"Trends in Higher Education Today Which Impact Engineering Education"

Address to

International Conference on Engineering Education (ICEE)
Taiwan, August 14, 2000

By

John S. Jackson
Interim Chancellor
Southern Illinois University

Introduction

I am pleased to be here with you at this meeting of the International Conference on Engineering Education in Taiwan this year. As many of you know, my institution, SIUC, has been one of the leading players in this organization and this conference since its inception.

I want to particularly acknowledge the leadership which has been provided by Dr. Juh Wah Chen, former Dean of Engineering at SIUC; Mr. John Mead, Director of the Coal Research Center and former Dean of the Graduate School; Dr. Max Yen, Director of our Materials Technology Center; Dr. George Swisher, current Dean of the College of Engineering; Dr. Benjamin Shepherd, former Provost; and, especially Dr. Win Aug of the National Science Foundation. Each of these has played a crucial role in SIUC's participation in this important conference over the years. SIUC is pleased to be here again this year as one of the co-sponsors of the ICEE.

The Current Situation: Stock Taking

I am a political scientist (not an engineer) and thus it is easy to be intimidated by a formidable group of engineers. I have also been a university administrator for many years. So, I want to discuss some trends in higher education which have an impact on us all today.

It has become clear over the years of existence of this organization, that while we are divided by geography, nationality, and occasionally by belief systems, there is much more which unites us than divides us. The positive results of these conferences have been well worth the time and expenses they have required and our universities, the students, and the world of research and teaching in engineering have all benefited greatly from this grand experiment in international collaboration for the benefit of engineering education. This conference is one important form of the "globalization" of Higher Education today. The globalization of higher education is an important trend which also reflects the parallel trends in the globalization of communications, finance, and technology. The globalization of higher education is as important as these other macro trends in the world today.

In my estimation, the most important challenge and opportunity provided to higher education in general, as well as Engineering Education in particular, is the growth, dissemination, and penetration of computer enhanced education or "distance learning", most notably via the Internet. These are exciting and

perilous times in education. Many of the papers to be delivered at this conference reflect your concerns about and ambitions for Distance Learning.

I want to discuss what is happening in my State of Illinois recently as an indicator of where higher education is going worldwide. In the United States, we are faced with a growing number and variety of new players and challenges regarding how we will deliver education and how we will do and disseminate research. I will focus more of my remarks on teaching. INEER is an exciting new development in this field which has both teaching and research implications, but I will leave that to Dr. Win Aung's panel. In addition, the questions of who will fund these new innovations in teaching and research, and who will own them are particularly compelling, although I cannot do them justice in the time available.

In the month of April 2000, the Illinois Board of Higher Education (IBHE), which is our state coordinating authority or our "Ministry of Education," approved a relatively unknown university-based program (Franklin University) in Columbus, Ohio, to deliver undergraduate degrees to Illinois residents. Not only was that approval given, but it also entailed a deal whereby Illinois Community Colleges (two-year degree programs) can partner with Franklin University to develop a third and fourth year of the undergraduate degree to be supported by Community College faculty and staff, but to be delivered largely on the Worldwide Web. Franklin University will try to make money off this arrangement. They would not be coming to Illinois otherwise. They are also sharing some of the "profits" with the community colleges, i.e., they are paying the community colleges to help deliver the courses.

Then, in the month of June 2000, the Illinois Board of Higher Education allowed and approved a new external university (Cardean University), which virtually no one in Illinois Higher Education circles had ever heard of, to come to Illinois to deliver a variety of Master's degree programs (in Business Administration, Information Technology, and Information Management). All of these are degree programs in very high demand and popular fields. I have no doubt that various popular engineering programs will be next.

While I have emphasized that no one had ever heard of Cardean University when it came to Illinois, they were able to boast about the courseware they had to offer. It came from scholars at the University of Chicago, the London School of Economics, Stanford, and Carnegie-Mellon University. People had heard of those places and thus arguments about quality control were quickly rendered moot. Note, however, that I said the "courseware" was developed by faculty at those prestigious universities not that Cardean University had those scholars on the Cardean faculty.

Jones University already delivers courses and degree programs to students in Illinois. It will be only a matter of time before the British Open University, working with its American partners, comes calling.

We hear in Illinois that Phoenix University, which offers a wide variety of undergraduate and masters degree programs, largely on-line, will be next in asking for approval to deliver full-fledged programs in Illinois. As many of you know, Phoenix University is a "for-profit" private corporation that has gone into higher education to make money. The same can be said for Sylvan Learning Systems, another for-profit private company increasing its presences in Higher Education delivery. They are now being joined by Edison Schools, another for-profit, which manages schools in 16 states and which proposes to go into Teacher Training in a big way over the next few years. Note that they, and others, can already deliver programs to individual students in Illinois. Students in Illinois (and worldwide) can enroll as they please in these courses, at their convenience. Under our law, these companies are free to operate in Illinois unless they:

a. establish a physical presence in Illinois and/or
b. enter into consortia arrangements with Illinois institutions such as Franklin University did with our Community Colleges.

In short, these are the legal boundary conditions set by State Statute. Other states in the U.S. have similar regulations. By law, that is the only role the IBHE can play in regulating course or degree program

delivery by institutions from outside Illinois. It is a very limited role and all else is allowed in Illinois (and in most states).

Some of my colleagues would say that "The Barbarians are at the Gate." I think there is cause for great concern at the traditional universities, but I would prefer that we respond by developing ways to meet their challenge.

These challenges of new institutions and new delivery modes are also going to provide great headaches and challenges for the state governments and the federal government in the United States. Questions of funding, accreditation, student aid eligibility, quality control, and costs are all beginning to rise with great insistence, but have no easy answers. It is not clear who will provide the answers. Because of our decentralized federal system of public and private education in the United States, the answers to these questions are likely to be diverse, ad hoc, and incoherent for many years to come. The costs to the students are generally above those charged by the public universities in Illinois but below those charged by the private universities. Many are eligible for federal and state student aid packages.

The Illinois Virtual University and the 21st Century Network

While we are behind the curve in Illinois, we are not completely asleep at the switch. The state (IBHE working with the universities), has taken some proactive steps to meet the challenge of the external forces.

The IBHE has created the "Illinois Virtual University" with its headquarters centered at the University of Illinois, Champaign-Urbana. The Illinois Virtual University offers an electronic platform for the dissemination of courses and programs that have been developed in Illinois universities by our faculty and disseminated worldwide via the web. It is an inventory or list of courses and programs at the local campuses and how to access those. So far there are well over 100 courses and a handful of degree programs available through the Illinois Virtual University.

It does not, to date, have any resources to encourage and entice faculty to do course development. It does not, to date, have any overall coherent plan for which degrees at Illinois institutions should be developed for net-based distribution, who should develop those courses and programs, how to subvent the costs, etc. Right now, it does not even have a policy on changing in-state or out-of-state tuition rates – always a big question. We do now have a Request for Proposals (RFP) issued by the IBHE for FY02 for the development of $3.5 million in new Distance Learning courses and degree programs. That money will help buy out faculty time for courseware development, something we need soon.

All of these are important issues which must be sorted out whether in Illinois in particular, in the U.S., or in worldwide educational terms. If they are not sorted out, with a weather eye on assessment and quality issues, chaos will undoubtedly reign for a period. In this early period, there can develop a certain "Gresham's Law of Distance Learning." That is, bad courses and bad practices may drive out high quality courses and programs and best practices for a while.

It should be emphasized that many others have sounded appropriate notes of caution about many of these same assessment and quality issues. There are many opportunities for innovation and entrepreneurship here. There are also opportunities for mischief and shoddy work. To be sure, some good courses are also being developed with the resources at hand and you will hear about some of those at this conference.

In many ways traditional universities, like SIUC, are deeply invested in the bricks and mortar of their facilities, as well as the human capital of their faculties and staffs. In this traditional investment we look a lot like the "Old Economy" industries such as the manufacturing of steel, automobiles, machine tools, etc., that have been seriously threatened and outstripped in economic performance recently and in stock market value by the new computer and information-driven industries collectively called now "the New Economy". Companies like Microsoft, Cisco Systems, Intel, etc., come readily to mind as the

epitome of the "New Economy", and the so called "dot coms" like "ebay", "Amazon.com", etc. are perhaps a special case of the New Economy.

This is the competition sometimes referred to as "Bricks vs. Clicks" in the Old vs. New Economy. The "Old Economy" suffered significantly in recent years in the U.S. stock markets. More recently, these companies have made something of a come back in share prices, but they still have problems. In education, we risk becoming obsolete, of becoming a part of the "Old Economy" if we do not rise to the challenge of being innovative and entrepreneurial.

Traditional universities are facing a wide range of challenges from the academic "New Economy" upstarts like Phoenix University, Kaplan College, Cardeen, Jones University, etc. These are places no one had ever heard of even five years ago, but now they are all over the globe and attempting to take major "market shares" of students away from the more traditional universities. The threat is particularly great on the "Non-Traditional" students, who are place and time bound. It will spread to the traditional students also. Our big advantage at the more traditional universities is that we were already in the knowledge generating and knowledge disseminating business and have been for many generations. We should be able to keep up with and compete with these electronic upstarts. Our professors in Engineering and the Sciences and Business Colleges created much of the basic knowledge storehouse on which the whole telecommunications and Internet revolution rests. We taught this current generation of entrepreneurs (with certain notable exceptions like Bill Gates) what they needed to know to go out and be innovative, creative and successful.

Some people think that the traditional universities will have some real advantages in this battle with their upstart challenges. Certainly a strong, recognizable "name brand" and the respect it carries will count for something in this competition. Most people know and respect names like "the University of Chicago", "Northwestern" and "the University of Illinois". Those prospective students who are a bit more knowledgeable will prefer a degree from a name brand rather than "Kaplan College", "Jones University" or "The University of Phoenix – Online." Others think that even somewhat less widely known universities like SIUC will have a real advantage in our own states and in surrounding geographic areas where we are widely known and respected, a sort of "friends and neighbors" effect.

Nevertheless, resting on our hard earned reputations for quality and longetivity may <u>not</u> be enough. The person who wants a course or degree available at their convenience and on their own terms may not care too much for academic prestige or name. Those who hire our graduates are increasingly concerned about their capabilities, their performance, what can they do, and we must be too. The good news is that Engineering Educators are already emphasizing performance-based education. This approach is also compatible with what the accreditation agencies, like ABET are doing. How one translates that approach into a virtual classroom setting will continue to be a challenge. Thus, <u>performance-based education</u> and evaluation will become increasingly important. In my view, the more interactive the course, the better it will be also. Passive lecturing is going out of style.

Certainly all is not lost at the traditional universities like SIUC, the U of I, etc. We can and must learn to adapt to these external challenges. These courses and degree programs will be better, even superior courses and degree programs if they are developed by real faculty anchored at real universities. They will require constant care and attention and updating to achieve any staying power in a fast changing academic environment. There, too, real faculty in real universities should continue to have an advantage.

In addition, the best, the most effective courses and degree programs are likely to rest on a multi-media mode of delivery, to be interactive, e.g., through a "chat room" for an entire class, or a study group within a class will be enhanced by the presence of the professor – even interacting on-line. A face-to-face and personal meeting between students and faculty members has some real advantages. Real professors in traditional university settings will continue to do the new research which is required to continuously expand our shared knowledge base. Courseware will need constant attention and updating to keep it current with new research and the ever-expanding spiral of knowledge. Our faculty members will need released time and financial support for such efforts.

This is not a counsel of despair. It is, though, a warning that things are changing rapidly out there in cyber-world, and higher education and engineering education must work fast and smart to keep up with the changes.

Conclusion

Those of us in the traditional universities, whether high prestige ones or lesser-known ones, cannot live too long and too well on our reputations and "friends and neighbors" effects alone. We must develop courses and programs that meet the demands of students for the convenience of the delivery system. We must meet the challenge of making geography and time of delivery irrelevant in our teaching. In our research, we must reach out to colleagues around the world to share research in a timely fashion and continue to be at the cutting edge of research. Enterprises like INEER sponsored by the ICEE can help insure that we continue to do so.

In addition, we must continue to turn out students who can perform at world-class standards. They must be able to think, communicate, and analyze with the best of their peers from around the world. The world marketplace that is represented by the global economy is interested first and foremost, in performance. That is, what can your graduates do; how much do they know, what value do they add at the end of the day. Thus, "performance measures" will continue to expand and predominate in the field of higher education in general and engineering education in particular. People may be impressed initially with your academic pedigree, but then they quickly get past that to your performance in the field. Most of the universities at this conference have done well in that environment of world-class academic competition, and we can continue to do so and learn from each other.

I believe this conference, and its shared perspective, can help us all to continue to play the leading role in higher education in general and engineering education in particular. I commend the organizers for assembling a fine program and all of you for attending.