

EDITOR'S COMMENTS

Some Implications of the Year-2000 Era, Dot-com Era, and Offshoring for Information Systems Pedagogy¹

In the tumultuous days of the Year-2000 crisis and the dot-com boom, at least in some countries the demand for information systems/information technology (IS/IT) professionals seemed insatiable. Many pundits believed the economies of these countries had undergone fundamental structural changes. A new era had emerged—one where remarkable gains in effectiveness and efficiency had been achieved through uses of information and communication technologies (ICTs). As a result, the future for IS/IT professionals seemed rosy. In a world that relied increasingly on ICTs, many observers believed that demand for IS/IT skills would remain buoyant. IS/IT professionals became the workforce elite. The high compensation levels they could command reflected their newfound status.

By the end of 2002, some harsh realities had become apparent. It was clear the previous few years had been an aberration. The boom was over. Companies that provided ICTs languished. Their customers were no longer willing to make heavy investments in ICTs. Instead, they were content to try to leverage their existing IS/IT assets—those they had made in the lead up to 2000 and the heyday of the dot-com boom. In some countries, the demand for the provision of services by IS/IT professionals also plummeted. In the absence of ICT investments, organizations curbed their development work. Accordingly, they downsized their IS/IT workforce. Overall, there was a sense that discipline had to be exercised once again in the ICT marketplace. The excesses of the previous few years had to be purged.

Around the same time, a new phenomenon that affected the demand for IS/IT professionals began to gain prominence. Specifically, many organizations commenced to relocate their IS/IT operations to countries other than those where they were domiciled. They sought ways to reduce their IS/IT expenditures substantially, perhaps as a reaction to the heavy costs they had incurred in the Year-2000 and dot-com eras. India and China, in particular, were beneficiaries of this phenomenon. These two countries had many highly skilled, highly experienced IS/IT professionals. Relative to most other countries, however, the cost of employing these professionals was low.

In many ways, this offshoring phenomenon was simply a natural extension of the outsourcing phenomenon that had occurred throughout the 1990s. Through outsourcing, some organizations had sought to achieve greater returns on their IS/IT investments by having them placed with other organizations that had a comparative advantage in providing the services they required. Often, however, the outsourcing vendor was located in the same country as the customer. Thus, the customer reaped few gains, if any, from differential labor costs. Offshoring changed this situation. Customers not only benefited from having access to professionals who were more highly skilled than their own IS/IT workforce, they also substantially reduced their labor costs.

¹I am indebted to Rudy Hirschheim for several helpful conversations on the topic of this editorial and to the Senior Editors of the *MIS Quarterly* for helpful comments on an earlier version of this editorial. Of course, responsibility for the content of this editorial lies with me and not Rudy or the Senior Editors.

Throughout this period, the demand for student places in IS/IT within tertiary institutions mirrored the demand for IS/IT professionals in the marketplace, albeit with some time lag. As a result, many tertiary institutions also experienced the boom and bust of the Year-2000 and dot-com eras and their aftermath. During the period in which the boom gathered momentum, tertiary institutions scrambled to provide basic resources like computers, library facilities, laboratory space, and classroom space. Many also found their administrative processes were inadequate to handle student needs. Also, as academics working in the field, we found we could command a premium for our services. The demand for Ph.D. graduates substantially outstripped the supply. Graduating Ph.D. students found they had multiple job offers.

When the bust set in, the inevitable consequences occurred. Students saw that IS/IT jobs had dried up. They shifted to other disciplines where the job market for graduates was brighter. Many tertiary institutions found they had various courses and subjects that could no longer be sustained because of low student demand. Furthermore, they found they had a number of ineffective and inefficient administrative processes that had been implemented hurriedly to try to meet burgeoning demands during the boom. Also, Ph.D. students in the pipeline realized they had invested in education to gain employment in an academic marketplace that had soured. On one of the few occasions in the history of our discipline, the supply of graduating Ph.D. students exceeded the demand.

On the one hand, we can frame the Year-2000 and dot-com eras as an extended, disastrous period for both the IS/IT profession and ourselves as educators. We can berate ourselves for our foolishness in believing that (1) the world had changed forever in our favor, and (2) we were immune from any kind of market settling-up that eventually might occur. Of course, using 20-20 hindsight to identify why past mistakes should have been avoided is often easy. Moreover, as an educator in the frenetic period of growth during the Year-2000 and dot-com eras, I recall that the best my colleagues and I could do was to marshal as many resources as we could to meet student demands. There was simply no time to discern carefully the implications of the growth that was occurring for the departments, schools, or faculties in which we worked and, in particular, the curricula we offered. Moreover, our problems often were compounded by the enthusiasm of our institutions to cash in on the boom in student numbers.

On the other hand, we can frame the Year-2000 and dot-com eras as a positive experience for both the IS/IT profession and ourselves as educators. In some never-before-experienced ways, it brought home to many of us the fragility of our discipline. Like a number of other disciplines (e.g., some of the biosciences), we suffer from the vagaries of technological change and the fickleness of marketplace fashions and fads. Nonetheless, an old aphorism enunciates: "No pain, no gain." The pain from the wash-up of the Year-2000 and dot-com eras ought to give us cause to reflect—something we might not have done absent the pain. In short, we can use our experiences to learn so that we can move forward in stronger, more-confident ways.

Similarly, for some of us the offshoring phenomenon has caused difficulties, because we have seen marked changes in the numbers of and types of IS/IT jobs performed within our countries. For others of us, however, offshoring has brought many benefits, because new and increased numbers of IS/IT jobs have shifted to our countries. The offshoring phenomenon is a timely reminder that as IS/IT educators we are dealing with an intriguing, complex international marketplace. We ignore this situation at our peril.

In this editorial, I examine some implications of the Year-2000 and dot-com eras and offshoring phenomenon for information systems pedagogy. My goal is to articulate some ideas that ultimately will lead to the design of better IS/IT curricula. Hopefully, the curricula will be better because they are more robust to change. Hopefully, they will also be better because they provide our students with the knowledge and skills they need to survive and prosper in a volatile and risky but nonetheless challenging and exciting profession. I hope, therefore, that this editorial will stimulate debate and discussion about some important

strategic issues relating to IS/IT curricula—for instance, the extent to which we need to balance our students' intellectual versus vocational needs.

Background: Some Trends in IS/IT Employment

The design of IS/IT curricula needs to take into account some overall trends in the marketplace for IS/IT employment. In my view, we now have sufficient knowledge of five such trends to predict with some confidence that they will be enduring. In the subsections below, I have outlined the nature of these five trends.

IS/IT Occupations Will Remain Prominent

With the current downturn in IS/IT employment in some countries, some pessimism exists about the future prospects for IS/IT occupations. For my part, I see little cause for concern. I cannot conceive of a future where we depend less rather than more on ICTs. Indeed, increasingly ICTs are becoming pervasive. They are becoming ubiquitous. For this reason, I believe IS/IT occupations will remain a mainstay in many countries.

For instance, predictions made by the U.S. Department of Labor provide an optimistic view of the future for IS/IT occupations in the U.S. economy. In the Department's *Occupational Outlook Quarterly: Winter 2003-04*, Volume 47, Number 4 (<http://www.bls.gov/opub/ooq/ooqhome.htm>), 6 of the 20 projected fast growing jobs are IS/IT occupations (4 of the 6 are in the top 10). The "information" industry ranks fourth in terms of the predicted percent change in wage-and-salary employment during this period. In terms of the predicted percent change in wage-and-salary employment during this period for "detailed" industries, 3 of the top 5 (ranks 1, 2, and 5) are IS/IT industries. The Department's message is consistent and clear. IS/IT jobs are predicted to remain a prominent feature of the U.S. economy.

Shocks Can Occur in Long-Run IS/IT Employment Patterns

In a number of countries, the overall trend in the numbers of people employed in IS/IT occupations is upward. The Year-2000 ramp up and the dot-com boom and bust were simply aberrations in the long-run trend. In the aftermath, unfortunately, we sometimes have lost sight of the long-run trend.

The Year-2000 ramp up and the dot-com boom and bust are signal indicators, however, that shocks can occur in the long-run pattern of IS/IT employment. I believe we are courting disaster if we work on the basis that these were singular events. Some type of shock will occur again. This is the nature of employment patterns in a technology-driven discipline. Both practitioners and educators must have in place strategies to weather the shocks when they occur. The benefit of being educators is that we experience the shocks with some delay. Practitioners feel them first. Would-be students observe practice and make decisions about their studies. Student decisions then impact us as educators.

Existence of a World Marketplace for IS/IT Employment

Increasingly, the IS/IT employment marketplace transcends national boundaries. Obtaining education and experience in one country does not undermine one's employment opportunities in another country. Indeed, many organizations now seek to employ IS/IT workers who have international experience. Similarly, many

IS/IT workers now seek to gain international experience. They understand fully that it will enhance their job prospects rather than detract from them.

I believe the IS/IT employment marketplace will become more fluid in terms of location. As ICTs evolve, fewer constraints exist on where IS/IT work must be done. Organizations will look to locate work where it can be done most cost-effectively. The characteristics of national economies now change rapidly, however. A nation that has a comparative advantage in performing certain types of IS/IT work might quickly lose this advantage as its economy becomes more wealthy and IS/IT capabilities develop in other nations.

Change Will Continue to Be Rapid

For a long time, it has been a platitude to state that changes in ICTs and changes in the IS/IT employment marketplace will be rapid. Nonetheless, even though in many respects both have matured, there are no signs that the pace of change will abate. For instance, Moore's Law still applies. Remarkably, every two years engineers somehow still manage to roughly double the transistor density per microchip.

Given rapid, ongoing changes in ICTs, I cannot foresee a time when the IS/IT employment marketplace will be senescent. Jobs must adapt to reflect changes in ICTs. Workers must adapt to reflect changes in jobs. Frequent superficial and sometime deep changes will be sustained in the IS/IT employment marketplace.

IS/IT Will Be the Bellwether for Other Occupations

It would be some solace if we could look to employment marketplaces relating to other occupations as a means of predicting changes in the IS/IT employment marketplace. Unfortunately, the reverse applies. The IS/IT employment marketplace is often the bellwether for other occupations. For instance, IS/IT outsourcing was the forerunner for other sorts of outsourcing (e.g., legal and accounting outsourcing). Similarly, IS/IT offshoring is likely to foreshadow other sorts of offshoring behaviors.

In this light, I doubt that changes in the employment marketplaces relating to other occupations will provide us with apt indicators of the changes that are likely to occur in the IS/IT employment marketplace. We must be self-sufficient. We cannot rely on our having timely warning from other disciplines of important changes that will occur within our own discipline.

Foundations: Some Educational Imperatives

Given these overall trends in the IS/IT employment marketplace, what are our educational imperatives? What must we do to ensure our graduates are best equipped to survive and prosper both professionally and personally? I believe there are five important imperatives, which I discuss briefly in the subsections below.

Avoid Xenophobia

As educators, we need to avoid xenophobia. Clearly, changes in the IS/IT marketplace are not universal. A downturn in one place in the world might occur at the same time as an upturn in another place in the

world. Similarly, the sorts of skills and experience demanded in one place in the world might be different from the sorts of skills and experience demanded at another place in the world. For many of us, our students come from all over the world. We run the risk of alienating our international students if our curriculum is driven primarily by local needs.

Moreover, increasingly both our domestic and our international graduates are viewing and will have to view the IS/IT employment marketplace as a world marketplace. Many actively seek international work experience. Through circumstance, many are forced to work elsewhere as expatriates. We do them a major disservice if we educate them only to be capable of coping in some types of IS/IT employment marketplaces and not others.

Provide Knowledge and Skills that Transcend Changes

We must provide students with knowledge and skills that transcend many types of changes. For a start, the history of our discipline shows unequivocally that ICT changes will be rapid. Moreover, for some ICT, we know that the pace of change will increase rather than decrease (until the technology becomes mature or it becomes obsolete).

ICT changes are often associated with major organizational changes. I fully understand the dangers of making technological-imperative arguments about organizational change. Nonetheless, clearly ICT changes in part motivate and enable some types of organizational changes. For instance, ICT changes have underpinned the growth of virtual teams in organizations. Similarly, in many cases, ICT changes have played a major part in organizational downsizing and the flattening of responsibility and reporting structures.

Somehow we must equip our students to be robust to change. Professionally, they must possess the knowledge and skills needed to allow them to acquire competencies in new ICTs quickly. Personally, they must be able to withstand the stresses that arise from having to cope continuously with rapid change. Ongoing survival in the IS/IT marketplace requires a special kind of person: someone who is willing to learn continuously throughout their lives; someone who can withstand the enormous personal stresses that often arise from the professional changes they face and potentially their having to shift their place of domicile frequently; and someone who is willing to take the risk that a path they pursue might quickly be rendered unproductive.

Avoid Resorting to Regulatory Constraints on Markets

Understandably, in some cases the downturn in the IS/IT employment marketplace, coupled with increased offshoring activities, has generated paranoia. In Australia, for example, several lobby groups have argued for government intervention to prevent organizations using offshoring to address their IS/IT needs. In this regard, I have had meetings with trade-union representatives to consider the wisdom of having some kind of regulatory body monitoring and controlling offshoring activities or taking industrial action against organizations that engage in offshoring activities. My stance has been that usually the overall benefits of offshoring activities outweigh the costs.

The foundation for my arguments has been basic economic theory, which indicates the kinds of undesirable outcomes that can occur when free markets are constrained artificially. In the case of employment markets, for example, regulation to prevent offshoring activities simply means that one country chooses to export its unemployment to another country. Leaving aside the moral and ethical issues

associated with practices that seek to regulate and constrain, to pretend that in the long term the disadvantaged country will not retaliate in some way is naïve.

In a global marketplace, I also find it hard to believe that regulation of or some kind of artificial constraints over markets can be effective. Global market forces now push organizations inexorably to produce their goods and services using the most-effective and most-efficient means they can find. Otherwise, they will be priced out of the marketplace. We need to understand (governments especially!) that a marketplace for regulatory regimes now exists. To the extent a country's regulatory regime disadvantages an organization, the organization may choose to shift its operations elsewhere. In short, we can plot classic demand and supply curves for a "good" called a regulatory regime.

More specifically, if prevention of offshoring practices means the production of IS/IT goods and services is more costly in one country, organizations will transfer their IS/IT activities elsewhere. The result is that few if any IS/IT employment opportunities will be left in the country that chooses to regulate or constrain its marketplace.

As educators, therefore, I believe we should neither espouse nor support market constraints over the IS/IT employment marketplace. In addition, we should not seek to educate students who are capable of surviving only in constrained employment marketplaces. Rather, we need to prepare our students for a world IS/IT employment marketplace.

Some Implications for Pedagogy

What, then, are the implications of the marketplace trends and educational imperatives I have outlined above for IS/IT pedagogy? I have had to wrestle with this question over many years because frequently I have been responsible for managing curriculum changes within my own institution.

In a nutshell, I believe the trends and imperatives dictate the need for an IS/IT curriculum that has two kinds of components. The first comprises a set of subjects that strike at the core of the IS/IT discipline. They provide a context in which students learn about fundamental concepts, theories, and principles that underlie IS/IT phenomena. Their content is intended to transcend technologies. To the extent possible, their content is also intended to be timeless. For instance, if the focus is IS phenomena, they ought to cover material associated with user requirements elicitation, project management, system development approaches, IS management, organizational change, and technology adoption, infusion, and diffusion. If the focus is IT phenomena, they ought to cover material associated with the structure and functions of hardware and system software, principles of good program design and testing, design and implementation of databases and knowledge bases, fundamentals of security, and user-computer interfaces.

If students have good knowledge of subjects that make up this first component of the curriculum, they should be able to work with whatever technology they confront when they commence their working lives. Clearly, a tertiary institution cannot provide students with experience in all the different types of technologies they might use. Accordingly, it must equip students with the knowledge and experience they need to cope with and adapt to different sorts of technologies. Moreover, having good knowledge of subjects in this first component of the curriculum ought to allow students to deal with change. As IS/IT evolves, students must be able to acquire quickly new types of proficiencies. Personally, they also must be able to cope with the stresses that accompany change.

The second component of the curriculum comprises a set of subjects that are vocational in nature. They provide students with knowledge about and experience with current IS/IT phenomena. For example, they

give students basic facility with the programming languages of the day, widely used application packages, current requirements analysis tools and techniques, and extant security hardware and software. One purpose of these subjects is to make students marketable. Organizations will hire them in the knowledge that they can become productive employees relatively quickly. Another purpose is to provide specific contexts in which knowledge of the core concepts, theories, and principles can be applied. Teaching these concepts, theories, and principles in abstract is problematical. Students are unlikely to engage meaningfully with them. Moreover, students are unlikely to develop the facility to apply them successfully. As a result, students will not be robust to change. For example, they will not be able to use their fundamental knowledge to understand and work with new technologies.

As educators, a major problem we face is to determine the makeup and size of these two components of the IS/IT curriculum. Often we face conflicting pressures. For instance, in the context of the offshoring phenomenon, my experience is that some employers will argue that tertiary institutions ought to be graduating students who are well suited to the needs of the domestic IS/IT employment marketplace. For instance, they will argue that tertiary institutions ought to give little attention to software-development skills and instead focus more on so-called higher-level skills like systems integration and project management.

As an educator, I find it difficult to understand how students can obtain a deep understanding of and facility with these so-called higher-level skills without having first acquired a good knowledge of fundamental IS/IT concepts. It is akin to expecting surgeons to be able to conduct operations proficiently without first having obtained good knowledge of basic anatomy. Also, as changes in a discipline and its associated employment marketplaces become faster, fundamental concepts and theories become more important rather than less important. They provide the means for individuals within the discipline to cope with the changes. On the other hand, vocational training dates quickly and thus becomes less useful. Moreover, if we are seeking to graduate students who are capable of surviving in a world IS/IT employment marketplace, we cannot simply focus our efforts on domestic needs. Otherwise, we are doing a major disservice to our students.

I believe, also, that we are foolhardy if we ignore history. We know already that domestic IS/IT employment marketplaces can change dramatically and quickly. If we attend to only the characteristics of the current domestic marketplace, our curriculum may date quickly and lose relevance. In short, in the design of our curricula, we need to have a broad, long-term perspective.

Some Conclusions

In the face of constant change in the IS/IT employment marketplace, as educators I believe it is important that we keep our nerve. We need always to remember the fundamentals of good pedagogy and to avoid being swept along by transient circumstances. Events like the Year-2000 crisis, dot-com boom and bust, and offshoring of IS/IT activities severely test our mettle. Ultimately, however, their effects dissipate and are soon forgotten. They become history.

We represent ourselves to others as an academic and professional discipline. This means we ought to be teaching fundamental concepts, theories, and principles in some domain. While we must be mindful of current IS/IT employment marketplaces, we must also see beyond them. Our pedagogy must enable our students to survive in the long term and in a world marketplace. Otherwise, we are abrogating our responsibilities to our discipline, our colleagues, and our students.

The dramatic changes that we have witnessed in the IS/IT employment marketplace over the last few years also should motivate us to consider the place of our discipline within tertiary institutions and its relation-

ships with other disciplines. As a sociotechnical discipline, periodically we need to consider our identity and the boundaries of our discipline. For instance, given the increasing pervasiveness of ICTs, perhaps we need to consider more open, collaborative educational practices that lead us to contribute more actively to the education of students in other disciplines. In this way, we might contribute to developing IS/IT competencies more generally, which in turn might lead to our attracting more students into our discipline.

Reviewer of the Year for 2003

I am pleased to announce that the *MIS Quarterly's* Reviewer of the Year for 2003 is Paul Pavlou of the University of California Riverside. Paul has been a frequent Reviewer for the *MIS Quarterly*, and Senior Editors and Associate Editors alike have regarded his reviews as outstanding. On behalf of the *MIS Quarterly*, I would like to extend to Paul our congratulations on his achievement and our thanks for the contributions he has made to our review processes.

Best-Paper Award for 2003

I am also pleased to announce that the *MIS Quarterly's* Best-Paper Award for 2003 goes to Roberta Lamb and the late Rob Kling for their paper, "Reconceptualizing Users as Social Actors in Information Systems Research," which appeared in the June 2003 issue of the *MIS Quarterly*. Nominations for the best-paper award are made by the Associate Editors of the *MIS Quarterly*. A short-list is then considered by the Senior Editors of the *MIS Quarterly* and the winner chosen from this short-list.

On behalf of the *MIS Quarterly*, I would like to extend to Roberta our congratulations on her achieving this award and our thanks for her support of the *MIS Quarterly*. The award also is yet another recognition of Rob Kling's significant contributions to our discipline. I am pleased that the *MIS Quarterly* has been able to honor Rob's memory in this way.

Retirement and New Assignment of Publisher Duties

With the retirement of Gordon Davis later this year, Alok Gupta, Associate Professor of Information Systems at the University of Minnesota, will be taking over duties as the Publisher of the *MIS Quarterly*. On behalf of the *MIS Quarterly*, I thank Gordon for the outstanding service that he has provided to the *MIS Quarterly* since its inception. When the *MIS Quarterly* was first published in 1977, Gordon took on the role of one of the MISRC representatives who was tasked with assisting the fledgling journal. Since that date, he has had continuous involvement with the *MIS Quarterly* in various capacities. His commitment to and support of the *MIS Quarterly* has been unwavering. The journal owes much of its success to his efforts.

When I first went to the University of Minnesota to undertake my Ph.D., Gordon was given the unfortunate task of being appointed as my advisor. He had to deal with an unruly, undisciplined, dogmatic, offensive, homesick Australian Ph.D. student. It is testament to his abilities as an advisor that he is still my advisor, even though I graduated some 28 years ago with my Ph.D. For me, Gordon's impending retirement is a poignant moment. Like many colleagues in our discipline, it is hard to conceive that he might retire. I am certain his presence will continue to be felt in our discipline.

I thank, also, Alok Gupta for being willing to take on the important role of publisher of the *MIS Quarterly*. Alok has been a wonderful supporter of the *MIS Quarterly* in a number of ways. I am certain he will do an outstanding job as publisher. I look forward to working with him.

Special Thanks for Assistance

On behalf of the *MIS Quarterly*, I would like to thank Allen Gwinn who set up the original MISQ.org domain name. Allen has maintained it as a service to the field for over 10 years. We greatly appreciate his ongoing support of the journal.

Incoming Editor-in-Chief of the MIS Quarterly

I am delighted to announce that Carol Stoak Saunders is the incoming Editor-in-Chief of the *MIS Quarterly*, effective 1 January 2005. Carol is Professor of MIS at the University of Central Florida in Orlando, Florida. She served as General Conference Chair of ICIS'99 and Telecommuting '96. In 2000, she was Chair of the Executive Committee of ICIS. Carol was inducted as an AIS Fellow in December 2003. Currently she is a Senior Editor of *MIS Quarterly* and *e-Service Journal*, and she is an Associate Editor of *Communications of the AIS*. Carol also has served extended terms as Associate Editor of *Information Systems Research*, *Decision Sciences*, and *Information Resources Management Journal*. Her current research interests include time visions, the impact of information systems on power and communication, virtual teams, and interorganizational linkages. Her research has been published in the *MIS Quarterly*, *Information Systems Research*, *Journal of MIS*, *Communications of the ACM*, *Academy of Management Journal*, *Academy of Management Review*, and *Organization Science*.

I have had the great pleasure and privilege of knowing Carol and working with her over many years. She is an outstanding scholar, and she has made many longstanding, significant contributions to service within our discipline. I know she will discharge her responsibilities as Editor-in-Chief with great distinction. I welcome her to her new role, thank her for all her support of my own efforts throughout my career, assure her of my own support for her efforts, and wish her every success.

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