, rapidly evolving IT management issues and technologies have led corporations to manage technical employees differently than other employees. In academia, however, MIS faculty are faced with the same expectations as other business faculty. The current model of MIS as an academic discipline has many issues that make staying current and relevant very difficult. The result is that MIS research and teaching lag practice. One might argue that as the field matures, we are falling further behind.

This paper is the outcome of a panel discussion held during the 2006 Americas Conference on Information Systems in Acapulco, Mexico. The panel discussed the assertions that MIS is on a "Slippery Slope" that threatens our existence as a business discipline and that our current model encourages irrelevance, both in research and in teaching. Panel members were asked to share their views on five questions relative to the Slippery Slope from their unique perspectives.

I. IS MIS ON A SLIPPERY SLOPE?

As the demands of research and rapidly changing technology continue to overwhelm MIS faculty, the discipline faces a stark reality. MIS class sizes have dropped substantially. Although the economy may be partially to blame, the decrease is also likely attributable to a lack of relevance of course content and research. As standards for tenure and promotion continue to climb, MIS faculty struggle harder and harder to stay current with an ever-changing mix of technology. Time spent learning about new technology is not rewarded and comes at the expense of research, which is highly rewarded. MIS research is criticized as out of touch with the business world, yet faculty continue to be rewarded for publishing articles that only MIS faculty read. Concerns exist that MIS lags practice on both fronts. More importantly, as technology and its applications race ahead, the MIS discipline will fall further behind—hence, the “Slippery Slope.”

These provocative statements framed a panel discussion at the 2006 Americas Conference on Information Systems conference in Acapulco, Mexico. The motivation of the panel was to open discussion of the MIS discipline’s inability (or unwillingness) to motivate relevance. This paper discusses the notion of an MIS Slippery Slope, outlines the panel and its participants, and summarizes what was discussed at the conference.

II. INTRODUCTION

Few will disagree that information technology (IT) plays a strategic role for most organizations today. It is hard to imagine running an organization of any substance without information technology as a key enabler of business processes and strategic initiatives. Successful organizations rely on IT for everyday tasks, embrace rapid IT change, and use IT for competitive advantage. During the peak of the Internet boom, MIS gained valuable footholds in its quest for equality. MIS programs around the world grew rapidly and were overrun with students. Companies competed aggressively for MIS graduates, and high salaries and signing bonuses were common.

When the euphoria subsided in 2000, the viability of MIS as a discipline once again came into question. Enrollments declined drastically, as much as 70% in some institutions. Although the discipline has made efforts to swing the enrollment growth curve back in the positive direction, the illusion of a mass migration of MIS jobs to offshore locations continues to compromise enrollment levels. Even though studies indicate a supply shortfall in technology graduates (Zweig et. al., 2006), and companies are once again competing for MIS graduates, our enrollment curves are, for the most part, flat or only inching back in the positive direction.

Today, the drop in enrollments—combined with shrinking budgets—has resulted in the MIS discipline again having to demonstrate its value within the business college. Within academia, the MIS discipline fights an uphill battle for recognition from academics in other business disciplines. MIS is often not viewed as a peer to more established disciplines, such as accounting, finance, and marketing. In fact, MIS does not stand on its own in many colleges and universities, often housed under or with accounting, decision sciences, operations, or some other discipline. Some schools have placed MIS outside of their business school into Colleges of Informatics (Northern Kentucky University) or Information Science and Technology (Penn State and University of Nebraska Omaha). Within industry, MIS research is ignored, and our curricula are questioned by the same organizations that rely on IT for continued success (Grieves, 2005).

In this time of increased scrutiny and doubts from our academic peers, industry, and potential and current students, the MIS discipline must ensure that its teaching and research provide value to its key stakeholders. The debate about the relevance of our research is ongoing even among MIS academics. Much of the March 1999 issue of *Management Information Systems Quarterly* debated rigor versus relevance in MIS research, as did Volume 6 of *Communications of the AIS* (2001). The relevance debate continues in more recent articles and conference panels (Larsen & Levine, 2005; Desouza et al., 2006). Although the research relevance discussion is well over seven years old, not much has changed in what MIS academicians actually do. Incentive

systems (and hence, MIS academicians) place the most value on publishing rigorous, narrow research in a select few journals that are seldom, or never, read by practitioners.

The relevance of what we teach is also in question. In response to the dotcom bust and the ensuing enrollment declines, there was a concerted effort by leading MIS academicians to re-convince business schools and other disciplines that “every business student needs to know about MIS” (Ives et al., 2002). The MIS model curriculum has not been updated since 2002, and IT workforce research indicates a growing need to rethink our curriculum yet again. Companies increasingly seek “IT professionals with a balance of technical, business, and project management skills. This ideal blend is not found in the typical freshly minted [MIS] graduate.” (Zwieg et al., 2006). The same study also acknowledges that academia is “...notoriously slow to change” (p. 52), especially the skill sets that we teach. Clearly, if MIS programs fail to address this growing demand, other disciplines (information science, computer science) will likely step in to fill the void.

III. THE PREMISE...WE ARE ON A SLIPPERY SLOPE

For the sake of discussion in the panel, the panel chairs strongly asserted that MIS as a discipline is indeed on a Slippery Slope. The common academic “business model” currently employed (which closely resembles that of other business disciplines) does not work for MIS and should be altered. In the workplace, corporations manage technical employees differently than other employees because of the rapidly evolving technologies and IT management issues. In academia, however, MIS faculty are faced with the same expectations as other business faculty. The current model of MIS as an academic discipline has many issues, including:

- Effective teaching of IS/IT requires considerable time to understand and incorporate evolving business and technological changes into IS courses.
- The time required to learn new software packages, programming languages, and infrastructure technologies is typically an unrecognized additional burden. Reward and incentive systems for MIS faculty do not adequately recognize or give credit for keeping up with change: One might even argue there is a disincentive to stay current because of the time it takes away from research activities.
- The research we do publish (and spend much of our effort doing) is often criticized for its lack of direction and relevance to MIS practice.
- MIS academicians struggle to explore important practitioner problems, technical developments, and tools (i.e., offshoring, XML, Web services) and integrate them into courses.
- Multiple and disconnected MIS research models address different facets of MIS, which threaten its coherence as an identifiable academic discipline.

The result is that MIS research and teaching both lag practice. One might argue that as the field matures, MIS is falling farther behind. As faculty begin to fall behind (perhaps in the heat of the tenure and promotion process), it becomes more difficult to catch up. The result is that “more established” faculty are less knowledgeable of new technologies and techniques and must lean on younger faculty to teach emerging technologies and issues. However, new faculty arrive from doctoral programs where they are taught and mentored by the same “more established” faculty. Furthermore, doctoral programs typically focus on academic research, not on keeping up with the latest technological developments, tools, and pervasive practitioner problems.

We assert that not only is the MIS discipline on a Slippery Slope, but this Slippery Slope threatens our continued existence as a business discipline. We argue that the discipline's current model encourages irrelevance, both in our research and in our teaching. For the MIS discipline to

thrive, we must find a new model that rewards relevant contributions to practice and to our students.

IV. ORGANIZATION OF THE PANEL

The panel was organized by Skip Benamati and Mark Serva. Panelists were selected to represent academic institutions near each extreme and in the middle of a continuum from educationally focused to research focused institutions. The panelists were:

- **Dr. Dennis Galletta** – Professor and President-Elect of AIS, University of Pittsburgh
- **Dr. Fred Niederman** - Shaughnessy Endowed Professor of MIS, Saint Louis University
- **Dr. Al Harris** – Professor and Editor-in-Chief for the *Journal of Information Systems Education*, Appalachian State University

Panelists agreed to discuss their views on the five questions listed below. The order of the panelists was randomized for each question. Questions were discussed in five separate rounds in the order given below. In each round, panelists had three to five minutes to answer the question. Skip Benamati introduced the session by explaining the premise of the Slippery Slope. He then introduced each question, monitored the time, and moderated the panel.

1. **Are we on a Slippery Slope? Is the discipline (or more specifically the model for the discipline) broken?** Please, limit your comments to your agreement or disagreement with the presumption that we are and why you agree or disagree.
2. **What are the prevailing issues with MIS research and how should our model be changed to address these issues?**
3. **Are we teaching MIS students what they need to know?** Please address existing weaknesses in our models for teaching and curriculum and how our models should be changed to address these issues.
4. **How well does the discipline keep up with change in the field and why do you think this is so?**
5. **What are logical/necessary first steps to begin addressing the Slippery Slope?**

V. PANELISTS' VIEWS

The following are the viewpoints expressed by each panelist in response to each question.

DENNIS GALLETTA

Are we on a Slippery Slope? Is the discipline (or more specifically the model for the discipline) broken?

At the risk of dodging a direct answer, I have to say “maybe” rather than “yes” or “no.” My belief is that the discipline is in a fragile state, and we need to be careful, or we will furnish the proverbial straw that will break the camel’s back. To use an analogy, MIS is like a house of cards in a windstorm on a wobbly table.

The wobbly table is the foundation upon which much of what we do is built at the graduate level: the MBA. First, we offer MBAs or masters degrees without a solid bachelor’s degree foundation required. If you take a close look, many of our master’s courses are the same as our undergraduate courses. Also, enrollments are on the decline in our MBA programs in the U.S. and several other countries. Many MBA programs are at two-thirds to a half of their former size. The two reductions are unfortunately synergistic; they result in student reductions that are

alarming MIS faculty in many countries. It helps somewhat that many of us succeeded in making the MIS core course required for all MBA students, but now the course contains a hostile audience instead of self-selected technology “groupies.”

The windstorm is represented by the variation in our assorted curricula. Even the core course varies with the wind (besides the windy professor). I attended a symposium on teaching the required MIS course at Harvard in May 2006 and was astonished at the variance in the core MIS course taught by a half-dozen well-respected faculty from various distinguished universities. Many of these courses had little overlap with one another. This is not true in physics, biology, finance, or marketing. Why should we have such a nebulous view of our own field?

The house of cards is the business students' belief that because they know how to use Microsoft Office, they do not need the MIS core course. The answers to the remaining questions below elaborate on what we can do to stop sliding and perhaps gain some traction back up the slope.

What are the prevailing issues with MIS research and how should our model be changed?

I see multiple issues as follows:

MIS lacks respectability from others in business schools and in the universities. I have heard of cases where our friends in Finance stated that they could not support a tenure case for an MIS member because the MIS papers were readable and understandable, and there were no proofs, and, in many cases, not even any formulas whatsoever. Additionally, they consider MIS a niche area, and state that if we had something truly valuable to say we would publish in prestigious general business publications (such as Academy of Management journals and *Management Science*). Even our revered *MIS Quarterly (MISQ)* and *Information Systems Research (ISR)* have been discounted at some business schools.

We have another problem, publication rates. Two recent papers in *ISR* and *MISQ* point out that our field has the fewest opportunities to publish among business disciplines (Dennis et al., 2006; Valacich et al., 2006). Furthermore, publication rates in business schools tend to be far lower than those of other fields. Fifteen years ago, one psychiatry faculty member who was an Executive MBA student of mine said she would never make tenure because she “only” had 40 publications and a few million dollars in grants. We need to make sure that quantity expectations are understood and that we can communicate our value to others. We need to build relationships and bridges to other areas.

Topics are also sometimes isolated, without a unifying framework (such as that found in physics). For example, MIS has researchers studying the economics of IS who have few (if any) citations in common with those who are studying ERP systems, and likewise few citations in common with those investigating issues with the user interface. While most established fields have subfields, the isolation in ours seems particularly severe. Sometimes this leads to tenure problems even within a department. We need to take steps toward better communication and understanding of each others' areas. Reducing ignorance and hostility will be the benefits. For every MIS researcher who harbors low respect for a colleague's research interests and approach, there is likewise one outside of our field who harbors the same low respect for both of those MIS researchers. This is a particularly good application of the biblical story that admonishes us not to throw stones when we have our own faults. Perhaps external validation will help your colleagues inside and outside of our field appreciate your area: Explore your finished projects with your Public Relations agents in your universities to provide greater visibility of your work.

MIS seems to suffer from a disproportionate amount of “angry reviewers” who appear anxious and pleased to seek reasons to reject and avoid constructive reviews. As Associate Editor (AE) and author, I have seen reviewers using non-fatal flaws to justify rejection recommendations. If the acceptance rates are only low because of the small amount of available space, then Valacich, et al., (2006) are correct that we need more frequent publications and more elite journals. It is easy and even respectable to claim that rejected articles deserve rejection, but if all Senior

Editors and AEs took a developmental approach and only rejected papers on fatal flaws, there would likely not be enough room for our work.

At conferences, I would like to see the best work of the presenters rather than simply the carved out section that would not jeopardize publication of the best work in a journal. I strongly recommend that conferences and workshops “fast-track” the best papers to journals. Fast-tracking will promote the submission of authors’ best work to conferences and will make conferences more valuable. We need journal “hits” from our work because even the highest-rated conferences do not count towards promotion and tenure in most business schools. Computer Science, on the other hand, rates work in conferences more highly than that in journals, so there is no need for fast-tracking. I tried to resurrect fast-tracking of ICIS 2005 papers to five of the highest-rated journals (as was done in the early 1980s), but the editors could not agree to support this endeavor.

I have no evidence of this, but I have the feeling that some of our research communities are tied together only through published papers in journals and conferences (with poorer papers in the latter, as discussed above). We have two other potentially valuable resources that should be used to communicate about upcoming papers and current work: SIGs and AISWorld pages. Many do not know about these pages. More seriously, too few of us contribute and the number of “free-riders” greatly outnumbers contributors. An informal count indicates that, while many in the MIS community read them, less than five percent of our community contributes to them.

We share the problem faced by other disciplines in that each research technique is but a piece of the overall puzzle. As I tell students, here is a pessimistic take: Experiments are great for control but might not be realistic and might manipulate fine points that do not matter. Mathematical models can be powerful and provide explanations of previously hidden phenomena, but they might assume away very important variables and over-simplify reality. The formulas can sometimes mask silly or nonsensical questions as well. Surveys cover very meaningful topics but are answered by few people (yielding low response rates and non-representative samples) and by those who could misunderstand the questions and answer incorrectly. Also, causality can rarely be asserted. Finally, monomethod bias can be serious in these studies. Case studies actually uncover what happened and why, but people might not care because the findings might not generalize to other organizations. Protocol analysis work can be instrumental at discovering cognitive steps in decision-making, but it is often based on a very small number of subjects and generalizability is also uncertain. Conceptual or theoretical work can address bleeding-edge issues but can also be prepared in an ivory tower, in isolation of real facts and issues.

An optimistic take is that all of the above provide valuable chunks that need to be combined. Besides that belief, I think that a potential solution here is to promote and support multi-method research. It is worth the trivial risk of having two studies contradict each other, even in the same paper.

Are we teaching MIS students what they need to know?

First, I will address the core course. At the present time, I think that what we have to “sell” is not valued by the audience. Before the course, students believe that they “know” all they need in MIS: Microsoft Office, a web browser, and Windows XP (or System X on the Mac).

Systems have been made much easier to use, which provides benefits to employees trying to accomplish tasks, but that ease of use provides an illusion of expertise in our field. Ten years ago our students had a healthy (for us) fear of computing. Now, they are overconfident. This illusion/overconfidence leads students to question why they need us. The real question is: Can we explain the reason they need us? They do not know that neither in-house nor outsourced custom-built systems can ever be expected to be as polished and “slick” as mass-marketed packaged software. Even ERP packages are said to be very awkward. If people compare the quality of mass-marketed packaged software to solutions provided by IT departments, we will not compare favorably due to the impossibly high standard of the mass-marketed goods. Also, they

need to be able to figure out how to structure data in a useful format, determine what is a useful information architecture for a firm, and even simply communicate with “IT folks.” These skills do not come with being able to use Office, browsers, and an operating system, however desirable you consider that to be.

Personality is an issue, too. A glance at popular current television shows such as *24* and *NCIS* reveals a popular view of IS people being seen as “different” than others. Some of the obvious stereotypes of IS people include the notion that they are very introverted, awkward around people, and technology-obsessed. We need to break that stereotype. Many do it by focusing on strategy. Talk about how mistakes lead to losses of millions of dollars. Talk about how CEOs consider information systems as enablers of strategy. Talk about how firms are made or broken due to their support of information systems. A former student of mine, Alexandra Durcikova (now at the University of Arizona), invites CEOs to speak rather than CIOs. A CIO is obviously going to agree with the professor and say that technology is the most important thing in the business world. But having a CEO proclaim the importance of information systems is probably much more potent.

We have perhaps lost sight of the original Davis (1974) definition of what is an information system: “an integrated man/machine system for providing information to support the operation, management, and decision-making functions in an organization. The system uses computer hardware, software, manual procedures, management and decision models, and a database.” (p. 5). The key fact here is the integration. We do not study the technical issues at the expense of management issues, just as we do not study management issues at the expense of technical issues.

In our teaching, many eliminate unpopular issues in the core course and become completely strategic. That is dangerous because, while it plays to student interests, some can complain (and have complained to me) that the core course is merely another course in strategy. It seems to me that we need to cover at least a little bit of system development, data management, decision-making, and systems approaches, or they might be correct. In your core course, provide pure strategy to the finance students in your MBA program, and you will hear many complaints, some of which are at best understandable, and at worst, warranted.

Do students need to understand how to develop a system? I believe the answer is partially “yes,” but the goal is to make them educated users. They should have reasonable demands on an MIS department and should not misuse technology. So students should learn enough about processes and technologies to become better users. Whether they are compiling data, analyzing data, or making a decision, they will need to use IT, so this goal can be very important.

Regarding curricula in general, my belief is that most professors are conscientious and update their material inside the “boxes” (inside their existing courses). I see the biggest problem to be that the titles and descriptions of the courses cannot change quickly enough and the courses are seen as less current than they really are. I once thought that the solution was to create courses with “timeless” names, as I did with “distributed computing” instead of “client-server computing” back in 1993 in our new dual-degree master’s program. However, we found that any course name that lasts for ten years will be seen as obsolete. Contrary to my preferences, I now believe we should adopt trendy courses with current course names and then eliminate/replace them as needed every few years. This is not to deceive, but to gain deserved credit for what we are already changing.

Concerning attracting students in an era of outsourcing and burst bubbles, I think we need to publicize the current predictions of a huge wave of hiring in the next few years. Part of my platform in running for presidency of AIS was that I plan to solicit contributions of such materials to dispel myths about the information professions and compile these contributions into a career pamphlet to be sold to universities at cost or just above cost (to fund future revisions), and universities would in turn provide them to high school counselors. People should know all the facts before discounting any notion of majoring in MIS.

How well does the discipline keep up with change in the field?

As stated previously, I am constantly impressed with what people do in the classroom to keep up. On the surface, research seems to be a different story: Researchers are often accused of studying yesterday's problems and tools. But on the contrary, it seems valuable to me to study what happened when organizations found value in the Apple II thanks to Visicalc. They "smuggled" computers into the workplace and concealed their purchases. That is obviously a very old topic, but do we understand such issues completely? I would hesitate to say we do.

We should be aware that some topics are difficult to study if they are attacked too early. I will provide two very recent examples of doctoral students of mine who might have attacked problems too early. One is in the area of subscription-based information goods and another is in the area of on-line chat help systems. I am convinced that the findings in each study were hurt by their newness. People just do not have enough experience with them to answer particular questions we naively asked. If we do the studies again in five to ten years, then I think the results will be useful, and more hypotheses will be supported. Beyond the academic exercise of supporting hypotheses, we will better understand the forces underlying adoption of those technologies. A corollary is that we just cannot have complete understanding of a new technology in the first minutes of its offering!

It is humbling to take a glance at one of those timelines that put the appearance of humans on this planet at 12 AM and today at 12 PM, which reveals that the first automobile was invented at 11:59. If we study a technological advance for five or ten years, some might consider this to be outmoded or obsolete. However, that interval is but a tiny fraction of our history. Who is being so impatient? My own view is that you should study carefully, take your time, and learn something valuable for the next few seconds on the human progress "clock."

What are logical/necessary first steps to begin addressing the Slippery Slope?

We should start internally, perhaps by collecting musings such as those voiced today from many people at various levels of experience, age, editorial positions, and so on. We should self-assess quickly. For the issues identified, we must assess how critical and how fixable is each issue. Those issues deemed both important and fixable should be tackled first. Those deemed unimportant or not fixable should be set aside for now.

Externally, we need to do several things. We must demonstrate how we make a difference with our research. In general we think we do. As discussed above, we should discuss our work with our University public relations people. We will be surprised with what they *are* and *are not* interested in. More feature pieces about our work will provide valuable data points in our favor for our deans, our administration, and our sometimes-hostile colleagues both inside and outside of our field.

Work must be done to correct the misconceptions that keep students away. One tangible task I identified in my AIS Presidency platform was to come up with a brochure like the one by the AICPA I saw as an undergraduate that made me excited enough to switch from psychology to accounting for my major. I remember, in particular, a photo of a small town CPA walking into the office of a client with a caption like "the owner of this small business depends on the CPA." We have similar stories to tell; it is important to deliver soon on this.

We need to help each other to "pump up" our courses. We should use resources like the course pages on AISWorld more and encourage the page editors to keep them up-to-date by showing our appreciation. Let's also share our videos, exercises, class activities, teaching approaches, tips. We need a recurring workshop at AMCIS/ICIS/PACIS/ECIS – or maybe all of them!

Most importantly, let's not give up! In 2010, I would prefer to look back at the "bad old days" of 2006 rather than consider them to be "good old days." This requires that we weather this storm.

AL HARRIS

Are we on a Slippery Slope? Is the discipline (or more specifically the model for the discipline) broken?

Is the model for the discipline broken? My general answer to the question is NO. Are we on a Slippery Slope? My general answer is YES. I think how we are implementing the model is where the problem is.

What is the model? The model is based on three "legs" - Teaching, Research, and Service. I would surmise that very few people would argue with the service part of the model. It is usually the teaching and research "legs" that people discuss when they look at the model and try to determine if it is broken or not. The basic questions that we need to ask from the teaching side are: Are we teaching IS majors what they need to know? Does our curriculum keep up with the changing technology? The basic questions that we need to ask from the research side are: Is our research relevant? Is our distribution system for research effective? Before discussing these questions, five major impacts must be introduced.

First, from both the corporate and education perspectives, IS/IT has become so pervasive in organizations that everyone thinks that they own a share of it. This has not really been the case with the other business disciplines/functions. As a result, most of the other disciplines try to incorporate IS/IT into their classes, hence courses like Accounting Information Systems and the extensive use of Excel in Finance or Economics. In the workplace, end users perform IS related work. If the academic functions are teaching IS related subjects and the end users are doing IS related tasks, the logical extension, to them, is why do we need the IS discipline and IS majors? Yet, when looking at the Department of Labor data regarding occupations with the largest job growth, 2004-14, two of the top five job categories for people with bachelor's degrees are IS related: Computer software engineers, applications and computer systems analysts (Saunders, 2005). The top five occupations requiring a bachelor's degree with the largest job growth, 2004-14, are shown in Table 1.

Table 1. Occupations with the largest job growth, 2004-14 (Only occupations requiring Bachelor's Degree Education)

2004 National Employment Matrix code and title	Number of jobs (thousands)		Change		Earnings
	2004	2014	Number	Percent	
11-1021 General and operations managers	1,807	2,115	308	17	VH
25-2021 Elementary school teachers, except special education	1,457	1,722	265	18.2	H
13-2011 Accountants and auditors	1,176	1,440	264	22.4	VH
15-1031 Computer software engineers, applications	460	682	222	48.4	VH
15-1051 Computer systems analysts	487	640	153	31.4	VH

Source: Department of Labor (2005)

Note: Earnings: VH=very high (\$43,605 and over), H=high (\$28,590 to \$43,604)

Second, we have splintered IS/IT into many sub-disciplines: Systems analysis and design, database, data communications, e-commerce, programming, and so on. Even the sub-disciplines



are divided into more specialized areas. This splintering becomes very evident when one looks at the publishing outlets of IS research. I think that splintering has diluted the research impacts, made it harder to define a common body of knowledge for teaching, and made it hard to articulate what the IS/IT profession is. Its impact on research will be discussed in the next section.

Third, our credibility as a profession continues to get hit, making it harder to claim our place at the table. Take some examples. The student recession of 2002-2004 really hurt. We had record numbers of students in 2000-2001, only to decrease by 30-70% in many schools. This decrease has given our detractors ammunition to shoot holes in our claim as a legitimate function in the college. The outsourcing of programming jobs gave us a black eye. Students heard the propaganda and shied away. The Dot Bomb was another example of IS in a tailspin. Everyone was told that computer businesses will fail and there will be a lot of fired computer professionals on the market.

Fourth, IS/IT knowledge is a moving target. A variation of Moore's Law exists in most areas of IS/IT. People outside of IS see this as an example of our instability.

Fifth, we have not yet been able to separate ourselves from Computer Science (CS) in the "public's" mind. Almost every article that I read talks about the increase or decrease in the need for CS majors when they mean IS majors.

What are the prevailing issues with MIS research and how should our model be changed?

We continue to isolate ourselves in our research. How many times have you worked with someone from another functional area and published research relevant to both of you? We attend ICIS, AMCIS, and HICSS and have a lesser (although still a fairly substantial) impact on the DSI, INFORMS, and the Academy of Management conferences. Unfortunately, an example of this is that the DSI, INFORMS, and the Academy of Management conferences are not on the list of "supported conferences" recently adopted in my department because they are not "IS" conferences. This continued isolation from the other functional areas is one example of how we are implementing the model incorrectly.

We seem to have a plethora of conference and journal outlets for our research, some for every splinter field of the profession. A quick check of the AIS web site for upcoming conferences showed about 204 IS conferences for the August to December 2006 time period (AIS Conference Pages). That equates to about 41 IS conferences every month. How can the quality of 100+ IS journals or 480+ IS conferences be evaluated? Are all of these journals and conferences necessary? Are they good for the profession? When evaluating research for promotion and tenure (P&T), how do evaluation committees and deans rate the quality of our work?

Regarding research outlets, practitioner publications are not considered "academic" enough to P&T, so we generally avoid them. At the same time, my guess is that *MIS Quarterly*, *ISR*, and *JMIS* are not read by many IS professionals outside of academics. What would you say if a CIO was to come to you and ask, "What research have you done that would be useful to me and my organization?" Unfortunately, most papers are written to "get a publication." Most departments do not recognize an article published in *Computerworld*, *InfoWorld*, *Datamation*, or *Information Week* as a scholarly publication for P&T.

Are we teaching MIS students what they need to know?

My answer is that some of us are and some of us aren't teaching MIS students what they need to know. When talking about curriculum, several issues come up.

First, every university seems to have a different curriculum. I am not talking about slightly different; I see large differences in the curricula. I pulled the undergraduate requirements of two leading IS universities. One university required 20 hours of coursework: a programming course, a systems analysis and design course, an infrastructure course, a managing IS course, and one elective. The second university required 24 hours of coursework: two programming courses, a systems analysis and design course, a database course, an internship-type course, a project

course, and one elective. If two randomly picked universities are that different (yes, it is a small sample), what is the body of knowledge for an IS major? If you were outside IS and looked at those two curricula, could you tell me what an IS major needs to know? Add six more universities and you would probably add six different curricula. Different curricula are not necessarily bad; I am just saying that they can raise big questions to those looking in.

Second, the "Model Curriculum" was designed by a committee to satisfy everybody. As a result, it is practically useless. The AIS Model curriculum 2002 has 11 courses or about 33 hours. Most IS major programs in Colleges of Business have 20-24 hours. If we must reevaluate our curricula almost yearly, why is the latest model curriculum a 2002 edition? Also, when looking at the model curriculum, why is there just one? Does every IS student take the same job? Why isn't there one for analysts, one for data administrators, one for e-commerce developers, and so on? Again, if you were on the outside looking in, what would you see?

One final comment regarding the "teaching" side: Everybody claims to be a researcher, but very few claim to be an educator. We have over 4000 educators in AIS, but only a few hundred in AIS's SIG Education. We freely and vigorously share our ideas about research, but not our ideas about educating in the classroom or our ideas about using distance education as a teaching platform.

How well does the discipline keep up with change in the field?

I have a dual response to this question. First, individuals must keep up with changes in the field. I believe that, individually, most IS professors do an acceptable job in keeping up with changes in the field. Unfortunately, the way most IS professors keep up is to teach themselves the new technologies and prevailing practical issues.

Second, I think that we attempt to do a good job keeping the curricula up with all of the changes in the field. However, to keep up, we must reexamine our curricula almost yearly. This is a tremendously time consuming job. Couple reexamination with a curriculum model that was developed in 2002, and I would say that we, as a profession, are not keeping up with the changes. We tell everyone how much IS is changing, yet we do not seem to be doing the changing.

What are logical/necessary first steps to begin addressing the Slippery Slope?

There are several things we should do. The following paragraphs discuss each and list the important stakeholders each addresses.

1. Connect better with industry. (Stakeholders: Educators and employers). I believe that there is a general disconnect between what we do and the industry that hires our students. We research what we are interested in, not necessarily what is needed by industry. Our curricula reflect what we are interested in teaching, not necessarily what is needed for our students to get jobs. In short, we need to connect better with industry in our research and our classes. Yes, a lot of us have Industry Advisory Groups, but do we talk to them or listen to them?

2. Rethink the conference model. (Stakeholders: Educators). It is great that we go to IS conferences, but IS conferences should not be our only outlet. P&T committees should recognize the importance of multidisciplinary research and reward some of that behavior. IS faculty should be encouraged to attend DSI, INFORMS, and the Academy of Management conferences, just to name a few.

3. Rethink the journal model. (Stakeholders: Educators and journal providers). I have two points here. First, slow down or even stop the proliferation of new journals in the IS field. They do not help us in the long run. They make it harder for us to get our publishing duly recognized. Our peers see a plethora of journals that we have published in and question their quality. Second, start giving credit for P&T for interdisciplinary publications in leading journals outside of IS. That way we are rewarded for and motivated to work with colleagues in other disciplines.

4. Rethink the Model Curriculum model. (Stakeholders: Educators and employers). A single Model Curriculum, created in 2002, is not realistic in today's IS environment. As an IS profession, we need to either abandon the Model Curriculum or create a specialized Model Curriculum for the specialized career fields that we are preparing our students to perform in when they enter the job market. These might include, but are not limited to, systems analyst, data administrators, network administrators, e-commerce developers, security specialists, and so on. While we are at it, let's create the model curriculum for courses in the major, with a maximum of five to six courses. A smaller model curriculum would allow its implementation in AACSB accredited Colleges of Business and allow possible IS electives.

FRED NIEDERMAN

Are we on a Slippery Slope? Is the discipline (or more specifically the model for the discipline) broken?

A lot of our current suffering in MIS is due to reduced enrollments, which in turn puts pressure on business schools (where most of us are housed) to shift resources to other disciplines. If these reduced enrollments begin to shift back in another boom or even to stability at a reasonable level, much of the immediate suffering will be reduced. Of course, in the enrollment trough, we don't know if our fate is to experience a continual boom-bust cycle or if we only experienced a temporary balloon with the introduction and early enthusiasm for all things Internet. At the margin, there are some things we can do to keep as much enrollment as possible, including internships and assistance with job searching, high levels of service in advising and student clubs, and courses that are updated with the evolving technological and business trends.

I don't know how good a job we have ever done of promoting MIS, particularly in the boom years when we didn't need to so. If we were really great at promotion, perhaps we would be in marketing rather than MIS to begin with, but we as a community would probably be well served by doing a better job of developing a compelling story about MIS jobs and careers and extolling that message.

My own favorite story about MIS work starts with "knowledge is power," and those in MIS working across business units are eventually positioned to know a lot about virtually all aspects of running an organization. This tends to appeal to those who want to understand a business from the ground up, but I have no measures of how well it works. I think some of our difficulty with promotion also comes from recruiting majors from among students who have already chosen business as their field of interest.

Many of these students come to business for reasons other than working with technology. We may have better luck convincing them to be double majors or to minor in MIS. I think we tend to emphasize the technology in our courses because much of the business knowledge and communication skills overlap (or should overlap) the content of marketing and management courses. Information science schools independent of business programs may have an advantage here, though I suppose information science schools have other disadvantages for coordinating their programs for students who want a blend of business and information technology.

My forecast is that either we are in a field dominated by boom and bust cycles, or our enrollments in general will return to a higher than current but lower than peak enrollment level. Of course, different schools and programs may have better or worse results. It would be wise to monitor which programs return to higher enrollment levels and investigate whether we can detect useful patterns. My own hunch is that the answers will have as much to do with the charisma and initiative of individual faculty as the names and content of the courses. If, however, enrollments continue to decline or do not stabilize at a reasonable level, then we will perhaps look back at the current time – September of 2006 – and realize that the field was already broken.

Are we on a Slippery Slope? As noted in the introduction to this paper, the technology changes extremely rapidly. This same technology forms, if not a base, at least a substantial element of

the content of the field. I don't think we generally have trouble with the incremental change, such as the shift from version 9 to 10 of Oracle or the like. But we are in a field that has experienced at least four paradigm shifts since it began in the 1950s, starting with the use of mainframes to (1) a mix of mainframe and mini-computers to (2) a mix of mainframe, mini, and personal computers, to (3) the introduction of Internet, to (4) the pervasive use of increasingly self-contained packages supported by an increasingly mechanized infrastructure.

We can argue about the exact description of these paradigms and where the lines might be drawn between them, but it is clear in my mind that the original mission of MIS – to prepare students for work as part of an MIS department – has shifted substantially toward a mixture of training students for interacting with users on behalf of MIS and for serving as MIS “consultants” for other business disciplines. I don't know if I am describing the nature of the current paradigm very accurately, but I am convinced that this new paradigm has emerged within the past three to five years. Increasingly the interesting jobs that combine information technology and business processes are not in developing new applications from scratch (though I think these are still interesting), but in integrating new packaged capabilities into the consciousness and activities of business professionals.

After the last downturn in MIS enrollment in the early 1990s, we experienced the growth of the Internet. We were able to extend known MIS content by considering programming for the Internet, strategic use of e-commerce, and managing the outsourcing of IT related work. However, I don't see a single new “technology” such as the Internet appearing on the horizon. Instead, I see expanding usage of increasingly sophisticated end user tools, such as GIS, ERP, and CRM, that continue to require a base of IT infrastructure, but don't extend MIS themes like programming as smoothly. I don't know how we apply what I see as the central tendencies of current MIS knowledge to the environment as it appears to be evolving..

I don't think we are on a Slippery Slope; I think we were dropped off on a different mountain range and our maps are a little out of date.

What are the prevailing issues with MIS research and how should our model be changed?

Issue 1: Are we relevant to practitioners? To the extent that research is about the discovery and demonstration of relationships that can be applied across a range of organizations and circumstances, we will always be somewhat irrelevant to the immediate concerns of practitioners. In order to be generalizable, we need to consider variables that differentiate organizations from one another (e.g., explain the context wherein findings work). Within an organization, however, these variables appear irrelevant, as they are fixed and constant from the practitioner perspective. For example, practitioners work for companies of a certain size. Hypothetically, if large companies are better at creating a diverse and productive workforce, there's not much I can do about that as a manager of a smaller company. An organizational culture that emphasizes innovation may correlate with better integration of information technology and corporate strategy, but if I'm at a company that is unconcerned with innovation, it may not be a lever I can pull as a manager. These variables may be of significance and relevance at some organizational levels and not at others. I believe the nature of business research based on a social science platform is that research will frequently not seem relevant to those engaged in solving day to day problems.

In my experience, most practitioners aren't concerned with precision of definitions and distinctions (for example between UML and the case tools that provide an environment for using UML). Neither are they concerned with precise measurement or scrupulous analysis. My experience with practitioners is that if research can suggest a way to improve the probability of a good decision by a percentage point or two, particularly if we are the only ones who know, then it has some value. Investigation to the level of proof is not of large concern in practice, in contrast to relative goodness, that the idea or action is the best available or worth trying. I think most practitioners sense that good ideas are better than bad ones, but are no substitute for relentless execution.

There is also a lot of value in the “useful fiction.” I don’t recall reading a single study that supported the observable existence of Nolan’s stage model, and yet I believe that practitioners found it a useful benchmark for understanding where they stood and how they might move forward or fall backward. It provided a language to talk about issues of positioning and proved of great value, even if “imaginary,” in the sense that it was not sustained by empirical investigation.

Issue 2: Are we less relevant than other business disciplines? In international business, management science, and management, within the last decade or so I have read articles and participated in discussions about whether the field’s research is relevant. How many stockbrokers do you think read the *Journal of Finance*? Colleagues in other business disciplines have commented privately that their major journals focus on very narrow subsets of the phenomena of their domains. Perhaps the tendency of MIS toward esoteric research is an intrinsic function of existing within business schools. Being generally a small, non-dominant player means justifying one’s existence to others who are committed more strongly to other interests. Unfortunately, due to the tendency of schools to evaluate for promotion and tenure with the whole business school actively involved, we have the dilemma of acting independently and risking rejection by the other disciplines or moving to some amount of conformity even if that provides a less than optimal platform for maximizing our discoveries.

When I consider the body of MIS research since I began as a doctoral student more than 20 years ago, I think we have actually produced some extraordinarily good work with potentially useful implications for practice. I point, for example, to the diffusion literature which, in my view, collectively shows limits of the referent discipline theories and why they provide little explanation for much of the phenomenon when applied to information technology. From an academic perspective, we have made a substantial contribution to the understanding of this area.

If we consider this same research from a practitioner’s perspective, why would she or he be very interested in the pattern of diffusion of a technology as a user? The level of detail of interest would more likely be of the traditional cost/benefit study. Should I invest in VOIP at all? If so, when, and with what vendor? These are the sorts of questions I hear from practitioners regarding the acquisition of new technology. These make for great consulting and classroom projects for students, but by themselves questions such as these don’t really have much staying power as the base for a research field.

The interesting questions, the answers to which will not directly solve the “do I convert to VOIP now” type questions, are those that over time develop a body of knowledge for the methodical addressing of such questions. Some examples might include:

- How do organizations evaluate the details of a new technology?
- How do they assess the match between their current and potentially changed states?
- How do they move through timing and vendor selection decisions?
- How do these processes differ across organizations and what are the likely effects of variation in these processes?

I believe we have an obligation to take advantage of our opportunity to stand aside from the day to day pressures of meeting payroll and maximizing investor revenue to address some of these more general and longer range research questions.

Are we teaching MIS students what they need to know?

These past few years and the decline of enrollments in MIS have been instructive. It is clear that enrollment is strongly attached to external perceptions of the field and careers in the field, regardless of the content of our programs. We have the difficulty that students need a reasonably high level of understanding of hardware and software, how they are created, and how they function as a starting point for more advanced MIS pursuits. Although we don’t necessarily need

students configuring local area networks, they can't become technical security experts without a thorough understanding of how LANs work.

I think the overriding dilemma for MIS is that we have so much core and background to study that we don't get to the current topics of interest early enough or strongly enough in our programs. For example, programming has become something that is necessary background and an important skill area to be called upon as needed, but I believe the bulk of MIS business school graduates will be working in information requirements, project management, or with complex and sophisticated end-user tools such as CRM and ERP.

I expect that some enterprising schools will reverse the order of instruction and start with sophisticated tools and work back to analysis, database, and programming as these become obviously needed in support of the flashier new packages. I expect that other enterprising schools will begin to specialize in more specific subsets of the MIS field, whether the supporting infrastructure, integration of packages, or using sophisticated end user products. Further, I would expect such specializations to be consistent with the local business communities and the types of industries and associated MIS facilities among those most likely to hire the graduates.

I think it is fair to say that those teaching traditional topics such as database and systems analysis with a good dose of programming are not teaching wrong or bad things. Perhaps these topics will always remain fundamental building blocks for MIS. It is just that in the new paradigm these topics are not enough; and they may be more relevant to the subset of IT workers who go into the IT industry (e.g., work for the IBMs and Microsofts) than those who go to work for "IT using" industries (e.g., retail, manufacturing, communications). Unfortunately most of us cannot add more courses in our programs to develop concentrations within bachelors or MBA programs and, hence cannot add this new material without discarding the old. We rarely have the resources – particularly with lowered enrollment — to both create the new programs for emerging package user and integration oriented students as well as traditional MIS programs.

How well does the discipline keep up with change in the field?

We do not move in lockstep. Some schools are up to the minute with new technologies, others lag significantly. I recall a few years ago, when I started investigating XML, I encountered colleagues who had not heard of it and others who'd already integrated it into their courses. On average, how are we doing? We are probably doing an average job. There are some good excuses. Economically we can't keep up with all the new versions of every technology. We have to focus on basics like database and programming, but increasingly the design of new systems and new packages is becoming the domain of computer science. Additionally, we are moving to purchase, installation, use, and training as well as integration with the business processes of packages such as GIS, ERP, CRP, and many others. Moreover, most of us might be able to master the application of a few of these end user oriented products, but how many can we handle?

Another question is in the research domain: How well do we keep up with change? The risk of studying each new technology as it emerges is, of course, that the results of the research will perish with the obsolescence of the technology. I think many of us try to keep up with changes in the field at the course level – incrementally tweaking courses as the technology evolves – and sometimes these changes are not sufficient to keep up with a paradigm shift where whole topics become less salient and new ones emerge.

What are logical/necessary first steps to begin addressing the Slippery Slope?

Research steps:

(1) I think that we need to assert strongly and consistently that our second tier journals – the *DATABASEs*, the *IEEE Transactions on Engineering Management*, and the *Journal of Global Information Systems*, to name some I'm familiar with – are important and valuable. I firmly believe that many worthwhile papers are turned away from *ISR* and *MISQ* just because there isn't

room for everything. I wonder what happens to the papers that are turned away. Top scholars tend to publish these in a wide array of journals and develop a deep portfolio. I sense that some others just abandon these works on the basis that they “won’t count” at some schools or won’t be taken seriously anyway. I suppose it is appropriate for some top research schools to focus on top journals, but it seems overly narrow to dismiss all else as though it did not exist. Keep in mind that, as the field expands, the B+ journal of today may be a clear A journal in the future.

(2) I think we need to step back from the insistence on every paper being theory based; I have encountered too many occasions when theory is retrofitted into otherwise fine studies just for the purpose of throwing in theory. There is nothing wrong with theory, but the field can profit from many more theory building exercises receiving significant attention. I think we suffer from the adaptation of poorly fitting theory from referent disciplines in the effort to show our value as a discipline.

By the same token, we must insist that theory building papers (and I would include most case studies I have read over the years) should suggest what theoretical conclusions should be drawn IF the studies do, in fact, tap into robust and general findings. These should form a basis for further investigation, refinement, understanding of contingencies, and sometimes rejection. I believe this to be true for action research and design science papers also. Even if design science in a particular case requires some trial and error, there may be guiding principles for choosing possible solutions to examine, and there may be stronger guiding principles emerging in addition to the specific solutions.

(3) I think we should support a highly respected journal that focuses on replications. In my experience, it is almost impossible to publish a paper that replicates a prior study. There is value in just showing that an experiment or survey has produced the same results when applied in a new setting (even if the effort is made to keep the setting as similar as possible to the original). Therefore, scholars tweak and twist the elements of existing theory with the consequence that we are less able to compare results with previous findings.

Teaching steps:

(1) If we have to live with periodic boom and bust cycles, we need to find ways to build up a little margin during the good times and some confidence for the continuation and reinvestment in programs during the lean times. How do the engineering fields handle their boom and bust cycles? It is probably too idealistic, but it would be helpful to convince university administrators to view programs in MIS as a long term commitment rather than part of the immediate product line.

(2) I don’t know of any programs that suffer from too much support from outside business interests. To a large degree, our enrollment trough follows the cessation of hiring by folks in industry. Real business practitioners will tend to be listened to if they insist on their need for MIS personnel (in whatever flavor). If MIS personnel are not a priority for local businesses – if statements about the need for personnel are not backed up by actual hiring – then we will remain in bad shape. Some effort, though, needs just to go into letting business people know that MIS exists and that personnel working with technology can come from business schools as well as computer science departments.

(3) I think we need to review our offerings and bring them into alignment with the reality of MIS work, but I think we need to be careful not to panic and not to “throw the baby out with the bath water.” I think we typically offer a solid academic program, and we need to promote that proudly.

(4) Within academia, we may need to form alliances and programs with others outside the business school. I know how hard such alliances can be in terms of dealing with cultural and administrative differences. But we may need to ally with groups in health care, library science, computer science, engineering – even geography and the arts — to be able to accumulate enough students for our core offerings.

In all, there is much to be done whether we are on a Slippery Slope, or not; whether we are broken, or not. A career in MIS academia is not for the faint of heart.

VI. CONCLUSION

The opinions of the panelists vary about the Slippery Slope assertion, from affirming the assertion, to being in a "fragile state," to just being a little lost with unclear maps. All three panelists agreed, however, that MIS must address issues in both our teaching and our research.

The root of the Slippery Slope problem may be that we have lost our energy and enthusiasm in the wake of constant change. All of us were attracted to this field because we were challenged or intrigued by new and interesting technology, and the management issues that result from their use. Along with these challenges came the reality that MIS is not a discipline where one could become complacent and still remain effective. Increasingly, we realize that this reality is both a blessing and a curse.

Perhaps we need to recharge both our research and teaching. All of us at times feel a bit overwhelmed by the waves of rapid change in technology, their applications, and the evolving management issues that emerge. At the same time, we strive to and do enjoy teaching students about important new technologies and prevailing management issues.

MIS faculty must rediscover the fun of learning a new technology and related issues, and of disseminating that enthusiasm to their students. For example, faculty could demonstrate the business value of GPS by taking their students on a hike through the woods, and then expecting them find their own way back or faculty could demonstrate how RFID is improving the supply chain by visiting a local warehouse. Rediscovering the fun of new technology could help us reaffirm the technical prowess of MIS in business schools. For example, we could teach students to present their projects using podcasting instead of PowerPoint slides before marketing faculty do.

We need to ride the waves, so to speak. After all, isn't embracing change what we explain to our students that they must do? As a discipline we must continue to try new ways to both motivate and enable faculty to embrace change and to increase the relevance of the discipline if we are to continue to thrive.

In his commentary, Fred Niederman suggested a career in MIS academia is "not for the faint of heart." That is undoubtedly true. But the MIS discipline has the privilege of being on the forefront of change in today's business world. Perhaps we not only need to start communicating that privileged status to our students, we need to start believing it ourselves.

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EDITOR'S NOTE: The following reference list contains the address of World Wide webpages. Readers, who have the ability to access the web directly from their computer or are reading the paper on the web, can gain direct access to these references. Readers are warned, however, that

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