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ABSTRACT

This publication presents proceedings from a 1999 conference on higher education reform and quality that involved six countries: China, Germany, Japan, Singapore, Switzerland, and the United States. The first section, "Report of the Six-Nation Higher Education Project," presents "Summary of the Progress of the Higher Education Research Project and the Meaning of the President's Summit" (Akira Arimoto). The next section, "Keynote Address," presents "Governance in the 21st Century University: The World is Changing Faster than the Governance System can Accommodate" (Kenneth P. Mortimer). The third section, "Presidents' Session Reports," includes: "A System in Transition: Higher Education Policy Update and Future Plans from China" (Ruiqing Du); "Reform for Quality Higher Education in the 21st Century: Policy and Future Plans from the United States Perspective" (Elisabeth A. Zinser); "Present and Future of Higher Education in Japan" (Makoto Nagao); "Establishment of Efficient Management in an Institution of Higher Education" (Yasuo Harada); "Strategies for Lifelong Learning: Re-thinking University Education in Terms of Continuing Education" (Werner Meissner); "Financial Management and Planning: or How to Implement Changes More Smoothly" (Luc Weber); "The Strategic Planning Process at the University of Hawaii" (Kenneth P. Mortimer); "Singapore's Experience in Higher Education" (Linda Low); "Reform Measures for Universities in the 21st Century" (Naoki Murata); "Promoting Financial Efficiency through Administrative Technology Applications" (Stephen T. Golding); "E-Enabled Information at the University of Pennsylvania" (Robin H. Beck); "The Internet Changes Everything" (Darren Rushworth); "Technology and the Curriculum: The NTU Experience"(Charng-Ning Chen); and "Science and Technology in Universities in the 21st Century" (Yoshiyuki Naito). The Fourth Section, "Transcriptions of the Discussion Parts," transcribes discussions from two

conference days. The fifth section, "Summary Comments," includes: "Brief Comments on the Presidents' Session 2: Which Ideal Must Lead 'Strategic Management for Universities'?" (Shigetaka Imai); "Commentary on the Concluding Session, Day 1, Higher Education Summit" (Robert Zemsky); "Reflections on the Presidents' Summit of the Six-Nation Research Project" (Noel F. McGinn); and "Reform for Higher Education in the 21st Century" (Ulrich Teichler). Appended are a conference program and list of participants. (SM)

RIHE International Seminar Reports

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Economic, Technological, Social and Political Forces Affecting Higher Education

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PREFACE

The Six-Nation Presidents' Summit-Hiroshima took place in the International Conference Center Hiroshima on September 20 and 21, 1999, under the auspices of Hiroshima University, the University of Pennsylvania, and the Six-Nation Education Research Project Steering Committee, with the collaboration of the Japanese Ministry of Education and the Institute for Democratic Education. At the opening reception, on behalf of Hiroshima University, President Yasuo Harada welcomed all the participants, referring to the Summit as one of the celebratory events of the University's fiftieth anniversary. Messages of greeting were presented by Dr. Akito Arima, Minister of Education; Mr. Yuzan Fujita, Governor of Hiroshima Prefecture; Dr. Tadatoshi Akiba, Mayor of Hiroshima City; Dr. Robert Zemsky, Professor of the University of Pennsylvania; and Dr. Kazu-hiro Mori, Director of Research Institute for Higher Education, Hiroshima University.

The two-day meeting successfully brought together some 188 people from the six member nations and from other countries. The participants included 22 distinguished people from overseas, including university presidents, researchers, business firms' executives, and government officers. Also participating were some 160 distinguished, relevant people from all parts of Japan.

The Summit meeting constituted part of the Six-Nation Education Research Project. The six member nations span both East and West: China, Germany, Japan, Singapore, Switzerland, and USA. Japan is the nation responsible for the higher education research component of the Six-Nation project. Topics selected for the Hiroshima Summit meeting were "Higher Education Reform for Quality Higher Education Management in the 21st Century: Economic, Technological, Social, and Political Forces Affecting Higher Education." This title was chosen specifically to develop the topics of "Academic Reforms in the World: Situation and Perspective in the Massification Stage of Higher Education" which were discussed at a previous Six-Nation seminar held at Hiroshima in 1997. Considering its relation to the main theme, the Presidents' Summit consisted of four sessions: Framework for Higher Education Policy; Strategic Management for Universities; Higher Education and Society - The Role of Universities in Economic Growth; Higher Education and Technology. The basic viewpoint located in the composition of these sessions is that management is likely to occupy an important place in forming the image of universities in the 21st century.

The keynote speech was presented by Dr. Kenneth P. Mortimer, President of the

University of Hawaii. In the following four sessions, a total of fourteen papers were provided by the distinguished participants including university presidents, such as Dr. Ruiqing Du, Xi'an Foreign Language University; Dr. Werner Meissner, University of Frankfurt; Dr. Elisabeth A. Zinser, University of Kentucky; Dr. Luc Weber, University of Geneva; Dr. Yasuo Harada, Hiroshima University; Dr. Makoto Nagao, Kyoto University; and Dr. Yoshiyuki Naito, Tokyo Institute of Technology; and also the representatives from government, business and from other universities.

From the two-day long, intensive and fruitful discussions, it became evident that all countries share the same kinds of problems, even though it is true that the problems present different aspects in different places. There is a recognizable similarity in that universities and colleges are expected to make creative reforms and to cope with rapid social changes; and a similar experience of the consequential conflicts between past experiences and future challenges with regard to the functions of, and structures in, academia. It was also recognized that university presidents now need to exercise stronger and more appropriate leadership if they are to realize the necessary academic organizational reforms for effective and innovative teaching, research, social service and management. It is important that presidents should overcome any obstacles to demonstrating an adequate level of leadership if universities and colleges are to develop and retain these necessary priorities of academia.

This report brings together all the papers presented at the four sessions of the Summit together with a summary of the discussions that took place during and the following these sessions. As the director of the higher education research project, I would like to express my heartfelt thanks to all the participants at the Summit meeting and especially to those who have contributed papers to this report. This volume is edited by Akira Arimoto and Keith Morgan with the collaboration of Mariko Sakamoto. I hope it will provide some useful and meaningful influence on the development of academic reforms in the participating countries and more generally throughout the World; and perhaps also on the development of research in higher education as well.

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Six-Nation Research Project
Professor, R.I.H.E.,
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REPORT OF THE SIX-NATION HIGHER EDUCATION PROJECT

Summary of Progress of the Higher Education Research Project and the Meaning of the Presidents' Summit

Akira Arimoto
Hiroshima University

On behalf of the members of the Six-Nation Education Research Project Steering Committee and also as director of the Higher Education Research Project, I am pleased to have this opportunity of presenting a paper. It is great honor to observe that the Six-Nation Presidents' Summit in Hiroshima is taking place under the auspices of Hiroshima University, the University of Pennsylvania, and the Six-Nation Education Research Project Steering Committee, with financial support by the Ministry of Education, and under the co-auspices of IDE, with many participants from eastern and western countries. I would like to express my thanks to all those who have been able to respond to our invitation and to attend this meeting.

1. Progress of the Higher Education Research Project and the Purpose of the Presidents' Summit

In December 1993, delegates from the six nations met in Philadelphia, Pennsylvania at the first Conference to discuss the feasibility of establishing a collaborative educational research program. They agreed to advance plans for a Six-Nation Education Research Program (SNERP). A Steering Committee was established to oversee its future operations at the second Conference held in Pennsylvania in June, 1995. The first, second, and third meetings of the Steering Committee took place in Singapore (1996), Switzerland (1997) and China (1999),

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respectively. Through these processes the initial intention of making a collaborative educational research project has been promoted to develop research proposals which would address six topics identified as being of mutual interest. They are as follows:

China: Educational Evidence for Programs, Policies and Projects;
Germany: Education and Economic Growth;
Japan: Higher Education:
Singapore: Language Education and Literacy;
Switzerland: Vocational Education;
U.S.A.: Mathematics and Science Education.

In the Higher Education Research Project, an international seminar entitled "Academic Reforms in the World: Situation and Perspective in the Massification Stage of Higher Education" was held at the RIHE, Hiroshima University, in February, 1997, resulting in a fruitful outcome for research in higher education. The proceedings were published in a report in English (RIHE International Seminar Reports, No.10, July 1997, Research Institute for Higher Education, Hiroshima University). We also promoted separate and complementary research under the title of "International Comparative Study on Academic Reforms in the Post-massification Stage of Higher Education". The outcome of this research was published under the same title in Japanese (Reviews in Higher Education, No.54, March 1999).

The Presidents' Summit we are now conducting has as its main theme "Higher Education Reform for Quality Higher Education Management in the 21st Century: Economic, Technological, Social, and Political Forces Affecting Higher Education". It draws on the experiences of the previous researches including the international seminar and international comparative studies. Considering its relation to the main theme, the Presidents' Summit consists of four parts:

- Framework for Higher Education Policy;
- Strategic Management for Universities;
- Higher Education and Society:
- The Role of Universities in Economic Growth; Higher Education and Technology: When Will Technology Really Change How Universities Teach and Students Learn.

The basic viewpoint located in the composition of these sessions is that management is likely to occupy an important place in forming the image of

universities in the 21st century.

In order to think about this kind of problem, while paying attention to the characteristics and originality of academic systems and organizations, it is natural to say that we should pay attention to the societies and environments surrounding universities.

First, a university is a center of learning, aiming to contribute to development of society through contribution to the development of knowledge. A fundamental logic resides in the role of the university. Primarily, universities should pay most attention to proper development of research, teaching, and social service, each of which depends on a basis of knowledge. Reconstruction of knowledge, which is needed today, has a close relationship with the renewal of academic work. The logical imperative placed on universities demands that their fundamental contribution to society is provided through accepting responsibility for academic work and in asserting the autonomy of their academic duties. Universities exercise this role and the derived functions based on knowledge, by realizing qualitative development.

Specifically, research comprising discovery, innovation and creative activity, must generate an output that satisfies international criteria. Teaching has to embrace the full diversity of high-level educational provision covering the needs of society-professionals, citizens, specialists and scholars. For this purpose, it becomes necessary to review the organic relationship between general education and professional education, and between undergraduate education and graduate education. Social service has to be both proactive and responsive in meeting the needs of the community with contributions of quality appropriate to a university.

Second, a university is inevitably required to respond to the various demands of society and environment. These become evident through the impact of the systemic components of politics, economics, science and technology. Current universities are compelled to undertake self-innovation in accord with the effects of rapid social change to the extent that they can demonstrate relevance and accountability. From politics there is increasing pressure on universities through development of new higher education policies consisting of combinations of deregulation, market mechanisms, structural rationalization, and external appraisal. We cannot ignore the fact that modern government's control on academia is increasingly strengthened by an emerging evaluative state, though there is also a tendency to formulate policies of deregulation. Economic considerations increase pressure on universities by identifying function with

economic growth, rationalization with market principles and international competition, and efficiency with privatization and managerial control. Science and technology demand innovative responses from universities incorporating the benefits of high technology through the information technology revolution and applications of multi-media. Generally speaking, it is clear that contemporary universities and colleges do not possess ivory towers, insulated from societal effects. Institutionally they are integral components of society. Universities are required to respond appropriately to the perceived needs of society-local, national, international, and global society. If they fail to respond to social expectation and in particular, if they fail to be seen to be accountable to society, they will easily loose the social raison d'etre for their existence.

Third, internal and external pressure for self-reform makes it increasingly indispensable that universities and colleges reconsider the arrangements for administration and management of their organizations. Both social and academic expectations demand that universities should contribute to development by accomplishing their academic objectives. Achieving these objectives may well be dependent on provision of adequate management within the institution. While reform of the existing organizational structure and academic systems may be an important element in fulfilling the social and academic demands for research, teaching and social service, it is clear that substantial administrative and managerial reorganization is essential. Under increasing difficulty from competitive allocation of resources among institutions, it is manifest that management is increasingly stressed by the financial problems.

Fourth, we cannot ignore the fact that any examination of university functions and organization is closely related to establishment of academic evaluation and reward systems. A variety of modes of evaluation exist-self-evaluation, mutual-evaluation, external-evaluation-each with its own criteria and objectives. Analysis of the roles and mutual relationships of the various kind of evaluation should be made from the perspective of realizing their suitability both for the reformation of academic organizations and for their ability to contribute to social relevance as well as academic development.

As has been said, it has become clear that the basic characteristic of an academic organization has to be found in a substantial commitment to academic development through knowledge-based academic work. It is also clear that management is responsible for maintaining such basic characteristics. At the same time, a university, which is a social system and organization, is expected to have

responsibility for accountability, coping with social changes and demands. For this purpose, appropriate academic evaluation as well as suitable reward systems are needed to function properly.

The preceding discussion can be summarized in terms of the following elements:

(1) structure and function of knowledge;
(2) existing situation and reformation of academic work including research, teaching, service;
(3) management of the academic organization, presidents' leadership, and academic autonomy;
(4) higher education policy at the level of the national system and its relationship to individual universities;
(5) relationship between academic reforms and social development, especially economic growth;
(6) relationship between technological development and universities, especially teaching;
(7) relationship between academic reforms and the academic evaluation and reward system including allocation of resources.

As is indicated in the program of the Summit, the arrangement of sessions is intended to provide for explicit analysis of the problems (3), (4), (5), (6), with particular emphasis on (3). The remaining elements, (1), (2), (7) are not covered explicitly in the scheduled sessions but it would be surprising if the discussion did not implicitly address them. Indeed, as they provide crucial viewpoints having substantial connection with academic organizations' survival, it is natural to expect that these matters will underlie discussions in all the sessions.

2. Academic Reforms: from Massification to Post-Massification

It is true that external and internal pressures are enforcing academic reforms on all the Six Nations, but it is also true that, due to the different situations in which the systems and individual institutions find themselves, the scale and content of the reforms are not uniform. As far as the level of national systems of higher education is concerned, development of three stages is recognizable: elite, massification, and post-massification. Though all the Six Nations could be roughly classified as in the stage of massification, the previous studies in our higher education research project have observed that their development differs to a

considerable degree. More precisely, China remains at the elite stage; Germany, Switzerland, and Singapore have reached the massification stage; and the United States and Japan are now facing the post-massification stage.

Nations approaching, passing through, and proceeding beyond the massification stage share many emerging problems. Discrepancy between the sequence of quantitative and qualitative development accompanying the massification stage has created many of the current concerns about educational pathology.

As Ulrich Teichler pointed out, similar proposals for reform or actual changes in teaching and learning are recognizable in the majority of countries, regardless of their differing stages of massification (RIHE International Seminar Reports, No.10, p.227):

- improvement and extension of staff development;
- introduction or extension of modular courses and credit point systems;
- new mixes between general and specialized education;
- practice oriented study;
- increase of options and choice in study provisions;
- emphasis on personality development, flexibility, social skills and individuality;
- improvement of assessment of study achievement.

If we first pay attention to teaching and learning, the necessity of educational reforms for coping with massification and a life-long learning society is inevitable. Massification and diversification have been extended to a considerable degree among both students and teachers. As far as students are concerned, the category of "new" or "non-traditional" students, as opposed to "traditional" students, has emerged and their numbers have increased. Their composition varies between countries and cultures but they include: part-time students; minority students; female students; international students; adult students. The Universities Council in Japan has estimated that in 2008 all applicants of the eighteen-year old cohort can be enrolled in universities and colleges. While, as this trend shows, universal access has almost started, it is said that educational pathology has become manifest with, for example, the phenomena of declining student achievement, morale for learning, and creativity. In order to provide for this diversity of students, a variety of innovations is necessary: re-arrangement of the curriculum; guarantees of teaching quality; improvements to general education;

emphasis on faculty development (FD) and staff development (SD).

Second, it is clear that recognition of a knowledge-based economy links research to social progress. Governments now place priority in their higher education policies on strengthening academic research. Specifically, in the face of severe international competition in the area of research and development, every government is concerned with research productivity in universities. Sociological studies of science show that in the 20th century the focal point of centers of learning in the world shifted from European nations, such as France, England, Germany, to the U.S.A. For the 21st century every country is aiming to compete, seeking to establish their own universities - and especially their graduate schools - as centers of excellence (COE) achieving high research productivity.

The third matter is that of service. Universities and college are also required to fulfill obligations to society through their contributions to the local community. One accountable aspect of this is the responsibility for facilitating formation of a life-long learning society.

Finally, the logic of the entrepreneur in industrial society seems now to have been introduced into the structure and function of management in academia. Academic management is changing explicitly from autonomy at the level of faculty, to control at the level of campus: that is from bottom-up decision making to top-down management. Sufficient discussion is needed to make clear the problems arising from such change from the viewpoint of academic autonomy.

3. Some Issues to be Discussed

(1) Universities and colleges, now searching for their new images, are required to answer various questions. Which aspects of their tradition and heritage should they conserve and where should they innovate? Which challenges for the future should they accept and which reject? In other words, what are the new principles, priorities, roles, and identities of universities and colleges in the 21st century and how they can reconcile these with the challenges of the past and the future?

(2) Universities and colleges need to maintain autonomy of their own organizations in order to pursue priorities and roles proper to academic organizations. At the same time, they need to improve academic work consisting

of research, teaching, and social service, if they are to be capable of responding well to social expectation. They are confronted with the difficult problem of how to resolve the conflicts caused by these external and internal demands. They must answer the question of how to coexist with and harmonize accountability and autonomy.

(3) There is a problem to be discussed regarding the relation between the various demands and higher education policy. How are the demands of national governments, society, and academia reflected in generating national higher education policies? There are demands for realizing economic rationalization, relevance, and accountability from national governments and from society at large; and there are demands for improving the quality of academic work. How are these demands to be reconciled and incorporated in higher education policy? What indeed is the basic direction of current higher education policy with its relation to politics, economics, science and technology? What kind of policy should emerge for the role and function of universities and colleges in order to improve national and regional economic growth? How are the social trends for internationalization, information and knowledge-based society, and life-long learning to be reflected in policy? What are the similarities and differences of higher education policies seen in the member countries? How do these similarities and differences among countries occur? What will be the direction and characteristics of higher education policy in the 21st century?

(4) Management is permeated by a logic of business and commercial administration so that the perspective of academic management in terms of a logic of academic organization is questioned. The characteristic of an academic organization has been conceptualized as a loosely coupled structure, a conglomerate, an organizational anarchy. Existing academic organizational structures are already moving away from decentralized, bottom-up decision-making towards centralization of power and top-down management. Why is it moving in this direction? How is it changing the characteristics of academic organization? What will be its longer-term effects? What is the ideal academic organization for the 21st century that universities and colleges are intending to create?

(5) Social expectation in the future will render even more important the function and role of academia as a principal contributor to social development in such fields as culture, politics, economics, and science and technology. It is necessary

to consider how universities and colleges will function in an age when the value of knowledge is increased and emphasized beyond present levels. How strongly does academia contribute to economic growth? Are there differences among the member countries with regard to the extent of such contributions, and if so, why? What are the conditions for academia to make contributions to economic growth?

(6) Universities and colleges are challenged to discuss effective usage of technology at a time of increasing impact of new technology on all aspects of life. How should universities introduce into their campuses these new technologies in order to use them for innovative curricula, pedagogy and the practice of teaching, and learning? How can academia maintain sufficiently the proper function of their own academic work through the processes of competition or cooperation with technology? How do traditional universities and colleges coexist with emerging virtual universities and colleges? How is it possible for academia to be sustained in the new technological environment?

(7) At a time when academic reform has become important, when academia's priorities and role in society are scrutinized minutely, and when academia's achievements are subjected to review and evaluation for quality assurance, is it true to say that academia is confronted with a challenge of survival? As examination of the criteria for survival increases, leadership in the academic organization is perceived to occupy an increasingly important function. Are presidents demonstrating good leadership? If the answer is yes, how is this achieved? If the answer is no, what are the obstacles to it? What form of leadership is ideal for academic organization today and what form will be needed in the future?

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KEYNOTE ADDRESS

Governance in the 21st Century University:

The World is Changing Faster than the Governance System can Accommodate

Kenneth P. Mortimer
University of Hawaii

The 21st century governance or policy environment within which we all work will be almost unrecognizable to those of us trained in the 1960s and 1970s. As the century draws to a close, terms like post-massification, rising market forces, academic capitalism, and mission-centered, market-smart strategies constitute a new vocabulary.

A 1998 report from the Association of Governing Boards of Universities and Colleges (AGB) states:

> The world is changing faster than the governance system can accommodate.
>
> Changes of great magnitude are coming so quickly that governing boards have been bypassed as a *de facto* matter. Whether they can act effectively in this environment is an open question. (AGB, 1998, p. 9)

In a 1999 interview, Clark Kerr, president emeritus of the University of California and former head of the Carnegie Council on Policy Studies, observed that "for 500 years, higher education hasn't faced much technological change. Almost everything else -- agriculture, industry, any other sector you can think of -- has been affected much more by technological change than we have." (Kerr, 1999, p.11)

We gather here in Hiroshima, at this Six-Nation Presidents' Summit, to consider higher education management reform in the context of dynamic and fluid economic, technological, and social-political forces. No keynote address could

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possibly capture the complexity of our six-nation higher education enterprise or of our separate institutions. To deal with this complexity, we have heard about the Six-Nation Education Research Project from Professor Arimoto, and we will hear about frameworks for policy, strategic management, the role of universities, and economic and technological growth during this conference.

I take it as my task to describe the important trends in the policy-making/ governance environment that will condition our work in the first decade of the 21st century. So I begin with an observation made by the Pew Roundtable:

> The changes most important to the university are those that are external to it. What is new is the use of societal demand -- in the American context, market forces -- to reshape the university. The failure to understand these changes puts the university at risk. (Pew, 1993)

I will sprinkle my experiences as president of the University of Hawaii throughout these comments. The University of Hawaii is an institution with 45,000 students; ten campuses, including a research university, two regional institutions, and seven community colleges; and 3,000 faculty members. I hope some specific example from our experience will add context to the general observations found in the literature.

The five developments to be discussed are the following:

1. rising importance of market forces;
2. globalization of science and technology;
3. increased importance of technology;
4. increased emphasis on educational outputs; and
5. integration of the university into larger society.

The Rising Importance of Market Forces

In his 1997 paper, Professor Arimoto cites rising market pressures and competition as one of his six axioms. In its public agenda discourses, the National Center for Public Policy and Higher Education in America comments that "What most often replaces public policy as a means of expressing public needs is simply the cumulative action of higher education markets. They are markets powered by the consumers of higher education services including students and their families." (page 1A, no date)

These market forces include the federal governments as they contract with

institutions for services, heightened *global* competition, and employers who demand workers trained in entry-level skills.

Market forces demand greater accountability from institutions and their faculties. A new vocabulary is emerging. Terms like education outputs, market niche, and cost/benefit ratios result in national conferences designed to spread the wisdom about how to compete. As Professor Arimoto has observed, the public asks, "How can higher education serve us better?" while the faculty is more likely to ask, "How can society be made to recognize and support the value of what we do?" Internal institutional governance patterns are not well designed to provide answers to these differing perceptions and expectations.

Several scholars have analyzed the problems of an excessive reliance on the market-driven phenomena as an *exclusive* framework for setting policies. My colleagues at the National Center for Higher Education Management Systems (NCHEMS) stated it succinctly (1998, pp. 19-20) when they offered the following points:

1. Reliance on the market emphasizes higher education as a private good and diminishes it as a public good. For example, if the individual benefits more than society, he/she should pay the greater share of the cost.
2. The market has serious imperfections. For example, almost all participants in the higher education market are, to some extent, subsidized in that they benefit from governmental largess in some form. *The real questions are about who gets the inevitable subsidies.*
3. Market mechanisms do not work for under-represented people, those who need basic skills, and those who tend to under-participate in higher education.
4. Competitive market factors do not work in those cases where higher education has a monopoly.

Zemsky and his colleagues have summarized the first point well. "The primary return on investment in education is individual rather than collective: The public good is synonymous with the choices and well-being of those individuals and those who benefit should assume the greatest share of the cost." (1997, pp. 63-64) Reliance on this set of assumptions in the United States has led to the basic philosophy of high tuition followed by high financial aid.

As I will comment in the conclusion of this paper, I believe the basic issue in the imperfections of the marketplace is a debate about who -- students, parents, governments, or what kinds of institutions -- are actually going to get subsidized.

In a provocative paper on stratification on American higher education, Michael McPherson and Morton Shapiro shed light on the topic of subsidization.

> This work shows that all students are subsidized -- that is, educational costs exceed net tuition and even sticker prices for both sectors and for each decile. But the amount of subsidy there varies greatly... Two year publics (the destination of almost half of all first-time, full-time, lower income students) provide a subsidy of $7,371, and private comprehensive universities (which are considerably less selective than research universities) provide a subsidy of $5,862. On the other hand, subsidies at private liberal arts colleges average $9,622, and subsidies at both public and private research universities are well over $10,000. The pattern is clear: more selective colleges and universities -- which disproportionately attract affluent students -- provide the largest subsidies in U.S. higher education. (1999, p. 29)

The point is not that public and private research universities are funded in excess. Indeed, Donald Kennedy, former president of Stanford University, commented on the dilemmas of private research universities in a 1988 speech to Stanford alumni. He asked the rhetorical question "How can we look so rich when we feel so poor?" Whenever Stanford makes an improvement in productivity, the university takes it out in the form of quality enhancements, not savings. He documents what they call a "two-percent problem" at Stanford, that is, a persistent, unfulfilled appetite for improvement that really represents our bid to stay constantly productive.

The third point is that market mechanisms do not work for those in need of basic remedial education and for those who traditionally under-participate in higher education -- low-income, at-risk students. Many students of public policy believe that these populations ought to receive the *greatest* subsidies, not the least.

I am interested in the comment of point four, conditions of monopoly. The University of Hawaii is the only public university in the State of Hawaii. Thus we have a virtual monopoly on public higher education, and we enroll approximately 80 percent of all students enrolled in higher education in the state. For many of the under-represented people, we are the only choice for achieving a post-secondary education. We are 2,500 miles from the nearest landfall. Can it reasonably be said that we have a monopoly on post-secondary education services?

In summary, market forces are with us, whether we like it or not; their increased importance must be recognized in the search for more effective policy principles and practices of governance in the context of a more market-oriented culture.

The Globalization of Science and Technology

Slaughter and Leslie (1997) examined the political economic changes in four countries, the United States, United Kingdom, Australia, and Canada. They observed these political economic changes to be both global and structural. In the 1970s and 1980s, markets became global, and science and technology became immersed in the marketplace. For example, before the 1980s, biology was a basic science funded by national governments through competitive processes. By the mid-1980s, most full professors of molecular biology held equity positions in spin-off companies.

Government policy was pushed to devote more resources to the enhancement and management of innovation, so that corporations could compete more successfully in world markets. Universities had to structure their intellectual property policies to take advantage of the financial opportunities inherent in these new forms of academic capitalism.

Slaughter and Leslie cite the following far-reaching implications of globalization for higher education (pp. 36-37):

- the restriction of monies available for discretionary activities like post-secondary institutions;
- growing centrality of those techno-science fields that are closely tied to markets -- especially international markets;
- tightening relations between multi-national corporations and state agencies concerned with product development and innovations;
- increased focus on global intellectual property strategies;.

It is sometimes difficult for college and university presidents to understand that expenditures in higher education are usually regarded as discretionary by national and state legislators. Higher education tends not to be as important in their priorities as defense spending, health and related entitlements, crime control, and basic K to12 education. When higher education is matched against these basic areas, we usually come out last on the list. We are identified as "discretionary," and, in economic hard times, receive a disproportionate share of the budget cuts.

Relationships between universities and multinational companies are becoming more common. The American higher education community was stunned when the plant pathology department at the University of California at Berkeley signed a long-time agreement with the Novartus Corporation. In exchange for substantial funding for research support, Berkeley will provide Novartus with differential access to the intellectual products of its laboratories. This arrangement has received substantial criticism in the national higher

education community as an infringement on the university's intellectual freedom.

An increased focus on global intellectual property strategies is a further iteration of this basic concern. There is strong evidence that state and national governments expect intellectual property to be a significant factor in driving the economic development of state and national economies.

The Increased Importance of Technology

Emerging information technologies have the potential to remove the constraints that space and time place on our teaching and learning activities. As a former University of Michigan president says: "As knowledge-driven organizations, it is not surprising that colleges and universities should be greatly affected by the rapid advances in information technology -- in computers, telecommunications, and networks." (Duderstadt, 1999, p. 5)

Katz speculates about how higher education might change in the next decade (1999, pp. 28-30). "There may be a global high-speed information network. Computers will be less costly and more ubiquitous; most institutions will offer at least a portion of their instructional efforts via communication networks. Third-party providers will become increasingly important suppliers of course content and materials. As the employment relationship between institutions and the faculty becomes more complex, laws governing intellectual property will change significantly."

The profit potential for those who are content producers is remarkable if that content can be adapted to these emerging technologies. This profit potential will attract newcomers to higher education's traditional monopoly over content, furthering the trend toward the rise of market and global factors in higher education.

A reference to our own intellectual property debates at the University of Hawaii provides examples of the changes that higher education is facing. The University of Hawaii is a ten-campus institution. The oldest and largest campus is a land grant, space grant, sea grant, research university in Manoa Valley. There are also two regional institutions that offer baccalaureate degrees and seven community colleges. Some 45,000 students are enrolled in the university in a given year, and an additional 20,000-30,000 students are served through a variety of outreach programs.

More germane to the discussion here is that there are some 3,000 faculty and/or professional staff covered by a system-wide collective bargaining

agreement. That agreement has an intellectual property clause. It gives the faculty 50 percent of the royalties and fees from any patents and licenses resulting from inventions in our laboratories. While the university owns the patent, it must share the revenues that accrue from any commercialization of the product.

Problems arise in defining the nature of academic work in an institution with a variety of academic employees. Some of our faculty teach at community colleges and, while they have scholarly responsibilities, typically are not heavily involved in original research. The faculty at our regional campuses participate in various forms of scholarship, but the basic research functions of the institution are embodied in a 1,800-member faculty at the University of Hawaii at Manoa. We also have some people who do only research, and we have others, such as extension agents and faculty specialists, who provide services to a variety of agencies and citizens.

It is fairly clear that when a patent comes out of one of our laboratories, the university can patent it and share the appropriate royalties with the faculty member. It is less clear, when the assignment of the faculty member to develop a course for distance education involves released time, as to who owns the actual product. The euphemism is often "work for hire."

The university, of course, maintains that released time to develop a product should be owned by the person who pays for that released time -- the university. The faculty would argue that such products are no different than that produced by a faculty member in humanities who copyrights a book and keeps the royalties. An even more difficult set of observations pertains when a faculty member uses significant university computer resources to develop software. The use of university resources in such matters can be substantial. The question then arises as to who owns the copyright of the software.

The convergence of these three factors -- markets, globalization, and technology -- constitutes a powerful set of forces for change. They are external factors to which we must adapt or see ourselves become increasingly marginal forces in our separate countries.

The Emphasis on Educational Outputs

Traditional universities and colleges take great delight in the debate about defining quality in higher education. The basic assumptions have been that, as you move from elite systems to systems of mass higher education and on to universal or post-massification, quality somehow suffers. A shift away from traditional

content areas into increased vocational, practical and/or professional fields at the undergraduate level is often used as an example.

One of the most persistent analysts/critics of American higher education, Alexander Astin, calls the traditional elitest view of quality the "resource-dependent perspective." This perspective judges quality in terms of an institution/provider view of higher education. There are, according to this view, three basic ingredients of a quality higher education. The first is the reputation of the provider. This is measured by public opinion, the historical reputation of the institution through such indicators as the number of distinguished alumni, the number of graduates who go on to graduate school, and so forth. The second indicator is the selectivity of the admissions process. The "better" institutions admit students with high scores on admissions tests and who have very successful histories of being well-prepared to benefit from college. Third is the amount of resources expended per full-time equivalent student. (In the United States, we tend to rank our graduate schools by the research and development expenditures per institution.)

These three indicators -- reputation, selectivity, and resources expended -- are all measures of inputs. *They have little to do with outputs -- what students actually learn.*

In the United States, we have become obsessed with assessment of education outputs as a means of judging educational accountability. In 1984, I chaired the National Institute of Education's study group on the conditions of excellence in American higher education. Our report, *Involvement in Learning*, is an example of this heightened concern about outputs.

We argued that the way to improve the quality of undergraduate education in America was to concentrate on three basic ingredients of a process-oriented system. The first was to build around the concept that whatever you can do to get students involved in and take responsibility for their education will improve the amount they learn. It is basic to educational theory that the more you can actively involve students in their own learning -- by doing things, as opposed to preaching to them -- the more they will learn. For that involvement to have meaning, it must take place within an environment of standards and expectations for performance. We argued that those standards of college level work needed to be redefined and that expectations needed to be raised. Simply involving people in efforts without some standards of performance is a cruelty that should not be perpetrated on the public. In order to judge accurately the quality of the involvement and the standards under which institutions operate, student learning needs to be assessed periodically and the product of that assessment fed back to programs and

institutions.

The study group did not argue that we should measure everything that moves. We argued that assessment can be a device for leveraging change in the learning process rather than simply recording it. When the product of educational programs is assessed regularly and the results of those assessments are used to improve the quality of efforts, everybody benefits.

Since 1984, a number of reports and conferences have concentrated on the extent to which assessments of educational programs provide a basis for improving quality. The output view of education has become more popular and will constitute a major force for change in the 21st century. Jones, et al., summarized the problems with the input approach well.

> Regional accreditations have focused overwhelmingly (at least, until recently) on the quality of the providers' resources and processes, not on the quality of the learning achieved... Almost two-thirds of the students who graduate from colleges attend multiple institutions, restricting quality/assurance mechanisms to the individual "nodes" in the chain of instruction -- rather than focusing on the collective experience and its consequences -- and missing key aspects of the quality/assurance problem as a whole.
>
> These problems are exacerbated by the growing inability of the degree (and particularly the baccalaureate degree) to certify a common standard of attainment. (pp. 14-15)

The increased public scrutiny and accountability to which Arimoto referred in 1997 at the initial meetings of the Six Nation Project have found their manifestation in the concern about student learning and/or outputs. National conferences are replete with assessment seminars and regional and professional accreditors require evidence of adequate assessment of plans and/or procedures.

Perhaps the most serious reliance on outputs as a basis on which the degree credential should be awarded occurs in the combination of new forces of technology. Attempts to free the award of degrees from the constraints of time and place to concentrate on the amount of knowledge acquired and/or learned is an excellent example of an output orientation. Here again, Jones and his colleagues state the output view well. "In an increasingly client- and market-centered environment, the provider-centric view of quality assurance is insufficient. This reality has been recognized by entities such as Regents College and the Western Governors University that certify learning and award degrees based on

demonstrated competence in clearly specified areas." (1998, p. 15)

I believe this movement will succeed and bring major changes to the landscape of higher education in the beginning decades of the 21st century.

Integration of the University into the Larger Society

The final development to be discussed is an extension of the first four. The rise of market forces, globalization, technological innovation, and output orientation will be major forces in creating more dependency between the university and society.

In talking about the future university, Clark Kerr has observed: "In the 1960s, I talked about the multiversity, but if I were writing today, I might use the term integrated university. Integrated into society. Integrated into the military efforts of the nation. Integrated into health care and the legal system. I talked about how we were reaching out in many ways, but society was also moving in on us. Higher education now faces the challenge of being less of an independent force and being integrated more into elements of society than ever before." (1999, p. 19)

Slaughter and Leslie observed that in the four countries they studied, the forces of academic capitalism reduced the amount of autonomy enjoyed both by institutions and professors (1997, p.59). In his 1997 address at the Six-Nation Seminar, Professor Zemsky observed "what some fear and others eagerly promote is a fundamental recasting of the nature of higher education in the United States -- with less emphasis on the importance of research and with less independence, even respect for faculty." (pp. 20-25)

The 1999 Kellogg Commission on the Future of State and Land-Grant Universities stated it well:

"The commission is convinced that universities and colleges can no longer be self-contained. Engagement essentially asked us to learn how to open ourselves structurally to external influence while insisting that the world beyond the campus grounds respect the imperatives of the university." (p. 23)

The commission offers four areas that need to be explored if this challenge of engagement is to be successful. Engagement has to be seen as both the central purpose and a means of enhancing the students' experience. An organizational culture must be nurtured, so that engagement does not depend solely on serendipity. The rewards and benefits of engagement must be clear for faculty and staff. A variety of tools is needed to finance increased levels of engagement.

Concluding Observations

The cumulative impact of the five developments discussed in this paper -- the rising importance of market forces, the globalization of science and technology, the increased importance of technology, the increased emphasis on educational outputs, and the integration of the university into the larger society -- will result in more, not less, government intervention into our universities.

I offer four recommendations to my colleague presidents in dealing with these forces.

1. Be mission centered, but market smart.
2. Realize that governance restructure is a radical treatment.
3. Make sure you understand your clients.
4. Use assessment to create change, not simply to record it.

A mission-centered, market-smart strategy will be one of the keys to successful institutional performance in the 21st century. Frank Rhodes, former president of Cornell University, argues for mission-centered focus as the basic purpose of an institution. All that I have discussed in this paper would indicate that those missions need to be interpreted in terms of the new reality of markets and global economy.

We need to focus on which programs are to receive what kinds of subsidies. For example, at the University of Hawaii at Manoa, we are attempting to reduce the subsidies to our professional programs that are more market-oriented while protecting the subsidies for the basic arts and sciences. As a part of our strategic planning, we suggested that our professional schools develop special relationships with the professions they serve. We've developed differential tuition for law, medicine, and nursing and will be moving ahead with the School of Architecture. We expect engineering, medicine, and some of the other professional schools to provide a greater share of their resources.

A mission-centered, market-smart strategy takes notice of a broader definition of post-secondary education. This has been in development in the United States for 30 or 40 years as new public providers assume a greater share of the market. In the U.S., for example, 80 percent of students are now enrolled in the public sector, a complete reversal of the figures of 40 years ago.

Institutions can well be advised to go to clients rather than have them come to you. Removal of the barriers of time and place will be a significant factor in the 21st century, and learners increasingly will expect institutions to reflect that fact. At the University of Hawaii, we have placed university centers as outreaches from the Manoa campus to the neighbor island community colleges. These university

centers are expected to take baccalaureate and selected graduate programs to where the clients are -- on neighbor islands. These neighbor-island citizens cannot be expected to conduct inter-island commutes to receive baccalaureate and/or specific professional education.

Governance restructuring is costly and a radical solution. We should look more carefully at alternatives rather than start with complete restructuring efforts. I agree with McTaggert and his colleagues who, after studying restructuring efforts in five states, conclude that such efforts do not improve anything; they are means rather than ends.

Cheaper and less dramatic alternatives to restructuring should be considered first. McTaggert and his colleagues point out that higher, rather than lower, costs are likely in the initial stages of restructuring and that lessons from the corporate and private college mergers apply only partially in the public sector.

I believe we should spend more of our attention on making sure we understand our clients. A market orientation believes that students should be treated as customers and that the customer is always right. While this misunderstands the nature of the teaching/learning process, we need to make considerable concessions in the way we do things to be sensitive to the nature of the learning needs of the clients we serve. For example, most students now pursue higher education on a part-time, rather than full-time, basis. Our learners need curricula that are shorter than the traditional four-year degree formats. This is particularly true for adult learners who often need refreshers and skill training rather than longer degree-oriented programs. The need for certification and training, as opposed to education, grows markedly in increasingly technological societies. As technology changes, so will our need to be able to provide refreshers and short courses to reflect these changes in consumer needs.

Finally, as we move to post-massification of higher education, basic skills have become more important. Somewhere, in the system of post-secondary education, the need for basic skills training needs to be addressed comprehensively.

I am a great fan of assessment and its potential to help create change. Assessment by external agencies that is designed to punish institutions for not conforming to some external standard can result in marginal change. The real reform movement is using assessment to improve the quality of what we do. The faculty is expert at critical analysis. We need to respect faculty members' competence while we educate them about the forces I have cited in this paper so that they may be involved in, and take responsibility for, assessment.

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PRESIDENTS' SESSIONS REPORTS

A System in Transition - Higher Education Policy Update and Future Plans from China

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Never before has Chinese higher education undergone such momentous changes and registered such tremendous growth as in the late 1990s. Never before has knowledge seemed so central and education, particularly higher education, so important for the whole nation in recent Chinese history. And never before has higher education attracted so much attention from the general public as well as authorities at all levels. A new awakening seemed to have been brought about in higher education and consequently a new leap is taking place.

These assertions can best be substantiated with a host of policy decisions by the central government and its Ministry of Education, which exercises more power than its counterpart in most Western nations over the development of education, as well as an extensive range of reform initiatives that has been taken. A very obvious example is the unprecedented increase of enrollment in 1999 - 1.58 million as against 1.08 million in 1998, a 45% jump. The decision was thrust upon colleges and universities just two months before the annual admissions process began. This growth plan came as a pleasant surprise to the nation's 1022 colleges and universities. They were a bit bewildered at first, but soon realized that it was a long-awaited opportunity that they could capitalize on. And they jumped at the opportunity. For prospective students and their parents, it was naturally most welcome news. At long last, the doors of institutions of higher education would open wider. The nation has been further enthused by the ambitious goal of 15% participation as against the present 9% participation in higher education by the year 2010.

And as the value of higher education is gaining universal recognition, education has become the top priority for consumption, according to surveys

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conducted in many parts of the country. It has come to be regarded as an investment for the future with 10% of personal savings allocated out of a total of 5,000 billion *yuan* estimated as lying dormant. Combined with the commitment to an increase of government appropriations - 1% of the central government revenue over a five-year period (1998 - 2002) - funding for education will also reach an all-time high.

Specific policies initiated by central authorities for higher education are many and comprehensive, covering both external and internal governance, diversification of institutions, student enrollment, faculty development, curricular structure, quality assurance, support system and cost-sharing. These policy stipulations are unequivocally spelled out in speeches delivered at and decisions reached by the June 1999 All-China Education Conference. They are also clearly stated in the extensive education legislation approved and put into practice over recent years.

In university governance, the State Council has delegated administrative power for post-secondary vocational training and the majority of the two- to three-year colleges to provincial and municipal authorities. Except for the approximately 100 universities, sharing massive allocation of resources from the government, and those highly specialized institutions catering to special, national needs, the administrative power of colleges and universities will also be downgraded to local authorities. This new mechanism is expected to come into full operation within three years by means of "joint administration, adjustment, cooperation and merger" for a fairly decentralized, two-tiered management system.

In terms of internal management, radical measures are also being taken. The overriding principles are to bring about a new mechanism for the invigoration and efficiency of university operation. The administrative and support staffs will be significantly downsized and the middle-level administrative bodies streamlined with numbers limited to between 10 and 20 according to the size of the institution. The administrative staff is to shrink to no more than 15% of the total faculty and staff of the university. The ratio of staff to students is to drop from the present 1: 5 to 1: 6 and that of faculty to students from 1: 11.2 to 1: 13 respectively within two to three years. This entails that the present personnel system, which is compared to "the iron rice bowl" (once hired, never fired), will gradually phase out. In line with the nature of the institution, responsibilities will be clearly defined for each of the administrative bodies. To encourage dedication, detailed and more structured evaluations are being effectively enforced.

Along with the reforms in management, the diversification of institutions is

gradually being brought about to provide a greater variety of opportunities to vast numbers of high school graduates. With the diversification, Chinese higher education no longer conforms to one uniform pattern, whether of organization, administration, or support. Among the 1022 established, government accredited and financed institutions of higher education, nine are going to be granted huge resources for development. This most recent decision aims at building a number of truly world-renowned universities for exemplary roles. It is a century project, which will exert far-reaching significance on Chinese higher education. Next in the hierarchy are the approximately 100 institutions belonging to the so-called "211 Project". Among these are the key universities representing different types of institutions having priority in funding and other government support. Following this category are four-year colleges and universities with emphasis more on teaching than research. Lying at the bottom are colleges offering short-cycle programs with a length of two to three years. The different types of institutions are advised not to compete with each other, but to carve out a proper niche for themselves as dictated by their mission and conditioned by their human and material resources.

Parallel with these traditional institutions of higher education, adult colleges and universities continue to operate with accredited programs in varying forms. Though recognized in workplaces, the diplomas granted by these institutions do not compare favorably with those conferred by traditional, established colleges and universities. But in a country with limited places at tertiary institutions and a dearth of people with post-secondary education, the diplomas stand the graduates from these institutions in good stead when it comes to employment opportunities. With the present readjustment the growth of these institutions has leveled off at 962 in number and a total student body of 2.82 million. It must be noted that these types of institutions may be characteristically Chinese, offering an alternative for people who fail to obtain access to a better, more structured and formalized university education.

This alternative, however, is beginning to be challenged by the phenomenal growth of non-government or privately-run post-secondary institutions. As a matter of fact, these newly mushrooming institutions pose a potential threat to the established colleges and universities as well. With highly flexible managing mechanisms and markedly low costs, these institutions demonstrate such a vitality and aggressiveness that they will most likely become the fastest growing sector in Chinese education. At present they have already outnumbered the traditional institutions of higher education (about 1200 as against 1022) and equal them in student population. The momentum for development is further boosted by the

moral support given by governments at different levels.

For the healthy, speedy development of private, post-secondary education, the Ministry of Education has made it clear that these initiatives should be "encouraged, supported, regulated and administered". It is argued and becoming recognized that these institutions make up an integral part of higher education that is essential for the targeted mass higher education and must be treated as such. At present, most of these institutions are not fully accredited, but given the vigor and vitality they have demonstrated and their responsiveness to social and economic needs, private higher education will no doubt play a greater role and gain its due place in the years ahead.

So it can be anticipated that Chinese higher education will present itself in an interesting, tri-angular pattern with each sector competing with and at the same time complementing each other. Though the competition may give rise to undesirable practices - such as attractive-sounding programs with little real substance and overlapping programs with the waste of resources, it will lead to more innovative endeavors and consequently a more vigorous development of enterprise. With competition and collaboration, Chinese higher education will be expected to experience the biggest leap forward in its entire history. And a brand-new pattern of Chinese higher education will emerge. Both the leap forward and formation of the new pattern will be sustained by China's deepening political and economic reforms and the people's growing desire for and willingness to spend money on education. At the very least, their development will continue to be boosted by the large pool of applicants from China's 13,948 senior high schools with 9.38 million students on campus.

The new initiatives for the speedy development of Chinese higher education also entail the transformation of the college entrance examinations with pilot programs already carried out. First, the number of subjects for examination will be reduced from the present six to three plus one more optional subject to be determined at the discretion of the institutions concerned. Second, bi-annual examinations will replace the present one-time examination to provide more opportunities. Third, a few universities will be given the freedom to conduct entrance examinations either by themselves or in collaboration with others. Once these reform measures are instituted, China's uniform, 40-year-old college entrance examinations will be overhauled.

If it is relatively easy to transform and improve college entrance examinations it is much more difficult for Chinese institutions of higher learning to grapple with the acute shortage of faculty members. In the Chinese parlance, a university's reputation does not rest on its buildings, but on its renowned

professors. It is the reputation of the faculty that determines a university's prestige. Among the major faculty development strategies, the most attractive is the introduction of specially recruited professors for a number of key institutions' principal academic disciplines. This is a cooperative project launched by the Ministry of Education and the Hong Kong-based Cheung Kong (Holdings) Co. Ltd., led by the renowned patriot Lee Ka-shing. Credentials for the "specially recruited professors" include distinguished teaching and research plus an age limit and a doctoral degree. The 100,000 *yuan* "star salary" as promised on an annual basis above the normal monthly pay is not all that impressive by Western standards, but the amount is 5 to 10 times what is currently paid to ordinary university professors. This is the first and by far the most significant step taken to attract young, promising scholars for service.

Other significant measures are specified in the program drafted in the spirit of the "21st Century-Oriented Plan of Education Vitalization" promulgated by the Ministry of Education in 1999. Major thrusts include merit pay and substantial financial assistance for the selected, young, highly dedicated faculty with potential for innovation, as well as for returned scholars who have distinguished themselves in various fields. The present size of the faculty is to remain unchanged, but their credentials are expected to improve, with more being MA or PhD holders. Among these promising young scholars, it is hoped that savants will emerge for key branches of learning and major research projects.

For well-qualified faculty a more strict screening will be conducted and a more flexible and fairer promotion system effected. Non-teacher training institutions of higher education are also to be entrusted with the training and education of prospective teachers. In-service programs are being strengthened and more extensive scholarly and academic exchanges with universities overseas facilitated.

More drastic among these reform initiatives is perhaps the reduction of the academic programs in the curriculum. Upon much investigation and research, half of the specialties offered by colleges and universities are to be cut (from 504 to 249) to ensure quality education and teaching. For the implementation of the new curriculum, a strict guideline has been mandated.

Broadening the curricular content is part of the endeavor for quality assurance. The most extensive and significant step in this respect is the effort for what is termed quality-oriented education, which featured predominantly at the national education conference held in June 1999. In fact, this has been the major focus of attention for Chinese educational authorities over a number of years with extensive pilot programs carried out in 52 universities across the nation. What

quality-oriented education means is the education of "the whole person", encompassing ethics, morality, cultural literacy and perhaps emotional intelligence in addition to rigorous academic programs. It involves training the mind, shaping the character, developing a capacity for innovation and discovery and fostering cultural literacy, especially the knowledge of the time-honored Chinese and Western civilizations. This has been deemed particularly necessary for students majoring in sciences and engineering, disciplines that tend to overlook education in humanities. For this specific purpose, course offerings have been broadened and a wide variety of extra-curricular activities organized. Much social work has also been conducted at weekends or during holidays on a voluntary basis. Clubs and societies are formed and intercollegiate athletic events held on an increasingly large scale.

On the academic side, evaluations at national, provincial and institutional levels have been conducted and accreditation processes mandated for institutions set up after the Cultural Revolution. Excellence in teaching, which has to satisfy the detailed criteria, is made a prerequisite for institutions listed for the "211 Project" and the ten top-notch universities.

For strong faculty and quality teaching, it is imperative for Chinese institutions of higher education to do away with their cumbersome support system. Realizing the gravity of the problem, educational authorities at central and provincial levels have been making painstaking efforts to rid the universities of the burdensome responsibilities that are non-academic in nature. In Shanghai, for example, universities joined forces in establishing a conglomerate for support services. Many cities have built apartments for faculty and students so that institutions of higher education will cease to be fully residential. And with the nation-wide reforms in housing and medical care, colleges and universities will be less burdened by these frustrating, costly administrative duties, which divert time and attention from teaching and research.

Closely related to the support system is the acute shortage of funds for university operation. This is, of course, a universal problem for universities everywhere, but it is particularly serious for Chinese institutions. With the market value of education, especially higher education, being gradually acknowledged and the consensus that non-compulsory education should not be free, a cost-sharing mechanism is now being put into place. This calls upon the student and the university to share the cost of education with the government, which means that tuition and fees for students will be increased by a big margin and universities will have to generate funds to supplement their expenditures. Tuition and fees for the 1999 entrants, for example, have risen 30 percent, which seems to be generally

tolerated. As mentioned previously, the Chinese treasure educational opportunities for their children and will set aside 10 percent of their savings for the purpose. This is, in fact, three percent higher than the money they set aside for purchasing houses.

The higher tuition and fees paid by students with the help of their families make it easier for universities to increase the enrollment, which culminates in a win-win situation for all parties concerned. This also constitutes a move to compete with universities in major Western nations, which have been generating much publicity and making efforts to recruit students from China, often with lowered standards for admission. Since the students have to pay much more for an undergraduate education at overseas universities, why shouldn't Chinese institutions enlarge the undergraduate intake with much less money demanded? This is perhaps one of the lessons the Chinese have learned from the massive publicity drive for student enrollment that overseas universities have been making in major Chinese cities over recent years.

The foregoing discussion does not by any means exhaust the wide range of efforts China has made for the vitalization of its higher education. But hopefully it is enough to demonstrate a state of dynamic evolution much like that of the economy and culture that surround and sustain it. No doubt, many problems still remain unresolved and some may possibly become exacerbated in the reform process, but the momentum for transition will continue to surge forward. Chinese higher education will witness more fundamental changes over the next few years than at any other period of time in its recent history.

Reform for Quality Higher Education in the 21st Century

Policy and Future Plans from the United States Perspective

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The aim of this paper is to make some comments in general about some of the major policy issues in higher education in the United States and to illustrate some of those places where the conversation about policy issues in the United States articulates well with the conversations about policies at the international level. Many of the policy issues as they are shaped in the United States occur at the state level. It will therefore, perhaps be useful to illustrate this by using recent developments in the Commonwealth of Kentucky and their consequences for the universities in the state.

Policy in the United States covers a wide range of issues. I have selected 14 institutional and national issues, not seeking to be inclusive but rather to be representative of the most prominent policy issues in higher education institutions and associations within the United States. In addition I have identified six areas that reflect issues prominent in state and federal agencies.

Institutional and National Associations

1. Affordability and Access
2. Diversity in Admissions, Student Success and Faculty across the Spectrum
3. Civic Responsibility, Engagement and a Sustainable Society
4. Preparation of Teachers and School Personnel and the K-12 Relationship
5. Technology, Economic and Workforce Development
6. Information Technology and New Competition
7. International and Cultural Literacy in the Curriculum

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8. Focus for Strength in Niche versus Comprehensive in Scope
9. Market Segmentation
10. Strategic Advancement in "Ratings and Rankings" by Emulation and/or Innovation
11. Faculty Roles and Rewards Aligned with Mission and Incentives for Change
12. Paradigms of Contemporary Scholarship
13. Autonomy and Accountability
14. Economic and Financial Trends, including the possibility of a recession

State Systems

1. Coordination or Governance by State Public Higher Education Systems
2. Financing public higher education
3. Inter-institutional Competition and Cooperation

Federal

1. Financial Aid and College Costs
2. Support for Academic Research
3. Communications and Information Technology Policy

The issue of affordability and access is alive and well. Diversity in the university remains a very important policy issue as well. It is increasingly complex by virtue of court decisions about affirmative action. The related subjects of civic responsibility, academic engagement and a sustainable society are receiving great emphasis in the United States. These themes recur repeatedly in most national and international forums for discussion of higher education policy today.

State systems are changing. There is much discussion about whether state-level agencies of higher education should emphasize the coordination of higher education or the direct governance of public institutions. Certainly, financing of public higher education remains an issue and the question of simultaneous inter-institutional competition and co-operation is very much on our agenda. At the national level we continue to see a great deal of emphasis on financial aid and college costs. There is an effort to better educate parents and the public about the real (versus imagined) costs of attending college, financial aid opportunities and pre-payment and savings plans. We also see great interest in the need to increase support for academic research. At issue is peer review versus political influence in determining research dollar allocations, in addition to issues of emphasis on basic

and applied research, and matters of technology transfer and ownership of intellectual property. Inevitably, information technology policy pervades discussions of academic and institutional futures.

We are part of a knowledge-based society with a conceptually-based global economy dealing in information-driven goods and services. As such, the demands upon universities are growing dramatically, not only in terms of the market economy but also in relation to social problems.

American universities find themselves embroiled in a galloping and complex market economy, including new entrants into the higher education service market. Colleges and universities feel enormous tension with many traditional academic values and the exploding public demands. Over the years, higher education has been seen as both a public good and a private benefit. It still is, but the fulcrum is moving back and forth more forcefully as the *knowledge access stakes* increase for the general public and for private individuals and businesses.

- More responsibility is falling to students and families for financing a college education.
- The gap between those with and those without a college education is widening at a time when advanced educational opportunities are expanding.
- The commercial value of academic research and technology transfer rises and becomes evident more quickly.
- Academic research and public services are expected to address the most stubborn social problems.
- Government and industry demand more of our capabilities without investing more.
- New providers and competitors are entering the global higher education marketplace.
- The grassroots "information revolution" is an uncontrolled and rapidly moving force.
- The knowledge explosion has taken on dimensions not seen before.
- Traditional universities are not organized to take quick or easy advantage of the emerging disciplines and new technologies.

We are pressed to think about our fundamental values and purposes, to find new ways of managing change and transforming our institutions, and to think differently about our institutions and dilemmas. Perhaps the metaphor of a balance that pits public good against private benefit is too simplistic for today's world.

- Many actions that serve private interests create jobs and wealth that, in turn, can lead to social benefits under the right public policies.
- University actions to transfer technology into commercial worth, and thereby to return value to the educational enterprise, serve the public good.
- Universities' actions, to better prepare teachers and thereby to enroll better-prepared students, serve the private interests of those employing their graduates.
- Even the market pressures caused by the entry of for-profit higher education providers serve a purpose by prompting traditional institutions to respond to unmet societal needs.

Donald Kennedy wrote in his new book, *Academic Duty*, that higher education institutions are in a "running conflict" with society due to tensions among competing values. Managing the tensions wisely requires understanding the competing values, and establishing and asserting the core values that will guide and balance the actions of one's organization or institution.

Civic engagement based on core academic values and commitment to human progress is the loudest call to leadership in U.S. higher education for the 21st Century.

- It speaks from within and outside, with an imperative as much global as local.
- It sees no boundaries — not geographical, sectoral, organizational, nor disciplinary.
- It hears only the complex needs, demands, and conflicts of a society dependent upon (but ambivalent about) universities in a knowledge-based economy.

The theme of values-based civic engagement can be found in the priorities and discourse of most leading organizations responsible for higher education and to the public. There are many illustrations of this. A range of relevant examples can be found in the matters attracting attention of some of the leading educational organizations.

Our largest umbrella organization is the American Council on Education (ACE). In the proceedings of this organization there are many examples of the concern for civic engagement. For example, looking to the future of American higher education, ACE's President, Stanley O. Ikenberry, stated that "[W]e will not be judged by words alone; nor by the latest rankings, our students' average test scores, the size of our research programs, the number of Nobel Prize winners in our faculties. Instead, we will be judged by the impact we have on people's lives,

the opportunities for growth that we provide, and the degree to which we as institutions embody the values essential to the survival of our democratic society."

A second example is an endeavor of the National Association of State and Land-Grant Universities (NASULGC). The Kellogg Commission, set up by this NASULGC, has produced five reports and will shortly issue a culminating paper:

- *Returning to our Roots: The Student Experience;*
- *Returning to our Roots: Access;*
- *Returning to our Roots: The Engaged University;*
- *Returning to our Roots: A Learning Society;*
- *Returning to our Roots: Toward a Coherent Campus Culture* (forthcoming).

The Commission's thesis is that the most highly valued and distinguished public research universities of the future will be those that center their learning and discovery functions around engagement with communities — local and global. The themes of the reports are learning, discovery and engagement with a learning society. Institutional engagements that are genuine, sustainable and productive are identified as the new "laboratories" for discovery and the new "classrooms" for learning. In this construct, the American university of the future is the "central core" of the community and convener of interests in the public good. It is engaged in partnerships across sectors for solving complex and global societal problems and enriching the global economy. Engagement is the context for discovery and learning, transforming the traditional tripartite mission of teaching, research and service into a new blended or synergistic mission centered on engagement.

A third example is provided by the work of the Campus Compact, housed at Brown University Convened presidents and other leaders met for two summit meetings at the Wingspread Conference Center in Wisconsin (December 1998 and July 1999). Both led to declarations on civic responsibilities and methods through trustee and presidential leadership, curricula, research, campus culture, diversity, career preparation, alumni roles, democratic practices, as well as partnerships, communications and improvements with communities.

The Association of Governing Boards (AGB) of Universities and Colleges constitutes a fourth example. Each year AGB issues a list of the 10 most prominent policy issues at the national level. Their list for 1999-2000 includes six that are directly associated with social needs: "Teacher Preparation and the K-12

Relationship", "Affordability versus Access", "Cost and Price of Higher Education", "Diversity in Admissions", "Economic and Financial Trends", and "Creating a Sustainable Society and Future".

The members of the Association of American Universities (AAU) are the top public and private research universities. Historically their membership has been selected on the basis of research funding and achievement. While these criteria remain, AAU is re-examining what is expected of member institutions and revising its agenda to provide "(1) a means for collective development and implementation of national policies affecting research and scholarship, graduate and professional education, undergraduate education and public service in research universities; and (2) a forum ... to discuss issues ... leading to institutional policies that advance the interests of the ... institutions and the society they serve."

Similar changes are evident in the attitudes of some federal bodies. The National Science Board urges universities to "reassess and redefine their roles and objectives" to better meet "the Nation's new opportunities, needs and goals." This statement calls for less insular scholarship and more strategic research. The National Institutes of Health, the National Science Foundation, and other supporters of academic research, are now looking beyond future scientific discoveries and training of graduate students to ask funded projects also to contribute to undergraduate education, pre-college student learning, innovation and commercialization, and related improvements in communities and society.

Similar themes are heard in national conferences of organizations with more focused or specific missions. For example, the National Conference on Race and Ethnicity in Higher Education asks universities to provide leadership in inclusive learning and discovery, based on social values of equity and justice and pedagogical values of diversity in ideas and "world views" in the curricula. Specifically it seeks:

- provision of equitable access to education and opportunity for all Americans;
- advancement of knowledge through scholarship concerned with gender, race, ethnicity and nationality;
- education of all students truly through multi-cultural knowledge;.
- preparation of students to live, work and communicate effectively in a shrinking world.

Another example is seen in the National Center for Higher Education

Management Systems' (NCHEMS) promulgation of "Some Policy Guidelines for the Next Generation of Postsecondary Education." This document was generated in recognition that the infusion of technology in teaching and learning is prompting reexamination of deeper policy assumptions. It deals with the distinction between client-driven and provider-driven learning, simultaneous enrollment with multiple institutions, the emergence of "output" and "competency" measures for judging quality, new definitions of the "academic calendar", changing roles and expectations of faculty, and new mechanisms for funding institutions.

These observations (and others) point to client and society oriented approaches to institutional achievement in mission and distinction. They may well play a role in future classification schemes and in quality ranking systems for universities. At present, various ways are used to classify universities in terms of type of institution and relative quality, at least on the basis of reputation.

- The Carnegie Foundation for the Advancement of Teaching classifies colleges and universities according to their missions as reflected along various parameters, such as federal dollars received and number of doctorates awarded.
- The National Research Council (NRC) rates doctoral programs in traditional disciplines based on such factors as numbers of journal publications and citations of faculty works, as well as production of doctoral graduates and other factors.
- The U.S. News & World Report ranks colleges and universities in terms of undergraduate and graduate education. It also ranks some specific professional programs (e.g. business, engineering, law, and medicine). It uses some objective measures such as federal R & D funding and student graduation rates, along with a survey of presidents for perceived quality or reputation.

The current classification and ranking schemes generally are skewed to favor size, traditional disciplines and prestige. What role will civic engagement with society play in future differentiation and distinction of institutions? Efforts are underway to re-think these methods and better recognize the diversity among institutions, emerging disciplines, and impact on graduating undergraduates and serving society. Illustrations follow:

- A book by Hugh Davis Graham and Nancy Diamond reported that some universities emerged after 1945 to challenge the hierarchy of traditional elite universities, mostly by balancing research achievements per capita faculty across the social sciences and arts and humanities, along with the basic sciences

and engineering (*The Rise of American Research Universities: Elites and Challengers in the Postwar Era*, 1997).

- The Carnegie Foundation is considering new dimensions in its classification system based on observations such as those in the Graham-Diamond book and others.
- The NRC is revising its list of programs to be ranked, taking into account the emergence of new, interdisciplinary Ph.D. programs and considering additional measures of quality.
- The National Center for Postsecondary Improvement (NCPI) is creating and testing a "taxonomy" of institutions based on their undergraduate student markets. On one extreme are the "name brand" institutions with a traditional liberal arts college focus; on the other extreme are the "customer convenience" institutions with client-driven services (often delivered through distance technologies). At various gradations in between the extremes are institutions with mixed missions tilted more or less heavily either in one direction or the other. Retention and graduation rates of undergraduate students represent a key factor in classifying institutions.

Similar changes are to be seen internationally. There is evidence that accountability for student learning, research contributions to economic development and civic engagement with communities are growing expectations in other nations. A wide variety of conferences, summit meetings and declarations have spotlighted their emergence in European higher education communities and in international conversations.

In May 1998, at Glion, Switzerland, a summit meeting of higher education leaders from Western Europe and the Americas considered the status and future of higher education from a global and values-based perspective, leading to "The Glion Declaration: The University at the Millennium." The declaration addressed a series of the basic contemporary characteristics of higher education. To quote-

- Affirming that teaching is a moral vocation, involving not just the transfer of technical information, however sophisticated, but also the balanced development of the whole person. That will mean an emphasis on the development of a creative learning environment...
- Affirming that scholarship is a public trust... [P]ublic support presupposes the impartiality and independence of the scholar and the integrity of the scholarship.
- Creating new intellectual alliances within the university and new partnerships

outside it... New alliances, new support, and new incentives are needed to address them.

- Employing new information technology (IT), which now allows the organization of these partnerships on a grand scale, whether locally focused or globally based.
- Recognizing public service as a major institutional obligation and providing the means and the incentives to pursue it.
- Providing new structures, flexible career paths, and selective support for new patterns of creative inquiry, effective learning, and responsible public service.
- Developing new patterns of governance, leadership, and management...
- Accepting the obligation for accountability...(t)he university must be properly accountable for its "output"....but beyond those things, it must remain sturdily independent, but changing deliberately, selectively, and responsibly in light of public needs and changing knowledge.
- Affirming the ancient values upon which the academy is established.... [while] it responds creatively to the new challenges and opportunities that confront it.

Here is clear evidence of the significance of issues such as creating new intellectual alliances within the university and new partnerships outside it. That is to say, identifying engagement and recognition of public service as a major institutional obligation together with the need to provide the means and incentive to pursue it.

Shortly afterwards, in October 1998, the UNESCO World Conference on Higher Education took place in Paris. The conference published its conclusions as "The World Declaration on Higher Education." The Declaration included the following points. To paraphrase and quote --

- Higher education shall be accessible to all on the basis of merit, and no discrimination.
- Higher education is "... a vital component of cultural, social, economic and political development, and as a pillar of endogenous capacity-building, the consolidation of human rights, sustainable development, democracy and peace, in a context of justice."
- Institutions, faculties and students must tend to their critical functions through ethics, scientific and intellectual rigor, analysis of trends, forecasting, warning and prevention. In return, they should enjoy full academic freedom and autonomy while being responsible and accountable to society.
- Relevance to societal aims and needs, and entrepreneurial skills, should be major concerns of higher education, with special emphasis on services to help

eliminate poverty, violence, illiteracy, hunger, intolerance, environmental degradation, disease, war and conflict, through interdisciplinary and trans-disciplinary work.

- Higher education should contribute to the development of the whole seamless system of education across the life span, with special priority on secondary education.
- Flexibility and diversification of higher education systems will give students a wide range of choices and the rigorous education needed across all stages of life.
- Quality is a multidimensional concept in higher education, including the advancement of knowledge through research evaluated objectively, independently and openly by specialists and guided by institutional and regional/national contexts.
- Needed is a new vision and paradigm of higher education that is student-oriented, with curricula richer in learning purposes.
- Pursue a vigorous policy for the development and professional/financial status of university staff.
- Decision-makers should place students at the center, with guidance counseling, opportunities to reenter, and the aim to "... educate students to become well informed and deeply motivated citizens, who can think critically, analyze problems of society, look for solutions to the problems of society, apply them and accept social responsibilities."
- Enhance the participation of women in higher education, especially at the decision-making level and in disciplines where they are under-represented.
- Use information and communication technologies to extend and diversify delivery and improve access to learning and knowledge, with special concern for equitable access through international cooperation and to adapting technologies to local, regional and national needs.
- Higher education is a public service, despite diverse sources of funding. Public support is essential to achieve educational and social missions. Autonomy in internal affairs is as important as transparent accountability to society.
- Inherent to quality, international networking "... should be based on sharing, solidarity and equality among partners." Priorities should be training in developing countries with centers of excellence in regional-international networks and short periods of study abroad.
- "Regional and international normative instruments for the recognition of studies and diplomas should be ratified and implemented..." for ease of student moment.

- Close and genuine partnership among all types of stakeholders is necessary for in-depth and lasting reform and renewal in higher education.

In this list of key points there is a pervasive concern for accessibility. It is made explicit that relevance to societal aims and needs and development of entrepreneurial skills should be major concerns of higher education. This UNESCO conference again emphasized that higher education is a public service.

In June of that year, at Bologna, an historic first meeting of 29 European Ministers of Education occurred to discuss the future of higher education in Europe. With common acceptance that service to humanity and the economy by higher education is the central driving force in the future of the European Union, the Ministers signed a "Joint Declaration on The European Higher Education Area." In their declaration, the Ministers state that "A Europe of Knowledge is now widely recognized as an irreplaceable factor for social and human growth and as an indispensable component to consolidate and enrich the European citizenship, capable of giving its citizens the necessary competencies to face the challenges of the new millennium, together with an awareness of shared values and belonging to a common social and cultural space. The importance of education and educational co-operation in the development and strengthening of stable, peaceful and democratic societies is universally acknowledged..."

The Ministers went on to outline key objectives for accomplishing the aims of their Declaration. They challenged the colleges and universities in Europe to accept this challenge while recognizing the need for university autonomy in achieving it. In fact, European higher education institutions had already taken the key initiative of establishing the "European Area of Higher Education," in the wake of principles laid down in the Bologna Magna Charta Universitatum of 1988. The objectives of the European Area of Higher Education and the promotion of the European system of higher education worldwide are summarized as follows.

- Adoption of a system of easily readable and comparable degrees for employability and international competitiveness.
- Adoption of a system based on undergraduate and graduate cycles, the first relevant to the European labour market and the second leading to master's and/or doctor's degrees.
- Establishment of a system of credits that promotes the most widespread student mobility.
- Promotion of mobility by overcoming obstacles for students, teachers,

researchers and staff.

- Promotion of European co-operation in quality assurance with comparable criteria and methods.
- Promotion of European dimensions to curricula, inter-institutional co-operation, mobility schemes and integrated programmes of study, training and research.

The Ministers declared their collective commitment to attain these objectives to consolidate the European area of higher education, taking into account institutional competencies, diversity of cultures, languages, national educational systems and university autonomy. And, they expressed the expectation that universities would respond "promptly and positively" to contribute to the success. They will meet again in two years to provide support, supervision and adaptation to the evolving needs.

Just one month later, the objectives of the ministerial meeting were echoed on an even wider international scale at 12th Triennial Conference of the International Association of University Presidents held in Brussels in July, 1999. Under the title "Touchstones for a Modern University Culture," it centered on competence, freedom of thought and discussion, and cultural and social commitment, and responsiveness to an increasingly varied spectrum of demands from all sectors of society. Its purpose was "to discuss how best the university culture can be adapted to enable universities to function effectively in the conditions of modern society, on the eve of the new millennium.... With science and technology now pervading every aspect of social and personal life, universities are being called on more and more to respond to an increasingly varied spectrum of demands for all sectors of society." *Touchstone* topics included:

- graduates' understanding of the link between research and education;
- helping graduates view their work in the context of scientifically sound, broader syntheses;
- developing the ability of graduates to deal with mass media effectively;
- wider access to universities through modern multi-media;
- university partnerships in regional development;,
- university contribution to conflict resolution;
- participation of women in academia;
- universities in industrial innovation;
- international university cooperation for sustainable development;
- world-wide accreditation of university qualifications;
- globalization;
- cultural diversity;

- the universities and the arts; and
- strategic management and professionalization.

Again, this schedule identifies a requirement for universities to be in partnership with their communities for regional development, to be making contributions to conflict resolution, and to be active in international co-operation for sustainable development -- in short, to be fully engaged, locally and globally.

It is perhaps fitting to note that the circle of international meetings addressing these issues between summer of 1998 and summer of 1999 was completed by the 1999 Biennial Transatlantic Conversation of the American Council on Education and the Council of European Rectors. This meeting, held in Italy, focused in particular upon new roles of future faculty in meeting society's needs.

KENTUCKY: A State System in Transition

I now turn to what might be regarded as a case study in the application of the emerging policies and principles to higher education in the Commonwealth of Kentucky.

A brief review of postsecondary education reform in Kentucky will illuminate some of the underlying concerns of policy makers at the State level in the United States. Kentucky is a state of 3.7 million people. It is located in the southeastern United States. It has been among the states most challenged economically and educationally. Kentucky ranks 46th among the 50 states in percent of population with a high school diploma and 42nd in the nation in percent of citizens with bachelor's degrees. It is 41st among states in a national report (Kids Count) on the health and well-being of children. It is low in research and development expenditures and faces difficulties creating technologically advanced jobs. Yet it has many opportunities if it is bold and creative in advancing the capacity of higher education to address these issues.

Newly elected Governor Paul Patton placed postsecondary education at the top of his agenda to move Kentucky into the forefront in economic and workforce development. He made this statement in his inaugural address in 1995: "[W]e must have a system of higher education that is more responsive, more efficient, and more relevant." He went on to promise to increase funding for meaningful change in the systems. In office, he initiated a process that altered dramatically

Kentucky postsecondary education.

At Governor Patton's request, the 1996 General Assembly created a Task Force to assess postsecondary education, including its governance and its funding. Based largely on the recommendations of that Task Force, the General Assembly passed and the Governor signed into law House Bill 1 in 1997. That Bill resulted in these and other changes in the system:

1. The Council on Postsecondary Education (CPE) was reorganized and strengthened. It is composed of thirteen citizens appointed by the Governor and confirmed by the Senate and the House, along with the commissioner of education, a faculty member, and a student member. Before the reform act, it served as the coordinating board for all public postsecondary institutions in Kentucky. Those institutions include one major research university (University of Kentucky), one urban research university at Louisville, and six comprehensive regional universities. Each of these institutions is headed by a President and governed by its own Board of Trustees. After the reform act, the CPE also assumed responsibility for community colleges, technical colleges and a new virtual (electronic) university. The CPE has the authority to eliminate academic programs and to revise institutional missions.
2. The Kentucky Community and Technical College System (KCTCS) was formed by moving 13 of the 14 community colleges away from the University of Kentucky and 25 technical schools away from the Workforce Development Cabinet of the Governor. This new system is headed by a Community and Technical College President who reports to the Council President.
3. A new Strategic Committee on Postsecondary Education (SCOPE) was created. It is composed of six members of the CPE and its President, the Governor and six of his appointees, and 14 members of the General Assembly, seven from the House and seven from the Senate. It acts as a forum for leaders to discuss needs and plans for postsecondary education. Its duties are advisory.
4. The funding process was changed to align it with the goals of the legislation.

The goals of House Bill 1 clarified and differentiated the roles and missions of the public institutions and set targets of achievement for some of them. The new funding structure was designed to accomplish the goals of the law as well as to reduce inter-institutional competition and promote greater cooperation among the

institutions.

"The General Assembly declares on behalf of the people of the Commonwealth the following goals to be achieved by the year 2020:

(a) A seamless, integrated system of postsecondary education strategically planned and adequately funded to enhance economic development and quality of life;

(b) A major comprehensive research institution ranked nationally in the top twenty public universities at the University of Kentucky;

(c) A premier, nationally-recognized metropolitan research university at the University of Louisville;

(d) Regional universities with at least one nationally-recognized program of distinction or one nationally-recognized applied research program...;

(e) A comprehensive community and technical college system with a mission that assures ... access ... to a two-year course of general studies designed for transfer to a baccalaureate program, the training necessary to develop a workforce with the skills to meet the new and existing industries, and remedial and continuing education to improve the employability of citizens; and

(f) An efficient, responsive, and coordinated system of autonomous institutions that delivers educational services to citizens in quantities and of a quality that is comparable to the national average."

House Bill 1 created six Strategic Investment and Incentive Trust Funds:

(a) A Research Challenge Trust Fund for the University of Kentucky (2/3) and the University of Louisville (1/3) to obtain 1:1 state matching funds upon raising new monies for endowed chairs, professorships, graduate fellowships and research operating funds;

(b) A Regional University Excellence Trust Fund for the six regional institutions to gain matching funds to develop their one center of distinction;

(c) A Postsecondary Workforce Development Trust Fund for the community and technical colleges;

(d) A Technology Initiative Trust Fund;

(e) A Physical Facilities Trust Fund; and

(f) A Student Financial Aid and Advancement Trust Fund.

The incentive trust funds are aligned with institutional missions such that the three types of institutions (2 research universities, six regional universities, and community and technical colleges) compete among themselves but not across sectors. Moreover, the Research Challenge Trust Fund was set up to provide 2/3 to University of Kentucky and 1/3 to University of Louisville thereby minimizing competition between the two research universities with distinctive missions.

In 1997-98, University of Kentucky matched $4M in recurring funds and $4M in nonrecurring funds, for a total infusion of $16M. Half of this is continuing year after year, used to hire over 50 new professors. The other half was one-time funding used to upgrade laboratories, equipment and other infrastructure needs for the new faculty.

How did we determine where to focus these new funds, strategically? We had a Task Force on Graduate Education and Research study the relative strengths of our programs and recommend "Targets of Opportunity". Forty areas were targeted for special funding in order to build on strengths across a variety of established and emerging fields of study. The first "tier" of 21 are those judged to be "distinguished, nationally competitive programs" and the remaining 19 are in the second "tier" as "programs positioned to achieve national stature". The University's new Strategic Plan empowers those choices today, along with special initiatives in undergraduate education and outreach.

In 1998-1999, the Research Challenge Trust Fund was filled with $100M to be shared 2/3 for University of Kentucky and 1/3 for University of Louisville for the creation of endowments, conditional upon the institutions raising the matching amounts. The University of Kentucky launched a private fund raising effort and has already acquired donations and pledges in the full allotment of $67M. Thus, the University has $134M in donations and pledges, plus the matching funds, for new endowments for chairs, professorships, graduate fellowships and research support. As of this date, the University of Kentucky has established 45 new Chairs and 81 new Professorships since 1997. This success, we hope, will encourage the Governor and General Assembly to fill the Fund with another $100M in the next fiscal year.

We are optimistic, even in a difficult biennium, because the priorities of SCOPE are to train workforce, increase enrollments and retention, and build capacity. The *Action Agenda* of the CPE calls upon itself to rationalize budgeting,

deregulate and streamline, bridge gaps between schools, home, workplace, colleges and universities, monitor performance and report results, advocate for the social value of education, and use incentive trust funds to drive the Action Agenda.

Present and Future of Higher Education in Japan

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1. Present Status of Higher Education in Japan

There are 99 national universities, 61 public universities and about 450 private universities in Japan. These universities have undergraduate schools with four year teaching curriculums. There are about 600 junior colleges with two year teaching curriculums, and so in total about 1200 institutions of higher education in Japan.

Primary schools adopt a 6 year system, and secondary schools, one of 3 years. These two steps are compulsory. Although high school is not compulsory, those who continue in high schools constitute 97% of the secondary school graduates. Thirty years ago, those who went to university amounted to 17% of the high school graduates but now they amount to 36%. When junior college students are included, the percentage participation becomes nearly 50%.

The population of eighteen years old, at which age students normally apply for admission to a university in Japan, reached a peak of 2.05 million in 1992. However the number has now fallen to 1.55 million and will continue to decrease to a minimum of 1.2 million in another ten years. This rapid decrease will impose serious effects on the management of private universities and may cause bankruptcy for some of them in the future, although the current increase in numbers of high school graduates who wish to enter university conceals the serious nature of this situation.

Expansion of graduate schools is a policy of the Ministry of Education, Science, Sports and Culture. The numbers of masters and doctoral students in 1970 in Japan were 28,000 and 13,000 respectively; now they have risen to

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123,000 and 56,000. The numbers will increase further in the future. However, a problem behind this remarkable increase is that universities have not been provided with enough facilities and have suffered shortages of teaching staff, both of which conspire to impede good teaching and research.

The Ministry of Education, more than 10 years ago, hoisted a target of accepting 100,000 students from foreign countries. In 1985 the number of foreign students was 15,000; it reached about 54,000 in 1994. But since then, there has been no further increase as one consequence of the economic crisis in Asia. The high cost of living in Japan has subsequently contributed to a decrease to 51,000 at present. To achieve the initial target of 100,000, there will have to be stronger support from the government and elsewhere for scholarships, and also a big improvement in the teaching methods within university classes, to attract foreign students.

Financial support from the government to higher education is about three trillion yen, equivalent to about 30 billion US dollars. Of this budget, 90% goes to national universities and 10% to private universities. This governmental support for higher education in Japan represents 0.5% of GDP, while in Canada, government support amounts to 1.6%, in US it is 1.1%, in Britain, 0.7%, in France, 0.9% and in Germany, 0.9%. This comparison shows that the Japanese Government should make further efforts to increase the budget for universities.

2. Current Problems in Higher Education in Japan

The most serious problems the Japanese national universities are facing now are closely related to the current reformation plan of the Government to realize a smaller governmental sector. The Government has already determined to detach the huge system of postal services; and it is going to change almost all national research institutes into independent corporations in another two years. It is asking the national universities to become similar corporations in another four years. This plan envisages that the national universities will be detached from the government public service to become semi-privatized along the lines of the British university system.

The Government has promised to decrease the number of governmental officials by 10% and expenditures by 30% over the next ten years. There is great anxiety that the universities' operational expenses, which the government proposes to provide as grants at the stage of half-privatization, will be decreased step by step in the near future regardless of the government's guarantee of adequate

support. If the level of support is not sustained, the quality of education and research will decline, and the Japanese universities will not be able to maintain high quality world-level activities.

National universities are totally dependent on national subsidy. Recently there has been an increasing demand from society for accountability of the national universities, for example, by evaluation of their activities in education and research. To comply with this public demand the Ministry of Education is to establish an external evaluation institution, which will provide a check on the activities of the national universities.

There is also a demand for a return from the results from university research and development to society, and particularly to industry. Universities are strongly recommended to cooperate with industry, and university-industry cooperation centers have been established in many universities. The universities are also recommended to seek patents, for which purpose technology licensing offices have been established in many regions. We shall have to wait several years to obtain expected results from these efforts.

Another big problem is how to give students incentive to study seriously at university. It is widely recognized that today's students do not study as hard as those in the past; and further that they appear to have no aspirations or objectives to achieve in their future lives. In their studies, they concentrate exclusively on the special courses that constitute their majors, but have almost no interest in liberal arts courses, which will sometimes prove more valuable than their specialized knowledge during their long lives. Universities must improve liberal arts courses so as to excite students' curiosity and provide incentive to study.

Recurrent education of people in the age of rapid technical innovation and changing industrial structure is becoming more and more important, and universities are expected to play a central role in this effort. In order to acquire recent knowledge and technology, there is an increasing number of students who, already holding positions in industry, are seeking admission to graduate schools. The numbers of such entrants to MS and PhD courses in 1989 were respectively 1,500 and 300; by 1994 they had risen to 2,800 and 900; and are now they are 4,800 and 2,000. These numbers will continue to increase in the future.

Universities are also expected to act as institutions of lifelong education at the level of undergraduate courses to cope with the varied demands of people of all ages. More than 10 years ago the Ministry of Education started the University of the Air. Similar to the British Open University, it has more than 70,000 students at present, many of whom are motivated by a wish to study continually.

3. Future Problems for Universities

There are many varieties of problems for universities to face if they are to fulfill their role of leadership in society in the 21st century. They will need to include:

(i) internationalization of university activities;
(ii) the role of universities in the development of science and technology;
(iii) leadership by universities in order to recover and re-establish "humanity" in a technology-driven society.

In the future, students may tend to be attracted to foreign universities instead of universities in their native countries. In Europe this has been realized to a certain extent by the Erasmus project, where students have a wide range of freedom in choosing universities beyond the borders of their own country.

There are about 50,000 Japanese students in US universities, a number almost the same as the number of foreign students in Japanese universities. In the near future, students will be able to attend many classes of foreign universities by means of distance education systems from their homes; and they may be able to graduate from a university with minimal attendance at actual classes within a university. Students may also be able to utilize a system of reciprocal recognition of credits between universities in order to attend attractive classes selectively, regardless of which university provides the classes. In such a situation, universities and their teachers must compete seriously to obtain as many good students as possible from all over the world. English speaking ability will be essential both for teachers and students.

Universities in Japan have been contributing significantly to advancement of science and technology. Japanese universities were started just after the Meiji Restoration in 1868, mainly following models based on European universities. One exception was that a technology section was included in the university system as the Faculty of Engineering. This contributed enormously to the rapid modernization and industrialization of Japan. After the second World War, a system based on that of the American universities was introduced. This gave much weight to liberal arts education and, by establishing many new universities and colleges throughout Japan on this model, opened access to as many young people as possible. In turn, this provided a major influence on the industrialization of post-war Japan, allowing Japan to become a world-leading industrial country.

Now, one hundred years after their creation and fifty years after the second World War, Japanese universities are expected to change once more, to adapt to

the demands of future society, not only of Japan but also of the world. This time the change is not being forced by an outside power or external causes but by our own internal motivation. In this situation, change is much harder to implement and indeed no definite direction has yet been defined.

Hitherto, Japanese universities have held to a firm belief that the pursuit of academic activities is justified by their own objectives; and that academic work is best kept at a certain distance from commercial applications. Nowadays universities are strongly recommended to establish close relations with industry. The conflict between an accustomed attitude from the past and a new requirement for direct contribution to society presents a difficult transition for university people. They are particularly sensitive to the possible outcome that the social demand for applications may impede the traditional spirit of independent enquiry.

There is no shortage of serious problems that have to be solved for the needs of the 21st century: environmental problems, energy problems, food shortage problems, problems of a high-aging society, and ethical problems which have been brought about by the advancements and treatments of medical science. Universities are expected to find solutions to these difficult problems. At Kyoto University we have been making efforts to attack these problems by starting new graduate schools, such as the Graduate School of Human and Environmental Studies, the Graduate School of Energy Science, the Graduate School of Informatics, the Graduate School of Asian and African Area Studies, and the Graduate School of Bio-Studies. And already we are considering addressing some of the other problem areas by establishing additional graduate schools.

Many people in our society have doubts about whether they can live in peace and achieve happiness in an advanced scientific-, technological-, and information-oriented future society. We have to consider these problems from many aspects. Studies of the humanities and liberal arts education at university should suggest better directions. I think we have to put more and more importance on such questions in the future.

Establishment of Efficient Management in an Institution of Higher Education

Yasuo Harada
Hiroshima University

Crises in education can be observed on a world-wide scale. School education in Japan is suffering from many difficult problems such as bullying, pupils' vandalism, children's apathetic non-attendance and break-down of teachers' control in classrooms. These crises now raise fundamental doubts on the principles of education.

Aggravating these problems in our country, we find some factors peculiar to Japanese society. One is the long-term problem of the critical decrease in the number of children being born; another is the immediate problem of a wide economic recession. The latter has led to a great increase in unemployment and a large budget deficit in the Japanese national finances. The consequential restructuring of the Japanese economic system is causing major changes in the accepted patterns of employment, notably in the traditional system of life-time employment and the seniority-based reward system. The impact of these economic factors on higher education is profound. The reduction of job opportunities and changes in career structures affect the employment of all graduating students. Constraints on university funding increase competitive pressures on the universities and especially on the national universities. And the changed economic climate adds to the pressures for managerial reform within the universities.

I shall return to some of these issues later but let us first consider the effects arising from the decrease in the number of children. At present, the number of births in Japan is decreasing rapidly and the indications are that this tendency may continue to the end of the 21st century. As well as its wider economic

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implications, this phenomenon will surely exercise a serious influence on the management of universities and colleges. Already there are reports that some of the private junior colleges are in difficulties and are failing to enroll a sufficient number of students to sustain their current level of activities. One solution is seen in extending the period of education by converting 2-year junior colleges to 4-year universities.

The statistics confirm that the fast decrease in the number of children is already affecting the number of applicants to universities and colleges. In 1998 there were 790,000applicants; by the year 2008 it is expected that the number will have fallen to 600,000; and to decline further in subsequent years to 560,000 in 2009 and 540,000 in 2010. In the national universities, there are likely to be measures to reduce the number of students admitted. But the reduction in enrolments in the national universities is likely to be both slower and smaller than the decrease in number of applicants. So, if the number of universities and colleges is unchanged, it could be envisaged that the proportion of successful applicants will rise to 100% in the near future. As was recognized when massification of higher education was first envisaged, universal access will result in a wide diversity of students from widely differing educational backgrounds. By one set of criteria, this implies that a number of less competent students will be able to enter universities and colleges. In turn, this can be expected to lead to direct competition between universities for students.

These problems — opportunities for some — will present major management challenges. Japanese universities and colleges are now required to respond to these problems.

Innovative Progress at Hiroshima University

At Hiroshima, the University has already registered the problems. During my time as President of the University, some 6 years, a programme of reformation and reorganization has been established. We now find that the principles on which we based our reformation are actually in conformity with a report released just one year ago, in 1998, by the Council for Higher Education in Japan (Daigaku Shingikai). It appears that we have been at least progressing in the correct direction.

A brief summary of the reforms already undertaken in Hiroshima University will indicate the nature of changes that appear to be necessary.

1. **Move to the new campus.** Uniting the University, previously dispersed over several campuses presented an opportunity for us to develop unification of our university facilities.
   (a) On behalf of the whole University, we have clarified the purposes of our education. We are able to state explicit principles for the purposes of university education and reformation of the University. Our aim is that graduates shall meet the needs of the 21st century for competent, creative, productive, internationalized and peace-minded citizens.
   (b) Improvement of the campus to provide an appropriate environment for education resulted in a campus-improvement award from the Ministry of Education.
2. **Renovation of general education at undergraduate level.**
   (a) Establishment of a new educational programme for general education in accord with the new principles.
   (b) Introductory seminars for first-year students to enable us to provide them with face-to-face guidance for university life.
   (c) A new practical system of foreign language teaching (in particular, communicational English) and establishment of a Centre for Foreign Language Education
   (d) Enhancement of computer literacy and capability through new courses in information and computer science and establishment of a Centre for Information Education.
3. **Faculty development.**
   (a) Annual workshops for discussion of developments in general education. The workshops extend over a period of two days and the intervening night in an off-campus location. Over 4 successive years, more than 700 members of university staff have participated.
   (b) Opportunities for exchange of views between academic staff and senior university officers. Despite the size of the University (10(or 12) Faculties, 2000 academic staff) the President now attends every Faculty meeting with the express purpose of providing an opportunity for exchange of views.
4. **Leadership in university management.** Hitherto, the authority of the president of a national university has been too constrained to permit any significant leadership role. The new structures that come into effect in

April 2000 will require presidents to exercise responsibility for management change. Predating this legal requirement, some preliminary changes have already been introduced at Hiroshima.

(a) External fund-raising has been instituted through establishing a Hiroshima University Support Association.

(b) Creating a unified University Alumni Association by uniting the existing Faculty Associations.

(c) Establishing a committee of external members to provide the University with external consultation and advice on managerial issues.

(d) Developing public relations through regular publication of Hiroshima University Forum, a newsletter distributed widely within the University and to its external community. (This publication has received an award from the Ministry of Education, 5 times in 6 years).

5. **Improvement of education and research facilities for graduate courses.** In addition to general development of graduate programmes in response to academic and student demands, specific organizational developments have been implemented.

(a) The first of the new graduate schools, in Advanced Materials Science has been established.

(b) The status of the Graduate School of Science has been raised to that of a "privileged graduate school", which now attracts increased government support for its courses.

6. **Securing research funding.** Expansion of research, both quantitatively and qualitatively, represents an academic priority. In addition to provision of basic support through regular university funding, supplementary funding is needed to achieve this.

(a) University staff are actively encouraged to seek grants-in-aid for specific research programmes from the Ministry of Education. Already this has resulted in a marked increase in the number and value of grants.

(b) Developing sources of external funding and collaboration for joint research projects.

7. **Improvements in graduate career advice and support.**

(a) A graduate Career Advice Centre has been established to provide advice to students and to facilitate arrangements for students to meet employers.

(b) Recognition in educational programmes of explicit advice and recommendations concerning the skills sought in graduates by public and private sector employers.

8. **University management structure.**
   (a) Review and restructure of university committees. The immediate result has been to reduce the number of committees from 40 to 11.
   (b) Clarifying the role and function of each committee.

The Future

Each innovation creates an environment for further change. In addition, new legislation will generate an expectation of change as a continuing response to internal and external needs. The schedule of innovation will be extended. Already areas for action can be identified.

1. Graduate Schools: improvement of their quality and extension of their sizes.
2. University Management: continuing innovation to ensure efficient management within a more compact structure.
3. Academic Standards: introduction of external assessment.
4. Leadership: implementation of the legal requirements for strong, positive leadership from the President with evident consequences for:
   (a) the roles of the Meeting of Deans of Faculties and Heads of Affiliated Institutions; and
   (b) modification of the powers of individual Institutions, Faculties and Departments.

Strategies for Lifelong Learning

Re-thinking University Education in Terms of Continuing Education

Werner Meissner
University of Frankfurt

It is a pleasure and a privilege to contribute to the conference's ambitious analysis of higher education in the next century. What I shall be trying to suggest is no less than re-thinking the whole system of tertiary edcuation, especially university education, from the viewpoint of continuing education. I feel, the consequences of such a re-thinking may, indeed, trigger a kind of educational revolution.

The paper's focus will be on job and career-oriented continuing education[1] and its relevance for the economy. Other activities also legitimately associated with lifelong learning such as leisure-time activities or programs for the elderly will not be dealt with.[2] Even though programs of continuing education are being provided by a variety of private, corporate, semi-state, and state institutions, the paper will concentrate on what universities can contribute in this field.

Potential and Responsibility of Universities for Continuing Education

The ever growing necessity of updating knowledge does not only comprise

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[1] In a way, "lifelong" does not seem to convey the correct connotation of what is at stake. Instead of associating "permanence" and "security" as in the Japanese concept of "shûshin koyô" (life-time employment), the only valid permanence is the permanence of constant change. That is why I prefer the term "continuing education" to "lifelong learning".

[2] According to the OECD-Report "Adults in Training: An International Comparison of Continuing Education and Training" (by Philip O'Connell, The Economic and Social Research Institute, Dublin, April 1999) participation in continuing education is highest among employed persons, and career-orientation clearly dominates any other motive in continuing education.

factual knowledge or techniques; of equal importance is the faculty of properly evaluating the social, ecological and political consequences of this very knowlege. That is precisely why universities, more than any other institution, are called upon to play an important role in continuing education. Above all, their wealth of disciplines, allowing proper interdisciplinary approaches, and their lack of downright economic and political vested interests, qualify them for this task. Economic development suggests giving continuing education more attention, and I hold that universities must not hesitate taking up this task.

The Economic Framework of Continuing Education

Regarding industrialized countries, the employment rate in agriculture has been dwindling since the end of the 19th century. For the last seventy years this holds good for the production sector too; and since the sixties even the service sector has been stagnating. In contrast, the information sector proper has been increasing almost exponentially.[3] Telecommunication in particular has challenged, at first theoretically, then increasingly in practice, the unity of time and place of employed labor. Side by side, the traditional pattern of consecutive schooling, training, and employment has begun to fade away. Instead, the concept of continuing education is steadily gaining momentum.

The very fact that OECD has recently been opening its statistical educational surveys to all age groups (not just secondary schools and universities) is sufficient proof of the growing importance of continuing education. Likewise, OECD has been extending its surveys to private education providers, and has already announced it will cover enterprise-based training and continuing education in the future. So, continuing education is on the agenda, there is no doubt about that.

Future Needs of Continuing Education

After having said this, we must take a closer look to the varying needs, forms, and resources of continuing education. When trying to find out more about

[3] Not only people working in communication industries proper but also all those working in information processing jobs within other sectors (production, service, even agriculture) have to be counted among the information sector working force.

future needs of continuing education, I suggest approaching this task with a four-segment-model.

1) As a matter of fact, new job-profiles have already been emerging. Companies are increasingly looking for people, especially for medium and higher management, whose basic qualifications are broad enough to employ them as "jokers" as it were, in varying jobs. At the same time, highly specialized manpower forming the nucleus of the company's staff is sought. Continuing education of this staff, according to a comprehensive study of OECD mostly in the fields of management/finance and technical jobs, will remain a primary concern of those companies, and will be financed by them.

2) Outside companies, without any job guarantee you will find more and more free-lancers who cover various specialized fields and are increasingly handling continuous tasks for companies previously taken care of by the company's staff itself. Continuing education, a sheer necessity for free-lancers who want to stay in the market, will be their own responsibility, and consequently will be financed by themselves.

3) There is another segment of manpower that is called upon only on specific demands. Their pay is low, they experience phases of unemployment, and they are dismissed once the task is accomplished. Continuing education of this group, if any, will most probably be taken care of by the state, trade unions and the like.

4) Finally, there is the segment which comprises all those who are, for one reason or another, permanently without employment. Dealing with university-based continuing education, we may neglect this segment for the time being.

So, presently, universities will have to cater for at least three different type of clients of continuing education, i.e. management, technicians, and free-lancers of different fields. Expectations, course organisation, and cost will differ accordingly, and must, therefore, be addressed in a different manner.

All this seems to suggest that when preparing for the future we ought to view university education as a whole in terms of continuing education

The eleven-country-study of OECD on "Adults in Training: An International

Comparison of Continuing Education and Training" of this year gives, it is true, a fairly accurate picture of the status quo of continuing education. It is basically confirming what experts of continuing education already took for granted. It must, however, not be mistaken as a blueprint for further action.

There is, however, one confirmed finding which deserves the universities' special attention:

> "Adults who already possess higher level educational qualifications are a great deal more likely than those with lower educational attainments to participate in education or training, and when they do so the duration of their training is longer. Current patterns of education and training are thus likely to exacerbate rather than mitigate labour market inequalities and processes of social exclusion."[4]

Without elaborating on the political consequences of this finding, universities the traditional clients of which definitely belong to those with "higher educational attainments" ought to give some thought to this fact. If they do one exciting conclusion seems to suggest itself:

Universities will quickly become aware of the necessity to conceive continuing education not as an additional burden but as part a parcel of university education as such. If graduates are the ones most likely to participate in programs of continuing education, and if, because of the development of the economies and labor markets, continuing education is bound to be the dominant form of education in the future, universities would be well advised to re-define and re-organize university education from a completely new viewpoint, the viewpoint of continuing education.

This is the central message of my paper.

Consequences of Re-Structuring University Education as Continuing Education

Re-structuring university education from the perspective of continuing education may mean (for many, though not for all, academic disciplines):

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[4] See Footnote 1, p.63

- University studies have to be so organized in content, time, and place as to prepare students for participating inevitably, as it were, in university programs of continuing education after graduation. Those universities that already have a considerable section of part-time or evening studies will find this easier than those that up to now cater for full-time students only. In any case, one step seems to be imperative: the further shortening of traditional study progams.
- Shortening study programs will in turn facilitate the introduction of tuition fees or reduce their burden when already in place. In this new perspective, full-time study programs are nothing else but another phase on the continuum of continuing education. Acceptance of education as being both a private and a public good, and more obviously, of continuing education as a payable service, will buttress the claim of an appropriate financial contribution by both the state and the individual. In other words: once you rid yourself of the illusion of needing to teach each student everthing there is to be taught on a specific subject within a limited uninterrupted period of time, and start viewing education as an ongoing open process consisting of many modules, you may be more at ease with this simple idea.
- If, as a consequence, even freshmen are seen as potential customers of future continuing education programs, their relationship with teachers and university administration is bound to change profoundly. Students will no longer be treated as some sort of aged school-kids but as potential buyers of educational services.
- The teaching of technical skills and of general education have to be so balanced as to open equal venues both for updating specialized technical knowledge and the meta-knowledge necessary for a profound understanding of the political, social, and ecological consequences of progress. Education must be conceived as a serial process, as it were, with customers waiting anxiously for the sequel. Consequently, curricula have to be thoroughly revised, to maintain the "educational suspense"; early specialization has to be avoided.
- Teaching-loads of professors will not necessarily increase, they will just be balanced differently. Moreover, professors will participate in the income generated by all programs of education according to their own quantitative and qualitative input. This may help in mitigating the frustration that has been building up during the last ten years or so because of ever dwindling resources and ever growing duties in teaching, research, and administration.
- The new perspective also means that universities themselves specialize in certain fields of continuing education — for the sake of comparative advantage

hopefully connected to their local or regional economic infrastructure (banks, industry, marketing etc.) — leaving other fields to other institutions of higher learning. A moderate form of competition for customers will ensue. Specialization, marketing, and quality control will gain momentum without transforming universities into mock-companies the sole target of which is to increase shareholder-value.

- In contrast to other providers of continuing education, universities will not, however, just cater for educational demands voiced by companies or individuals. It is the privilege of universities to go beyond that. And it is their social responsibility to generate within their programs of continuing education new demands and new understanding.
- This implies that teaching in continuing education and as a consequence in all university education has to be closely tied to the latest research findings. To impart "future knowledge" instead of standard knowledge as the primary task of universities would certainly not work without research. In constantly renewing teaching in the light of their research findings in order to provide really up-to-date continuing education, universities will get another chance to live up to their own and society's expectations.

If consecutive schooling, training, and employment are no longer viable, and if companies are increasingly reluctant to invest in their own manpower through on-the-job-training, universities may take over — but on their own conditions, appropriately financed by those companies, and in accordance with the universities' public educational mission. In addition, special attention ought to be given to the emerging educational demands of free-lancers who enlist in programs of continuing education providing them with both technical updates and attractive broad socio-economic and political refresher courses. Their economic survival will hinge on the quality of this education!

All this may sound quite revolutionary. In reality, it isn't. As with so many other revolutions, it contains a good deal of common sense and traditional wisdom. As a matter of fact, a closer look at some of the consequences of re-structuring university education reveals that we need not re-invent the wheel but just find new answers to old questions - questions that have accompanied university education since its very beginnings. Today's questions and problems are, indeed, the questions and problems of the past; they differ only in their degree of complexity. Then, university reformers had to face less complex situations, it is true. However, their means of problem-solving were not too elaborate either.

Today, the political, social, and economic framework is by far more complex, but so are the facilities to cope with it.

Ever since its beginnings, universities were supposed to bridge quite a number of gaps. It may suffice to mention a few:

- theory vs. practice;
- research vs. teaching;
- specialized high-level training for jobs vs. general scientific education;
- catering for local or regional demands vs. international networking;
- elite education vs. mass education;
- public interest vs. private interest.

It is exactly within this context of more or less conflicting targets and tasks that universities ought to approach the concept of continuing education. It is within this context that they can boast a superior problem-awareness and an enormous experience. Viewing university education as continuing education may provide new answers to these structural questions and may help in spreading new enthusiasm and new commitments in the academic world. This will be much more, indeed, than just trying to respond to certain demands of labor markets or to generate some additional income for institutions of higher learning. If properly tackled continuing education can become a kind of Archimedean point from where the traditional concept and practice of tertiary education as a whole, for the sake of leeway for the future, may be unhinged and encrusted institutional structures toppled.

I have no illusions about the effort required to put this into practice. It is a formidable task, indeed, and I am sure re-defining university studies from the point of view of continuing education will not be achieved if it is not perceived and accepted as a common effort of all the principal agents of change:

- university managements, who dare to declare continuing education to be the pivot of all university education;
- professors, who commit themselves to this revolution;
- students, who readily invest in their professional futures and keep investing after graduation;
- companies, which support, promote and tolerate education that does not pay dividends the next day; and

- the State, which keeps its distance and yet, for the sake of public education, helps and facilitates.

Now, as far as the strategy for continuing education is concerned, there is no need to elaborate much on that. First, there is no one strategy, but possibly a few hundred. Second, generally speaking, strategies are what they ever were, easy and difficult at the same time. Dare to think new things, rely on an informed guess about future developments, and convince other people inside and outside the university to share with you this vision and determination to realize some of it. How you do it, depends on...you name it. Pat solutions are not to be expected. Strategies for continuing education that apply to any place and any time are, as it were, a contradiction in terms. Strategies themselves are bound to evolve constantly, have to adapt to specific conditions, and are subject to constant revision. In reality, they are themselves part of continuing education.

Financial Management and Planning: or How to Implement Changes More Smoothly[1]

Luc Weber
University of Geneva

1. Introduction

The rapidly changing environment is directly challenging the universities in ways they have never experienced in their long history. Universities are challenged in all aspects of their activity: the nature of their students, the way they deliver knowledge and do research, the way they interact with the civil society, business, the State and other universities and the manner in which they manage their main asset, their human resources. In order to maintain, or better, to improve the leading position they have occupied in the development and dissemination of knowledge, as well as to secure their role as main guarantor of cultural heritage and of societal values, universities have to adapt more rapidly to their changing environment. However, it appears that their traditional organizational structure and system of governance restrain them from adapting rapidly enough.

After a brief introduction on the consequences of globalization and of the information technology revolution for the universities (2), this contribution develops some general considerations about university governance (3) and then focuses principally on the role planning, budgeting, as well as financial tools, can play to overcome the resistance to change on the part of the university community, essentially the faculty (4)[2]. It should be considered as a somewhat provocative

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[1] I am particularly grateful to Mrs. Mary O'Mahony, Deputy General Secretary of the Association of European Universities in Geneva, for the professional and rigorous editing of this paper.

[2] I am using the term ⟨faculty⟩ according to its American meaning, that is the teaching staff.

essay to stimulate more thoughts on some aspects of the most complex, but so crucial, subject of university governance.

2. The Rapidly Changing University Environment[3]

Globalization and the information technology revolution are changing the world at an increasingly rapid pace. Firms have to adapt to survive and governments are making great efforts to adapt as well.

Universities are, on the contrary, changing slowly. Most of them do not realize that they are losing their regional monopoly: students are more mobile, good education, thanks to new media and the supply of education as well as the production of new knowledge can increasingly be offered by private-for-profit organizations.

Moreover, in many countries, universities are hard pressed to deliver more at lower cost: their financial sponsors — the State or private sponsors - want them not only to be accountable, but also to serve more directly their immediate needs. In other words, universities are expected to be more *responsive* to short-term needs of the private economy, the State and their main stakeholder, the students. This influence is partly positive: universities should not pretend any more that they are the only institutions which possess knowledge and supply only what they like to do; obviously, they have to pay more careful attention to the aspirations and needs of their students and of the country. However, universities have to assume a crucial *responsibility* towards society. They are, with the established churches, the only human institutions able to preserve and transmit the cultural heritage of a society and have the professional competences and appropriate status to analyze societal problems independently and scientifically. Business leaders and politicians should be brought to understand that a *responsible* university is also responsive in the long run[4].

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[3] See in particular Hirsch, W. Z. and Weber, L., *Challenges Facing Higher Education at the Millennium*, American Council on Education/Oryx Press, Phoenix, 1999, in particular chap. 4 to 6

[4] On the topic of Responsiveness, Responsibility and Accountability, see in particular Weber, L., Grin, F. and Harayama, Y., *Responsiveness, Responsibility and Accountability in University governance: An Analysis of the Swiss Academic System*, Report to the Federal Office of Education and Science in Bern in the framework of the Six-Nation Education Research Project, (forthcoming)

3. More Effective University Governance

3.1. Traditional University Governance is Inadequate

The great majority of universities has always been governed according to the so-called system of *shared governance*. This means that decisions are made collectively, mainly between faculty[5], directors, deans and presidents[6].

Shared governance appears at first to be an ideal system of decision making, as appealing as extensive democracy. However, the system has important shortcomings[7]:

- It is heavy and slow, as each decision has to pass through multiple bodies or committees and can easily be stopped at nearly any level,
- It has a strong bias in favor of the conservation of the past and makes the realization of new innovative projects difficult or too slow.

Consequently, even if shared governance has apparently served universities well for centuries, this decision making system appears to be less and less adequate for the new environment, which requires decisions which are future-orientated, sometimes introducing an element of discontinuity, requiring acts of authority.

3.2. General Strategy to Make University Governance More Effective

The ideal system of university governance is particularly difficult to conceive. The reason is that the main asset of a university, that is its human capital (faculty, researchers and students), belongs, as in no other institution, to the bottom of the hierarchical pyramid, not to the top. Therefore, the centralization of most of the decision power on the presidency, that is the President, its team and committees, would not allow either for an optimal use of the human capital, because it would miss most of the knowledge and capability for initiative of the faculty, researchers and students.

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[5] See footnote 2

[6] I am using the generic term ⟨President⟩ to designate the academic leader of the institution, who is generally the "Rector" in continental Europe and the "Vice-Chancellor" in the UK

[7] See in particular Tsichritzis, D., Research and Education: New Roles, New Instruments, Chap. 10 (pp. 99-110) in Hirsch, W. Z. and Weber, L., *op.cit*

In order to conceive an adequate organizational structure and repartition of competences between the different bodies, one can draw on the economic theory of federalism[8], as well as on public and private management theories[9].

The basic principle is that decisions should be made at the lowest level possible[10]. However, the search for the optimal organization should take into account three additional considerations:

- Decisions made at a low level often also have consequences (positive or negative) at a higher level[11]; it is therefore suboptimal to make these decisions exclusively at the low level, as the chance is high that, in so doing, the external consequences will be neglected.
- Decision making at a high level allows in an increasing manner exploitation of economies of scale, which becomes a necessity in a time of increasingly scarce resources (consider for example the creation of digital libraries),
- The more a community is in favor of an equal treatment of equals, the more rules have to be set up at a high level, which implies also more bureaucracy and rigidity.

These principles allow us to clarify the role which should be assigned to each potential decision maker. If we restrict ourselves in this contribution to the key players of university governance, that is faculty and presidency, we can infer from it the following conclusions. Faculty should keep a very large autonomy with regard to their teaching and research responsibilities, be invited to make reports about the development of their discipline and to propose new projects; however, they should not have a final decision power concerning the fixing of strategic – that is long term - priorities or about the scientific profile of a new professor (which is by the way also a very long term decision). As their collective behavior leads most of the time just to maintaining the present structures or programs, this is a necessary condition to allow the institution to adapt to its changing environment. Strategic decisions should be made by the leadership of the

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[8] See for example Rosen, H. S., *Public Finance*, 5th ed. Irwin, Mc-Graw-Hill, 1999, pp. 471-484

[9] I am developing this argument in a contribution prepared for the Glion Colloquium II at Del Mar, January 5-9, 2000, "Critical University Decisions and their Appropriate Makers: Some Lessons from the Economic Theory of Federalism", publication forthcoming

[10] It is what economists call the "subsidiarity principle"

[11] It is what economists call ⟨externalities⟩

institution, in collaboration with the deans and the initiators of new projects; in other words, the decision process should be more centralized, but take into account the professional input of the base.

4. Strategic Planning and Budgeting as Management Tools

Financial management, essentially *strategic planning and budgeting*, should play a key role in a modernly governed university. In a university where the presidency has more decision power than in a traditional system of shared governance, the main difficulty for the presidency is to enforce its decisions. The solution is to find ways to reduce the natural resistance or even opposition of faculty and of other stakeholders.

As we know too well, faculty tend to be independent, self-centered and, worse, refractory to change. Therefore, it is very difficult to get their acceptance, all the more their collaboration, by imposing a solution on them. Such an approach provokes most of the time, a reaction of opposition, encouraging their resistance, decreasing their motivation for their university activity and/or pushing them to work essentially on outside projects.

One of the main challenges of governance is to find the right means or tools to secure the effective participation of the people concerned by a policy change and to encourage them spontaneously to take initiatives in line with the general policy.

Since the market is recognized to be the most efficient, although not perfect, means of allocating resources, some financial management tools create "market-like functions" able to reduce the resistance to change.

4.1. Strategic Planning

Planning is a tool which contributes to looking into the future and to getting a better grip on it. It is useful to distinguish between the elaboration of a *four or five years plan*, which is essentially a means to extend the time frame of the annual budget and consequently largely to extrapolate past tendencies, and the elaboration of a *strategic plan over an 8-10 years period*, which is a powerful means to look into and to prepare for the future.[12,13]

In a university, the elaboration of a strategic plan should promote the following:

- Make the whole community aware of the changing environment as well as of their responsibilities and explore possible future scenarios,
- Encourage a serious analysis of the strengths and weaknesses of the institution and its subdivisions and make an inventory of the proposed projects and solutions to improve its standards,
- Help to make strategic decisions, in particular to decide about departments and/or creating or closing programmes, to set up broad priorities and posteriorities and to improve the management of human resources.

The elaboration of a strategic plan should be a collective process, both top-down and bottom-up; it should be iterative, in order to optimize the solutions implemented. The presidency should lead the whole process with the support of ad hoc committees representing the different stakeholders and disciplines. However, the final arbitrage should be the sole responsibility of the president and his or her team. If the University has an external board, it should be called upon to approve the plan; this would greatly support its enforcement by the presidency.

One should always keep in mind that it is extremely difficult to forecast the future correctly. Therefore, one has to be aware that the plan will have to be adapted at short notice in order to take unexpected changes into account. This is why a strategic plan should be prepared every 4-5 years, even if its range extends over a longer period. Finally, it is not necessary to introduce too many financial details. Rough tendencies and scenarios will do. However, the implementation of the strategic plan requires good programming for each project and their integration into the budget.

4.2. Budgeting and Financial Tools: Expenditures Side

The objective on the expenditure side is to promote more flexibility in using

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[12] See for ex. Mintzberg, H., *The Rise and Fall of Strategic Planning*, Prentice Hall, Hemel Hempstead, 1994

[13] See also Tabatoni, P. and Barblan, A., *Principle and Practice of Strategic Management in Universities*, CRE-GUIDE Nr 2, Association of European Universities, Geneva, 1999

financial incentives and disincentives. As we can think of many different sorts of measures, university managers have to be imaginative and find those best adapted for their institution.

It is also very important not to forget to eliminate all those rules or daily administrative measures which create wrong incentives. Examples of bad rules are numerous: for example, the necessity for faculty to transfer to the university a high proportion of the grants they have been able to secure outside to fund their research, or the tendency to decrease the university contribution to a priority project if the latter is well funded externally.

Different measures can help to promote flexibility.

- The regular increase or decrease of the budget allocated to a subdivision or a program can be scheduled over a 4-5 year period and enforced, year after year, through the annual budget. These medium term trends should be made explicit by the university authorities according to the priorities (posteriorities) they have decided upon in their strategic plan. Subdivisions or program directors should know far in advance that their share of the university budget will be growing, be stable or be diminishing, whatever the tendency of the general university budget.
- Departments or Faculties[14] (Schools) should be encouraged to reallocate resources, that is to reduce one activity in order to create or finance more generously another one. One interesting way to implement such a policy is for the university authorities to encourage them to save money by allowing for a special contribution of 10 to 50% of the amount saved. However, such a measure is difficult to implement, as it is not easy to know if an activity has really been suppressed and if another activity is new. Deans of Faculties should be invited to participate in the implementation of such a policy.
- In order to implement the above-mentioned measures and to be able to co-finance at short notice a new unplanned, but important, project, the presidency should dispense the necessary financial means. In other word, an important component, let us say 2-5% of the total running budget of the university, should be at their disposal. Moreover, the budget allocations drawn from this special reserve should not be committed forever, but only for a limited period, let us say 5 years. Afterwards, the project should be

[14] According to the European usage of the word

evaluated and, if considered good, be financed by ordinary means or external credits.

- Finally, the systematic search for external funding, that is for donations, subsidies from research funding organizations or contractual money, should be encouraged, and even rewarded. The university could for example increase the amount received by adding its own participation (between 10 and 50%).

4.3. Financial Measures: Revenue Side

The revenue side of the budget should be built on four main blocks[15]:

- The State (whatever level of the community or as a joint effort of the different levels) should provide the necessary financial means to cover the cost of the missions it has given to its universities. This means that the State contribution should take into account at least the number (and the cost) of students[16] and the research infrastructure, which is a necessary condition not only to perform good research, but also to receive research grants both from research funding organizations and on a contractual basis. These basic financing rules can be established by law or fixed every 4-5 years in a performance or output contract between the State and the universities.
- European students should cover a higher proportion of the average cost of their education. This would have a positive impact on the allocation of resources and even on the income distribution, provided the low-income group can get the necessary financial support. However, universities are often afraid of proposing higher students' fees as they fear that the State would use this opportunity to reduce its own effort simultaneously.
- As mentioned above, increased funding can be found in searching for financial support outside of the university, in research funding organizations and in the private economy. Donations are obviously the most tempting solution; however, it is difficult to convince people to give part of their wealth or revenue to a pubic institution (medical schools are

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[15] Regarding the European situation, see for ex.: Balling, M, Thys-Clement, F. and Weber, L: *Five Ways to Improve University Funding*, CRE-DOC Nr 2, Association of European Universities, Geneva, 1997

[16] This is particularly true in countries like Switzerland, where universities have, by law, to enroll all those students who have finished high school.

an exception). The most promising source of additional funds are contracts to do specific research or to set up a specific education program for firms and even the State, or renting facilities (as long as they belong to the university).

- Last but not least, one badly exploited source of income is the effort, which should be permanent, to decrease the unit cost of teaching and research thanks to better organization, the search for economies of scale in making joint efforts with other universities or with firms, and in using more systematically the new information technologies.

5. Conclusions

This essay on the role of strategic planning and budgeting as management tools postulates that university governance should be seriously improved to permit universities to adapt to their rapidly changing environment. On the basis of the theories of federalism and of management, I suggest that university governance can still be grounded in participation by all potential decision makers; but that strategic decisions should be the privilege of the president and his or her team. Then, I note that it is easier to implement important strategic decisions using financial tools rather than with authoritarian rule enforcement. In this respect, I believe that strategic planning is the best means to prepare strategic decisions because it allows one to involve the whole university community. Finally, I have discussed different types of budgetary tools, which can be used to implement change.

I am aware that the above suggestions are too superficial to be applied without further thought in any individual university and, also, that they are quite controversial. Nevertheless, I believe strongly that the use of financial tools to promote change has not been exploited enough in the past and that they have great potential. They deserve, therefore, further thought.

The Strategic Planning Process at the University of Hawaii

Kenneth P. Mortimer
University of Hawaii

When I arrived at the University of Hawaii in 1993, the university's Strategic Plan had been in place since 1991. By 1996, a great deal had changed.

- The University system enrolled more students.
- The University's financing had been fundamentally changed by the adoption of legislation that allowed us to retain student tuition payments in our own account, instead of giving them to state government's overall pool for funding all state agencies.
- A slowed state economy had decreased the overall state budget and increased competition for funds among state agencies.
- We also faced increasing uncertainty about federal government support for the University, and growing demands for accountability.

On the positive side, the ten-campus University of Hawaii was functioning increasingly as a coordinated system by 1996. We felt a new Strategic Plan ought to reflect that reality, while it addressed the generally growing demands on our generally shrinking resources.

Developing a new plan also offered an opportunity for us to address some things that had not changed. It was a chance to reinforce our commitment to improving quality, to renew our commitment to addressing student needs and responding to changing population patterns, and to rededicate our attention to the educational and training needs of our state.

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It Takes Time

That is a big agenda, and we knew this work would not be accomplished overnight. We wanted the process of developing the new plan to be open and inclusive. We could allow the greatest amount of time for review, comment and revisions if we could get a draft together quickly, so that is what we did. Drawing on recent priority-setting and planning efforts of our individual campuses, as well as the existing Strategic Plan and a new draft Mission Statement, we were able to deliver a first draft to our key constituencies. The first draft of both the Mission Statement and the Strategic Plan went to our Board of Regents; to the deans, provosts, faculty senates, student government and collective bargaining units of our campuses; and to state legislators and business leaders.

Their inputs led us to some very specific kinds of revision.

- We updated the Mission Statement to reflect better the particular strengths and distinctions of our university, especially in such areas as ethic diversity and Asian/Pacific expertise.
- We strengthened language relating to student learning, service to the state, the role of research and the international role of the University.
- We reduced the management orientation and administrative preoccupations of the Strategic Plan.

A revised draft was distributed to an even larger population for comment. We sought comment on this more-finished version from more than 450 agencies and organizations outside the University. These included community and ethnic organizations, chambers of commerce and other civic-minded groups with a strong interest in what happens at Hawaii's public university campuses.

Make It Easy

To encourage the largest possible response in this second round of review, we prepared a short summary version of the new Mission Statement and Strategic Plan. Our idea was to allow as many people as possible to participate without having to commit hours and hours of their time to read a complex and somewhat lengthy document. We also made it easy for those who wanted to get the longer version, by mail, at public libraries, at various campus locations, or on the World Wide Web.

In addition to inviting comments by mail, fax, e-mail and telephone, we held two public forums, where students and members of the public could present their views in person. One of these used the Hawaii Interactive Television System, so people from virtually anywhere in our multi-island state could participate.

This second round of comment led to further revisions, including several that clarified or strengthened what was already the intent of the draft — such things as the University's support for the visitor industry, the importance of libraries and information, education access, and the critical role of research, undergraduate education and professional development for faculty and staff. The importance of intercampus cooperation and international collaboration were also stressed, as was the link between the diversity of our population and the overall goals of our University. Throughout, we emphasized that all programs must pursue continual quality improvement.

This second round of comment was important for another reason. It gave our various constituencies a sense of participation and ownership in what they all view in some ways as their own university. It was very important, we believed — and we still believe — for all of them to feel their voices had been heard, whether or not every recommendation they made was adopted. It was obvious to all who participated in this process that different interest groups were promoting different approaches, and some of these were mutually exclusive. Not everyone who offered a suggestion could be accommodated, but the listening process gave them a chance to say what they thought and to hear what others thought. Ultimately, it was a chance to understand better why the final version of the plan took the form that it did.

A Complex Plan

The University of Hawaii is a fairly complex system, with differentiated missions for its component parts. These are spelled out in the new Strategic Plan, and — as you might expect — that makes it a fairly complex and multi-layered document. The overall outcomes we hoped to achieve, however, can be stated rather simply:

- To tell a common story about our shared vision and priorities.
- To improve communication among ourselves and with our many publics.

- To have a basis for actions that advance our priorities.
- To establish a solid foundation for improved private, state and federal support.

Measuring Progress

One of our concerns as we sought to implement the final version was creating ways to make sure that we stay on course in meeting the specific objectives laid out in the plan. For this, we asked our Office of Planning and Policy to develop a set of "benchmarks" — specific performance indicators that could be measured at regular intervals to answer that most basic question: How Are We Doing?

Obviously, that is something our legislators want to know before they appropriate funds for us. It is something our private donors want to know, something grant-making organizations want to know. Our prospective students and their parents want to know. Even if none of them cared, we in the University administration need to know these answers in order to project future actions to complement or adjust the trend lines they reveal.

The periodic benchmark reports allow us to compare our performance to targets that we selected in accordance with the goals outlined in the Strategic Plan. They allow us to compare our performance in some areas with the performance of other U.S. institutions that are comparable to the University of Hawaii. They allow us to compare our performance in other areas with national statistics. We can compare our performance in the school year just ended with an earlier period. These reports tell us very plainly if we are on-target, improving, or slipping away from where we want to be.

Our Report Card

Equally important, they give us hard data — not opinions and impressions — so that we can report to our constituencies and tell them exactly how we are doing in meeting the goals they helped us choose during that Strategic Planning process three years ago. In that sense, the benchmark reports are an ongoing part of the process.

The reports help us remind our legislators, our faculty, students, alumni,

neighbors, and friends that these are the goals we chose together. The reports help us show that we are striving to meet those goals. Equally important, they allow us to remind our various publics that they, too, can be part of that work, just as they were part of the effort that defined the goals.

Singapore's Experience in Higher Education

Linda Low
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1. Introduction

Contemporary Singapore dates from 1965 when it was separated from Malaysia as a sovereign nation. There were critical implications of this independent status in regaining full control in foreign policy, defence and security policy as well in revenue matters. On the other hand, its import-substituting industrialisation programme had to be switched to export orientation with the promise of a common market with Malaysia aborted. As an open city state with natural resources limited, except those of its people, with its strategic location being eroded with communication and telecommunication technology, Singapore has few options. Its traditional entrepot has raised a merchant breed of entrepreneurs and a white collar class of workers serving the civil service and other commercial and service sectors. A state-led industrialisation riding on the backs of direct foreign investment (DFI) and multinational corporations (MNCs) was the most expedient means to ensure economic survival.

In turn, this export-oriented industrialisation strategy needed a strict disciplined regime in industrial relations and overall competency and productivity in the workforce and infrastructure. Accordingly, the government invested heavily in human resource development and infrastructure right from the start. Appropriate amendments to the Employment Act and Industrial Relations Act were legislated. At the same time, technical education at the secondary school level was introduced together with engineering and technical subjects as well as management and accountancy subjects in polytechnics and the then sole

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university. These changes set the stage for the economic take-off, expedited by favourable external regional and global conditions in trade, capital flows and others.

Singapore has surpassed many economies in the Organisation for Economic Cooperation and Development (OECD) in per capita gross domestic product (GDP) terms, second only to the US in purchasing power parity (PPP) terms in 1998 at US$28,565 and US$31,470 respectively (Japan, US$22,720). We turn to a few salient features of its higher education policy to support this industrial restructuring and universities' contributions to society.

2. University Output and Contribution

One very clear trend in higher education in Singapore is that it is almost exclusively oriented to economic growth and development. It is elitist as only some 20% of the cohort reach university level, 40% if the polytechnics are included. As will be discussed in the next section on policy, students are under rather guided choices in faculty and subjects they are able to pursue in the two local universities,[1] as much by availability of places and the pursuit of studies for career development. From an economic point of view, this pragmatic way of selecting university education to maximise economic returns is generally efficient and competitive, even if it generates a lot of pressure in university life.

With continued economic growth, matching the input and output from the universities as far as possible to demand from the industries and economy, implies progressively higher rates of university growth. In 1998, 9,159 full-time students were admitted to the universities (4,429 males, 4,730 females) (Singapore, Department of Statistics, Yearbook of Statistics 1998). In terms of enrolment, the figure for the same year was 31,991 (16,230 males, 15,761 females). Graduates from the universities in 1998 totalled 9,331 (4,455 males, 4,876 females. Engineering students dominate enrolment in first degree courses (39.2% in 1998) especially for male students (58.4%); while the majority of female students enrol in humanities and social sciences (27.0%).

For enrolment in higher degree courses, the bulk (46.1%) is in engineering

[1] These are National University of Singapore (NUS) and Nanyang Technological University (NTU). There are also an Open University run by the Singapore Institute of Management (SIM) as a private university and another private Singapore Management University (SMU) opening in 2000 together with INSEAD and Chicago School of Business also setting up campuses here by 2000.

science, reflecting the encouragement given to research and development as Singapore pursues a high technology strategy. There are many research institutes set up in the universities and in the nearby Science Park.

Management education has taken a distinct growth path with over 2000 MNCs operating in Singapore, creating both the demand and a rich training ground for managers in and around the region. Both universities run many full-time and part-time executive programmes, some in strategic collaboration with renowned American universities such as the Massachusetts Institute of Technology (MIT), Harvard University, Stanford University and the Wharton School. The numbers of mature students admitted to the Open University in 1998 reached 1144 with a majority (83%) in science and most of them males (68.7%).

Government recurrent expenditure on subsidy per university student in 1998 was S$16462 with highest subsidy for medical and laboratory based courses. Education at all levels accounted for some 6% of GDP, as much as is spent on defence and twice that on health. There is some catching up for Singapore as university graduates form only some 12% of its workforce, 20% if polytechnic graduates are included, figures which are below OECD standards.

3. Higher Education Policies and Rationale

With such a definitive emphasis on university education geared toward economic growth and industry need, it is not surprising that both NUS and NTU are statutory boards and even the two private universities are not wholly autonomous. First and foremost a Committee on Professional and Technical Education (CPTE) set up since 1979 under the Ministry of Trade and Industry (MTI) undertakes manpower planning and makes intake recommendations for universities and polytechnics. A demand-approach starts with projecting economic growth rates down to sectoral levels, taking into consideration productivity growth as well. Mindful of fine-tuning recommended intakes by faculty and course, the technique is reflective of how much planning and control is exerted in tertiary education.

A range of structural features ensures that industry needs, useful input and feedback on relevancy and applicability of curricula are reflected to the CPTE. First, the CPTE is a multi-ministry, multi-agency committee involving all the bodies and organisations in the area of human resources and manpower in the public sector. Consultation with the private sector is effected through agencies such as the Economic Development Board and the Singapore Productivity and

Standards Board (PSB). Second, international advisory panels from universities that Singapore uses as benchmarks, are set up by local universities to ensure global competitiveness and standards. Finally, at the national level, tracer studies of graduates and employers' surveys provide rich lodes of information from both graduates and employers on curricula, effectiveness of teaching and other aspects.

Granted that Singapore adopts a very paternalistic approach to manpower and educational planning, these are symptomatic of a small country which cannot afford a high attrition of its scarce human resources at all levels of education. Neither can it afford not to supply the type of graduates demanded by industry to pursue a high technology, knowledge-based economy. In the final analysis, the manpower handle or level is a critical one for policy, be it in higher education or wage policy to ensure international competitiveness. As much as this is wholly economically driven, the hard logic of survival predominates, leaving not much space for education for knowledge or aesthetic reasons.

Singapore is, however, mindful of the softer, cultural aspects of education as well as extra curricular virtues. Recent policy changes to re-weight admission criteria to encourage extra-curricular activities and to reduce the quantities of knowledge to be taught, as opposed to instilling and stimulating more creativity and innovativeness, are steps in the right direction. This is in line with the current drive to encourage technology entrepreneurs (technopreneurs), which involves a cultural and mindset change as well as legal and regulatory modifications.

Singapore's universities are aiming to be first class institutions, like its MNCs, to bring out the best in its people and to create an environment for higher education that serves economic and social ideals. Despite expansion and upgrading in local universities, there was still a projected shortfall of some 7,000 graduates in 1997; Singapore needs some 17,000 graduates a year with the local universities enrolling only some 9,000 students. Even with more universities and foreign campuses set up, the supply of students is still constrained by birth rates and the need to maintain standards of admission. Some of the shortfall is met by local students, studying overseas, but more has to come from selective immigration and a policy for attracting foreign talents.

When overseas education was expensive and less accessible due to academic high standards and sheer exclusivity, only government scholarships, principally through the Public Service Commission (PSC), provided the avenue to study overseas. On the demand side, tertiary education remains prestigious and, with growing affordability and greater opportunities it is highly sought. Moreover, growing per capita income and smaller family sizes are making higher education more attainable. Other supply factors include foreign universities, deprived of

state funding as their governments are mired by fiscal deficits, which now actively recruit fee-paying students, in contrast to the more altruistic scholarships as previously offered as development assistance. More private scholarships are offered by other statutory boards, notably, the EDB, which is second to the PSC in the number of scholarships provided annually; and even larger corporations are now giving scholarships.

Based on data from the 1990 Population Census, there were some 11,000 Singaporean undergraduates overseas mainly in the US, UK and Australia. More Singaporean students go to the US for engineering than to Australia; but while Australian universities compare favourably in quality to those in the northern hemisphere, the comparison is not so favourable at the postgraduate level, especially vis-a-vis North America. Neither do Australian universities have an overseas marketing network like the British Council does for tertiary educational services. But they are focused in marketing strategies and proximity is another huge draw attracting more Singaporean students to Australia than to the US (traditionally the most favoured spot after it wrested the top spot from UK). The CPTE has now accepted the philosophy that private students, educated overseas, augment the local pool like icing on a cake.

Modern information and communication technology has brought another form of delivery of higher education in twinning and distance learning. Foreign universities have either set up campuses in countries with a demand for tertiary education; and either split courses between these local and home campuses or run the entire programme through their own faculty augmented by local lecturers and tutors. In particular, the SIM has run such courses with several British, American and Australian universities[2] to offer another alternative to marginal "A" level holders who cannot afford the full sum for studying abroad including accommodation and living expenses.

Many other private institutes and non-profit organisations including the Singapore Institute of Human Resource Management (SIHRM), Singapore National Employers Federation (SNEF) and PSB have set up similar arrangements with other universities. Other entrepreneurial education service providers are offering pre- and post-vocational courses, diploma, undergraduate and graduate programmes in conjunction with foreign universities. This is clearly a growing and emerging industry in a very education-oriented society like Singapore. Strangely,

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[2] These include Brunel University of West London, London University, University of Strathclyde, Henley Management College, Royal Melbourne Institute of Technology, Monash University, University of Sydney and the State University of New Jersey.

neither the Ministry of Education nor other ministries keep track of such undergraduate programmes so that full information and statistics are again missing.

The policy of attracting foreign talent is not all that new. Singapore has been an immigrant society since 1819. The only new aspect is that now the focus is on talent, however, defined, rather than foreign workers, which previously included those of lower skills. However, while augmenting local professional and skilled talents is crucial for global competition and to sustain the world-class business and manufacturing hub that Singapore is, there are sensitive socio-political implications of dividing the market between the global cosmopolitans and the Singaporeans. Liberalisation of the banking and finance sector is a good case in point: it was instituted as much to remove the protection given to local family run banks in the last three decades as to bring in foreign institutions to strengthen Singapore as a regional and international financial centre. It became not just fashionable but effective when foreign chief executive officers (CEOs) were recruited in local banks as they turned performances around even before the end of the Asian financial crisis.

Similarly, foreign lawyers and doctors were admitted after fulfilling professional practising standards when admission to these two faculties in the universities were capped in the belief that supply induced demand was perverse. Too many doctors would be a waste of resources as perfect competition is not likely to be the operating principle in a market with asymmetric information. Similarly, too many lawyers may induce a litigious society, so a capped intake of 150 per year to the universities was deemed desirable. That these trends are themselves debatable, is another issue, separate from the policy for foreign talent which poses a conflict of double standards. What constitutes talent is hard to quantify and measure and what kind and degree of substitution exists between local and foreign talent, are difficult questions. There is a legitimate fear of older Singaporeans losing jobs to younger and more dynamic foreign talents as much as this is in and of itself, a desirable policy. While an immigrant society is the explanatory factor behind the US economy, though not the Japanese, whether a city-state sized Singapore can smooth over the political economy implications is itself a challenge.

4. Conclusion and Prospects

That higher education in Singapore makes a difference to its economy and

society is irrefutable. A human resource development-led strategy remains an all-important all-time comparative and competitive advantage. For a knowledge-based economy, workers have to be creative and innovative, motivated and oriented to understanding problems and solving them. Education does not necessarily teach Singaporeans to be more agile and nimble, working "smart" and not just productively. The challenge to university education is to instil and augment this element of self-thinking, self-motivation and self-learning and yet work and live as a cohesive team for national survival and solidarity.

University education is no longer the type of luxury good that only the rich and genetic legacies can provide. Because Singapore is so hungry for talent to be maximised from its 3 million people, no holds are barred when it comes to getting a university education: provided the ability is demonstrated, scholarships, bursaries and loans are in plentiful supply. Parents are willing to finance their children, and even finance their own study to advance their careers. Unlike foreign universities fighting adverse depopulation trends and reduced budgets from fiscal processes mired by deficits, demand is not a problem in Singapore; and neither is supply of resources from a government which has chronic budget surpluses and a penchant to spend on human resource development. In fact, the problem seems to be filling the projected shortfalls in university graduates.

Reform Measures for Universities in the 21st Century

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A. Historical Perspective

Development of Higher Education in Japan

1. Japan introduced a modern higher education system following the Meiji restoration in 1868. The movement was led by the government, through establishment of the "Imperial Universities". The first private universities were established in the early twentieth century; subsequently, they have played a major role in expanding provision of higher education.
2. From the outset, universities were expected to play an important role in industrial development in Japan.
3. After the war, universities were the leading force in industrialization of the economy and in developing a work force, appropriately skilled to meet the needs of industry.
4. In the late 1980's, the University Council was established as an advisory body to the Minister of Education. The University Council was given responsibility for advising on specific measures of reform of the universities so that they could contribute to the needs of a changing society in Japan. In October 1998, the Council issued a report entitled "*A Vision for the University in the Twenty-First Century*". The report noted that the coming era will require global co-operation, while reinforcing international competitiveness. Furthermore, the declining birth-rate will greatly affect both patterns of

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employment and the structure of industry; and an ageing population as well as rapid progress in technology will create social and technical needs for life-long learning. Advances in the sciences and in technology will develop even more rapidly; and interdisciplinary approaches to new problems will be needed. As a result, higher education will have to undergo a fundamental restructuring.

B. Changing Higher Education in Japan

1. Undergraduate Education

(a) Demographic decline in the number of school-leavers will continue, at least for the next decade, resulting in a drastic decrease in the traditional student-age population.

(b) As a result, it will be increasingly important to secure quality of education. Higher education must nurture students so that they will be able to respond independently to change and bring a broad perspective to cope flexibly with a diverse range of tasks. A high level of information processing skills will need to be part of their abilities. An increased understanding of different cultures should be developed as part of their basic educational provision. From the whole of university life, graduates will be expected to have acquired a strong sense of ethics and self-control.

(c) Close relationships between universities and society should be encouraged. Internships and other opportunities to interact with the community need to be developed: pilot programmes are already underway in some universities.

2. Graduate Education

(a) The number of students enrolled in graduate schools has been increasing, although the gap between undergraduate and graduate student enrolments is still great.

(b) Graduate education should play a major role in both the promotion of academic research and in highly specialized skill-training for professionals. It should also play an important role in advancing continuing education and in social development.

(c) Traditionally, graduate schools have depended on undergraduate departments for faculty, facilities and resources. However, a recent trend has seen graduate schools being established separately from and independent of undergraduate departments.

(d) In order to improve teaching and research quality, better management systems must be established. In master's degree courses, students' knowledge and abilities in their disciplines acquired through their undergraduate courses should be extended and deepened. At doctoral level, the focus should be on developing creative researchers, capable of contributing to international academic research.

(e) The University Council has proposed establishment of specialized graduate schools to nurture highly qualified professionals. The Ministry of Education has issued guidelines concerning the curriculum for such professional courses and the appropriate levels and qualifications of faculty able to teach such courses. The courses are expected to incorporate both empirical research experience and instruction from experienced members of the professions.

(f) The research function in graduate schools should actively promote joint research with, and technology transfer to, industry.

3. Continuing Education

(a) In the future, many people will be investing in continuing education in order to improve their professional skills. Universities must be prepared to cope with this demand.

(b) Scheduling of degree-oriented programmes should be more flexible. There should be evening courses and accelerated courses to accommodate the needs of working adults facing time constraints.

(c) In addition, non-degree oriented courses should be offered so that students are able to register on a course-by-course basis.

C. Management of Universities in the Future

1. Universities facing the future need to meet their challenges in ways that are more interdisciplinary and comprehensive. Additionally, they need to create and nurture a closer relationship with society at large. To be able to respond to these requirements, universities need to establish new systems of management.
2. In particular, it is important for universities to be — and to be seen to be — more accountable to society. The University Council has proposed the creation of a "University Administrative Council" at every national university, to provide a formal mechanism by which the university is able to

hear the views of the community. The law has already been revised to allow implementation of this proposal.

Promoting Financial Efficiency through Administrative Technology Applications

Stephen T. Golding
Morgan Stanley Dean Witter Investment Management

1. Introduction

The administrative environment of American higher education has gone through a considerable evolution over the last 50 years. The management changes that have taken place have had a profound impact on university operations and professional requirements. To keep pace with these changes, universities have been at the forefront in developing model business practices that were once thought to be the purview of the corporate sector.

Some would suggest that the changes now taking place in the U.S. have been a recent phenomenon. That institutional management was driven by the demand to be more accountable on the part of its various constituency groups: trustees, legislators, government agency, external donors, parents and faculty. The pressures from these groups took such forms as:

- CHANGE MANAGEMENT — Redesigning an institution's administrative culture
- PRICE CONTROLS — Keeping higher education accessible
- TECHNOLOGY INNOVATION — "Cost effective" replacement for unskilled labor
- FLEXIBLE WORK FORCE — Interchangeable parts based on institutional priorities
- MATRIX MANAGEMENT — Flexible, collaborative, entrepreneurial

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STOCKHOLDERS v. STAKEHOLDERS — Whose interests are being served, those inside the institution or those providing the resources

The reality is that higher education administrators in the U.S. have been in the vanguard of some of the most exciting changes that have taken place in U.S. capital markets and financial management over the second half of the 20th century. These changes have contributed directly to the ability of the university to underwrite the major investments that have been made during the past thirty years in research, educational facilities, student housing and program expansion. And despite what has been written about the escalating cost of U.S. higher education, these have actually restrained the increases in institutional costs

To underscore my basic premise, I want to cite three examples where U.S. higher education administrators accomplished major institutional transformation benefiting the institution and its community and laid the groundwork for the transformation taking place today.

Example 1: Asset Management — U.S. higher education institutions since the 1950's have been leaders in the development and application of sound investment policies. They have utilized their Finance faculty in developing investment theory and have hired investment officers to implement the concepts for the betterment of the institution. Today, endowment management is the investment model by which the risk/returns of all other institutional portfolios are measured.

Example 2: Debt Financing — Over the past thirty years U.S. universities have recognized that they are highly capital-intensive institutions with a need to access capital markets in order to support the investments required to keep them competitive. The goal is to access capital at a lower cost rather than using institutional assets. Due to the leveraging of external capital, these institutions develop financial guidelines and operating standards that permit external creditors to evaluate their financial management capabilities and policies.

Example 3: Application of Technology — University faculty have been leaders in the development and deployment of artificial intelligence applications and the infrastructure required to support it. This has led to the recruitment of leading industry professionals who can handle complex system implementation projects. Without this infrastructure, the business changes taking place today would not

have been possible because the expertise and infrastructure would not have been available to support them.

U.S. higher education administrators have used external professional resources extensively to assist them in these endeavors. These strategic relationships have evolved due to the complexity of the business issues and the need to access financial resources on an "as-required" basis. It has been this combination of internal and external expertise that has insured that the financial and program resources have been available when required.

2. Financing American Higher Education

In the U.S. today, there are 4,096 institutions of higher education with total expenditures of $190 billion. Of this, $80 billion comes from public funding.

Based on a National Association of College and University Business Officers study, 508 universities reported $178.3 billion in endowment assets. By assuming a 5% spending rule, this should generate approximately $8.9 billion of annual institutional operating revenues. While not all universities and colleges have adopted a 5% spending policy, by order of magnitude we can still see the importance of endowment income to funding U.S. higher education institutions operating budgets.

Management of an institutional endowment is synonymous with stewardship and a critical element in institutional revenue growth. The generation of gift and investment income is an important institutional financial measure, along with return on (and growth of) net assets that external financial analysts use in assessing a university's credit-worthiness. As seen in the following charts, over the last ten years, university endowments have experienced significant growth in real endowment, which has significantly strengthened university balance sheets and underwritten the programmed investments of the late 80's and 90's.

Endowment Gift Flow Rates (1998)

364 Institutions, Total Gifts of $3.4 Billion

# Institutions	%Tot.Inst	Endowment Size	% Total Gifts	Average $ Mill. Gifts	FY 1998 Inv.Perf	10-Year Inv.Perf
139	38%	$75 m or less	8%	2.029	17.7%	12.4%
132	36%	$75 m to $300 m	24%	6.318	18.1%	13.3%
78	21%	$300 m to $1 billion	41%	17,999	17.8%	13.8%
15	4%	$1 billion or more	27%	60.438	19.4%	14.4%

Source: NACUBO 1998 Endowment Study

Types of Endowment

	True[1] Endowment	1995[2]	Term Endowment	1995	Quasi-Endowment	1995	Funds Held In Trust By Others	1995
In Aggregate (Dollar-Weighted Mean) *Percentage of Total*	58.3%	63.7%	2.1%	2.6%	35.0%	31.7%	4.4%	2.1%
By Government Size (Dollar-Weighted *Percentage of Total*								
$75 Million and Under	63.5	64.3	1.9	0.8	31.5	33.7	3.0	1.2
Over $75 Million to $300 Million	59.6	68.1	0.8	1.2	36.2	29.0	3.4	1.8
Over $300 Million to $1 Billion	57.8	62.1	1.5	1.5	33.3	32.6	7.4	3.8
Over $1 Billion	57.9	63.6	3.3	3.4	36.3	31.7	2.6	1.3
By Type (Dollar-Weighted Mean) *Percentage of Total*								
Public	63.4	65.1	1.1	0.9	29.8	31.8	5.7	2.2
Private	56.4	63.2	2.5	3.1	37.2	31.7	3.9	2

Source:1998 NACUBO Endowment

[1]$133.3 billion aggregate assets controlled by 475 institutions: True Endowment 59% ($77.9b), Quasi-Endowment 35% ($46.6b), Term Endowment 2% ($2.8b), held in trust 4% ($5.9b)

[2]$88.5 billion aggregate assets controlled by 427 institutions: True Endowment 64% ($56.3b), Quasi-Endowment 32% ($28.1b), Term Endowment 7% ($2.3b), held in trust 2% ($1.8b)

Even with an incremental 47 additional institutions reporting, the reviewer should not lose sight of the fact that over a three-year period there has been a 50% increase, or a $44 billion growth, in net non-operating assets. What is also interesting is the distribution across revenue categories, which suggests that these institutions may have more financial flexibility than previously understood. This becomes an important fact when evaluating a universities ability to issue debt.

Today, American universities have approximately $196 billion in outstanding debt obligations. The use of debt, as we noted earlier, is a relatively recent phenomenon extending over the last twenty years. Increasing reliance on institutional debt has necessitated the development of financial and operating measurements by creditors for the purpose of tracking institutional financial performance. Higher education administrators in the U.S. have actively participated in creating these measures and use them every day in evaluating institutional resource decision-making.

Using the Moody Investor Services' Private College and University Financial and Operating Ratios (1), we can highlight the amount of management data that must be collected by university CFO's; and the level of oversight exerted by lenders to ensure the quality of their investments. What is of particular interest when looking at these ratios is the breadth of data on issues not directly related to institutional finances. For example:

Market Demand	Capital
Selectivity ratio (%)	**Unrestricted resources-to-debt (%)**
Measures student demand	Measures resources available to investors
Matriculation ratio (%)	**Expendable resources-to-debt (%)**
Measures student demand	Measures all resources available to investors
Net tuition per student ($)	**Total resources-to-debt (%)**
Measures actual revenues received	Includes endowment and revolving loans
Educational expenses per student ($)	**Actual debt service-to-operations (x)**
Cost to educate a student	Actual operating budget debt burden
Institutional tuition discount (%)	**Peak debt service-to-operations (x)**
Measures tuition covered by general revenues	Measures peak cost to operating budget
Total tuition discount (%)	**Age of plant (number of years)**
Measures tuition covered by all revenue sources	Crude measure of deferred maintenance indicator

Balance Sheet	Operating
Unrestricted resources-to-operations (%)	**Actual debt service coverage (x)**
Measures expendable unrestricted revenue reserves	Measures actual margin of protection to investors
Expendable resources-to-operations (%)	**Maximum debt service coverage (x)**
Measures all reserves protecting annual budget	Measures protection against peak debt service
Total resources per student ($)	**Operating Margin (%)**
Compares institutional resources/number of fte's expenditures	Measures ability to balance operating
	Gift and investment reliance (%)
	Measures expenses funded/gifts/endowm.income
	Return on net assets (%)
	Measures improvement in total resource base

(1) Chart taken from Moody's Investor Services May 1998 book *Split Outlook for Private Higher Education*

Given the level of investment by third party creditors and the commitment of institutional assets to global capital markets, monitoring financial performance has become a priority for institutional financial leaders. The level of sophistication that goes into assessing an institution's operating performance and financial health can be seen in the data and ratios that are used to measure performance. This kind of analysis could not take place without the institution's ability to generate the data on a real time basis and share it with the appropriate financial agencies.

Technology has enabled this level of management oversight, which has permitted these institutions to access, at competitive prices, external funds necessary to make the investments required to attract and retain students, faculty and staff. It has also been done in partnership with key financial services firms that have the resource and expertise required to assist university financial officers in making critical financial decisions. These financial services firms in many instances rely on MIS systems and technology designed specifically to support higher education financial management practices.

3. How Morgan Stanley Dean Witter Supports this Model

In its simplest form, Morgan Stanley Dean Witter is an enabler. It assists its

higher education clients access to capital markets. For universities seeking external funds, we identify and structure financial transactions with creditors willing to lend universities their excess funds. For universities looking to earn a return on their investment portfolios, we identify investment quality securities that will pay universities for the use of their funds commensurate with the risk they are taking.

The value that a financial services firm such as Morgan Stanley offers is in its knowledge of capital markets and the expertise it brings in evaluating the risks imbedded in a financial transaction. It is our expertise in structuring capital market financial transactions that directly supports university financial officers charged with meeting the capital and operating budgets of their institutions. It is our knowledge of global markets and their investment returns that have contributed to the level of endowment appreciation experienced over the past seventeen years. Morgan Stanley, as is the case with other financial services firms, provides this expertise to our university clients at a cost that universities could not achieve if they tried to build these capabilities internally.

Conclusion

Higher education institutions are closely correlated to U.S. capital markets today. This has benefited American higher education as it has given access to capital liquidity to make investments in core programs and infrastructure. It has also raised the level of institutional financial management practices.

University financial officers have not achieved these objectives on their own. They have had critical partners in terms of investment analysts, asset managers, MIS personnel, and systems development professionals. It has been the combination of these resources that have permitted the development of the financial management systems that contribute to American higher education today.

E-Enabled Information at the University of Pennsylvania

Robin H. Beck
University of Pennsylvania

Introduction

Among my current responsibilities is leadership of the University of Pennsylvania's (Penn) efforts to resolve the Year 2000 problem. For several years now, I have been aware, at times painfully aware, of how soon the new millennium will start. Y2K has been an agent to force many of us to think more broadly of all the potential changes we in higher education will be facing, and to assess how we begin to deal with both the forces of change we see now, as well as the more ambiguous ones that we don't yet recognize.

My professional experience has spanned both the for-profit business world, as well as the world of not-for-profit higher education. And today, I see many similar issues shaping both. This is not to say that higher education does not have a unique role in society, but the demands for customer service, the questions raised about the return on the large monetary investments made by students and their parents, the necessities of "lifetime learning" for employees, the elimination by distance learning of geographical boundaries, and the new competitors (for-profit institutions and the establishment of their own educational programs by businesses) all suggest that higher education must begin to look as carefully at its customers' expectations and its market as do other industries and with the same need for vision and analytical thoroughness.

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Penn Specifics

Penn is a private, research university founded in 1740 and has a campus of 122 buildings located on 260 acres in West Philadelphia. There are 23,000 students enrolled in 12 undergraduate and graduate professional schools with some 30,000 employees, including 18,000 in the University Health System. Penn operates under a financial planning and management system called *Responsibility Center Management* (RCM). Under RCM, each school is responsible for its own planning, the delivery of its academic programs, and for all costs and directly receives the revenue from its programs. This makes for a highly decentralized environment. The University's operating budget (excluding the Health System) is in excess of one billion dollars.

As Penn has begun to face the coming realities, which we believe will produce a fundamentally changed higher education industry, we have concluded that the status quo will not suffice. Penn sees the "chicken or egg" dilemma, and recognizes that technology has been the trigger that has given impetus to many of these forces. We believe, however, that by using information technology to enable streamlined, responsive, administrative functions, we will have successful strategies necessary to support our academic mission in order to thrive in the 21st Century. Over the last several years, we have begun to look at the administrative support function of the University with the same analytical "business sense" that successful for-profit businesses have been using throughout the 90s. We rigorously and systematically look at the people, processes and technologies that must be in place to achieve our goals and objectives. Employees are challenged to work "more intelligently and efficiently" and are given the training - from executive development seminars to career courses — that help them to do so. We ask ourselves whether a business function needs to be performed, and if so, can the private sector perform the processes more effectively. If not, can we redesign and improve the process and make it flexible enough to adapt to ever changing conditions. As Penn sees its administrative challenge, it is to redesign and implement more effective business processes, and to do that, we must introduce and implement new technologies. New process designs require enhanced competencies in the work force, and enabling technologies if we are to effectively support Penn's mission of instruction, research and community service.

Information Technology at Penn

At Penn, we have established a model for the delivery and support of information technologies that we believe leverages our decentralized environment. We have three inter-related components that supply information technology services to the University community. The first is Academic Computing, which provides direct support of research and instruction. This support may consist of anything from e-mail lists of students in a specific class, to new tools for teaching that leverage the intranet in course delivery. These services are delivered by individual schools, so that the IT organizations are close to the users of their services.

The second component is our computing infrastructure, shared by both academic and administrative functions. What we call "infrastructure" consists of the network that connects all 122 buildings (including student residences) and the technology and security standards, as well as site licenses of software products — Oracle, for example — that provide the broad foundation for our intranet, internet and business applications and information access. The infrastructure is provided by the University's central computing organization (ISC).

Administrative systems are provided to all administrative centers, university-wide. All schools use these systems and access the central repository of data. These administrative systems are based on three premises: first, that opportunities for process restructuring have been explored; second, that technology solutions will be based on "network computing"; and third, that the design of the applications and data stores will be "user-centric". Business applications are increasingly the "central nervous system" of how customers (i.e. students), employees and external suppliers, interact with the administrative processes of the University. The information technology reality for Penn is that web-enabled technologies have brought unprecedented access to information, whether from a laboratory, an office, desktop or student dormitory. We have moved from the mainframe-shared computing era to the desktop PC with a fixed one-to-one communication era, to "any time/any where" computing where students, faculty and staff have multiple devices: desktop, laptop, dormitories and maybe even personal digital assistants (PDA). We are responding to the expectation that information will be where the user needs it. It is web-technology that allows us to meet these expectations.

We classify our business use of the web into three generally used categories.

- Intranet applications exemplified by web publishing. At Penn, you can find everything from information about faculty and staff organizations, to financial policies and procedures, to copies of the University's newsletters/newspapers, to addresses and programs of various cultural resources, to detailed information on each school and academic program, to how to apply for a job at Penn.
- Collaborative applications include both asynchronous collaborations such as newsgroups and discussion groups, and synchronous collaboration exemplified by chat rooms, electronic meetings, audio-conferencing, etc.
- Internally developed applications and vendor-packaged business applications. These include student and employee self-service applications and the access mechanisms to information contained in the University's data warehouse, as well as backbone, transaction systems such as Oracle's Financial System.

Our portfolio of developed and purchased applications is the "backbone" and "glue" that allows us to capture and validate data at its point of origin and provides direct access to the processed data in value-added ways so that within our decentralized RCM structure, each school will have access to information from, and share information with, the central university. By providing direct access to information by students, faculty and administrators, we deliver services as effectively and cost-effectively as possible.

Applications that Support Administrators

Every department in every school has authorized administrators who can use their desktop computers to:

- enter on-line budget information and/or make a general ledger journal entry;
- add a new employee to the payroll system; enter time for payment or plan for yearly salary increases;
- enter a purchase order for goods or services, have it immediately validated if there are sufficient funds in the department's budget for that purchase, and then electronically route that order for the appropriate approvals. Once approved, there is electronic/fax transmission of the orders to vendors. And soon, further E-Commerce enhancements, which are under development, will make the process even more user-centric. No longer will a purchaser need to select from a

list of model numbers, but will be able to browse through an on-line catalog, select the pictured item and then incorporate the item into our current electronic approval process.

The examples above have generally been seen as beneficial in terms of streamlining our business processes. The electronic routing approval and transmission of orders to vendors, for example, has allowed Penn to take a process that used to average over 10 days to one that – once approved – averages three hours for over 95% of new orders. Our purchasing process eliminated much of the cycle time and refocused the attention of the Purchasing Office from paper processing, approval and validation, to one in which they focus on negotiating the most favorable terms for Penn. And for an order that is for one of those negotiated vendor contracts, then, as in the case of office supplies, it may be delivered to the person who ordered the goods the very next day. Approximately 3,000 business administrators use one or more of the various systems on any given day. And while not all are yet web-enabled, that is our stated direction.

Applications that Support Students and Faculty

Web technology is used to permit students to register for courses, look at their schedules, drop and add courses, see their transcripts, look at their financial information, change their local addresses, search a job bank for available jobs, and soon they will be able to vote in student-sponsored elections. We call this application PennInTouch and it is a self-service application that has eliminated the need for students to stand in line, waiting for an administrator to perform a transaction or look-up a status. To give you an idea of the how well received and used this system is: on the first day of classes (09/07/99), PennInTouch processed 123,464 transactions from 7,943 different students, and on day two (09/08/99), processed 136,897 transactions from 7,213 different students. Peak usage was between 11:38 p.m. and 11:44 p.m. on 09/07/99 and 00:23 a.m. on 09/08/99.

In a similar fashion, faculty advisors will have web access to the germane information about the students they advise – including digital photos so they can be sure to greet each student by name. Again, self-service permits both improved customer service and efficiencies not possible with paper based or older technologies. And yes, non-web technologies can provide the same on-line access, but it is the ease of use of browsers that infrequent users (such as faculty advisors)

find so attractive. Applicants to Penn's undergraduate or graduate programs may apply — not just request forms — via the WWW and, for graduate applicants, check to see if all of their information — including reference letters — has arrived.

Employee Example

Employees can review their benefit plans and select their plan options via the WWW. No longer do thousands and thousands of forms need to be mailed, tracked, collected and processed manually. Employees see the current data, make their choices, and when finished, the database is electronically updated and becomes available for payroll processing of deductions. And finally, our Oracle-based data warehouse provides the capability of direct access to the information needed by planners and management.

Do you want to know:

- Departmental Tracking Load/Funding?
  You can identify the number and class level of students within a course; the rank and salary of the faculty member teaching the course and the calculate the tuition revenue you would get from the class per responsible department or aggregate the data at the school level.
- Funded Research Projects by Faculty? Within a Department? Within a School? Do you want to combine that information with teaching load so that you know both the faculty activity and faculty funding by individual faculty member or by discipline?
- A school's actual revenue and expense against budget and any variance?

All of the above illustrate the kinds of decision-making information that is directly available to an authorized user. Depending on the volume of data, the query may take seconds, minutes or up to an hour before you receive your answer but you don't have to wait perhaps days for someone else to collect, compile, analyze and report the information.

IT Challenges

There are fundamentally two IT challenges I'd like to mention. One is strategic and one more operational. Penn, like other universities, believes that investments in technology are important to our strategic objectives, but finds it difficult to directly identify and measure IT's contribution in terms of the "bottom line". In addition, we tend to have two strategic plans – one for the business and one for information technology.

IT management at Penn, like our colleagues world-wide according to the Gartner Group, report that at the top of our list of challenges has been aligning the strategic IT plan with the University's plan. We believe we will achieve "success" when there is not a business strategic plan and an IT strategic plan, but one plan. Why do we think this is "success"?

While a strategic plan should address how the organization wants to be positioned in the future, plans should also be action-oriented. Steps should be identified that must be taken to reach the envisioned objectives. Because we believe change is a result of the integration of people, process and technology, without the technological component, the desired changes are unlikely to happen. At Penn, we believe one of the roadblocks to complete integration of IT into strategic plans is that it is hard to "prove" the return on investment (ROI) for IT. If we can't show the contributions in measurable terms, then IT isn't seen as "strategic" to achieving objectives, and the large sums necessary for IT are seen solely as "costs".

We are beginning a process for administrative systems that we hope over time will address this issue. We are going to try and develop a model that will link total costs associated with IT with the administrative processes they facilitate and support. We face significant challenges in doing this, but hope in time to develop some key "metrics" for each process owner. In this way, future IT investments could be seen within the context of the changes (resource reductions, response time to customers, customer satisfaction, cost improvements, etc.) they permit. We may only be able to develop "reasonable approximations", but that will be more than we now have.

Our second challenge is a result of our success in web publishing. There is a potential overload of information on our intranet; our challenge is to avoid chaos.

We have outgrown our "web master-based" publishing process in which a relatively small group of "experts" could manage format and content. Increasingly, this must be a more widely distributed responsibility, performed within a set of standards and facilitated by tools for component management, versioning, check-in/check/out, etc. We must also find ways to sort out and deal with what is increasingly becoming a glut of information. We are exploring the options of enterprise portals and the question of whether this is something Penn or a third-party should provide.

Future Considerations

This is the most difficult area to discuss. The IT profession is full of wild enthusiasms for the newest technologies frequently followed by some level of disillusionment until a balance is found and we understand the technologies' roles. Some technologies seem to explode into our everyday lives (e.g. the WWW) and others are on a slow adoption cycle. We try hard not to let the hype drive our strategies, but to look at the implications a new technology will have in improved services, cost effectiveness, and for managerial information.

Having said that, the future for administration systems seems to include:

- continued concern for the tight market place for good IT professionals;
- need for 24×7 support and operation of IT functions – that "anytime/anywhere" model;
- continuing strong collaborative relationships with IT service and package vendors like Oracle for both products and services; leverage cost and experience, but within a Penn vision;
- the impact of wireless technologies notably mobile phones, which may be micro-browser enabled and may support some level of video, audio, text and graphics with smart card applications;
- band width and speed of transmission that will make it truly feasible to stream video in real time.

In short, we anticipate a future that extends IT access from car, office, home or dormitory through highly portable and perhaps even wearable systems that will need to supply information and services to meet ever expanding customer expectations.

Conclusion

Universities face a daunting range of challenges in the 21st Century. Significant change will come about in higher education for a variety of reasons. The active participation of a university's senior executives is required to develop strategic plans to lead, and not just react to, the coming changes. Senior executives will increasingly need to develop strategic goals and then prioritize change initiatives including the implied use of the technologies that facilitate change.

The Internet Changes Everything

Darren Rushworth
Oracle Global Learning Initiatives

"Today we are witnessing the early, turbulent days of a revolution as significant as any other in human history. A new medium of human communications is emerging, one that may prove to surpass all previous revolutions -- the printing press, the telephone, the television, the computer -- in its impact on our economic and social life."

(Don Tapscott, Creating Value in a Network Economy).

"If you do not see the Internet as your future, your company will have none."

(Dr. John Donovan, The Second Industrial Revolution).

The Internet is changing everything. Many industry observers like Don Tapscott and Dr. John Donovan are making very strong statements. The Internet is simultaneously the most over-hyped and under-estimated influence of the modern age. Is there any truth to the hype? Further investigation is required.

For a medium to be classified as a mass medium it must have an audience or subscriber base of at least 50 million people. It took electricity and the radio 46 years and 22 years respectively to obtain an audience of 50 million people. The Personal Computer took 16 years. The Internet achieved a subscriber base of 50 million accounts in under 4 years and reached 100 million subscribers in just 5 years. Further, Internet traffic is doubling every 100 days and in 1999 more data was sent over the world's telecommunications networks than voice traffic for the first time.

Darren Rushworth is a Director, Asia Pacific Division, Oracle Global Learning Initiatives.

Date	Invention	Years to Mass Use
1873	Electricity	46
1876	Telephone	35
1886	Gas Automobile	55
1906	Radio	22
1926	Television	26
1975	PC	16
1983	Mobile Phone	13
1994	The Web	4

(Newsweek 1998)

In fact, these incredible numbers are conservative. The number of Internet 'users' reflects the number of Internet accounts (specific addresses) whereby more than one person may have access to the Internet through a given account. An example of this would be an Internet café, or a home account, where more than one member of the family uses a single account.

What about the acceptance of the Internet by higher education?

- *44% of classes use E-mail*
- *33% require Internet research*
- *Approximately 50% of students and faculty access the Internet each day--higher % for administrators*
- *Expansion of "virtual" colleges and universities*

(K.C. Green, The Campus Computing Project 1998)

The use and acceptance of the Internet by higher education is growing rapidly. Just 4 years ago, Internet usage was less than 10% for email, research or administration. This is staggering given higher education's resistance to prior technologies from overhead projectors to CD-ROMS. According to Dr. Mark Milliron, President, League of Innovations,

> *"The acceptance is not surprising considering how effectively Internet technologies connect students and faculty to educational content, rich context and each other."*

Internet tools have succeeded precisely because they have more quickly and easily made the connection to the core mission of higher education than did their technical predecessors. Can this new 'phenomenon' provide a platform to help with the administration of a higher educational facility or assist in pedagogical goals?

I will now examine some of the challenges facing a higher education institution in the areas of administration, learning, access and community, and offer some options as to how the Internet may help address some of the issues, and indeed, create some issues of its own.

Administration Challenges

1. Changing demographics

There is a continuing trend towards older (mature age) students and a huge increase in the number of non-traditional students. These students may participate in part-time study, continuing education (re-education), professional training, and be located either on campus or not. Indeed, it appears that an institution must expect to cater literally for life-long education, from the cradle to the grave – and perhaps from kindergarten to Ph.D.

2. Declining budgets and increased demands

Financial pressures are requiring university administrators to do more with less, getting "More scholar for the dollar". Budgets from governments continue to decline, whilst increasing student numbers, offerings or competitive pressures push the university to be more consumer orientated.

3. Increased global competition

No longer does a university compete just with those institutions in its locality. Today's education market is fiercely competitive, with institutions from around the world enticing students with flexible learning options and other incentives.

4. Complexity of school environment and accountability

What is the university of today? A publicly funded service; a commercial training institute; a business; an industrial research laboratory; all of these; none of these? Not only is the environment complex but changes in public policy are requiring more and more institutions to privatize or seek funding outside government coffers.

5. Increased student demands

Students feel empowered to 'vote with their feet'. Today a student can choose when to study, what to study and where to study. No longer can a university rely on local youth to fulfill its enrolment quotas.

6. New education providers

New organizations are providing education. A leading concern for existing universities is the number of universities being established by industry. These include diverse organizations, from McDonalds to Motorola, all over the world. Further, education brokers and other third parties are offering retail outlets for degrees and for the time and place of education. An example would be a professional, who enrolls in an Internet-based program of continuing education that permits study of a single subject, at home, in the evening.

What can information technology and particularly the Internet do to address some or all of these Administrative concerns?

To manage a university effectively, administrators need the same tools and information as a corporate Chief Financial Officer (CFO). These tools should allow the administrators to manage the processes of the university, increase administrative productivity, and provide accurate and timely information for decision-making.

A Learner Relationship Management (LRM) system allows an institution to manage and track a prospective student inquiry (lead) through to a lifelong learner. All information is stored in a central database, which can provide timely information to all participants and bring faculty and students services closer together, producing a better environment for students.

The Internet provides a common platform to help with recruitment, teaching and managing the University business. Further, it puts the information in the hands of those who need it, when they need it, in a self-service fashion. A study by *Harvard University* found that up to 60% of general student inquires could be managed by computer systems. If these systems are Internet-based this allows self-service, providing immediacy, accuracy and efficiency. Additionally, technology such as the Internet provides a delivery mechanism for universities to compete for mature and distant learners.

Learning Challenges

1. Life-span of a technical degree is less than 5 years

This statistic is now outdated, with Dr. John Donovan contesting that the life

span of a technical degree is now only 3 years. Due to the incredible pace of the I.T. industry it is nearly impossible for universities to keep up to date. Even some of the concepts or fundamentals change in very short (educationally speaking) periods of time. The Internet's n-Tier model is an example of this. The consequences for universities lie not just in those of keeping up, but also in the demands for re-skilling and shorter professionally orientated courses placed on it by working students.

2. Use of technology now a basic skill

Every university graduate today must know how to perform basic functions on a computer. This is true regardless of the discipline studied. Computers have influenced our lives to such an extent that every profession requires at least the basic use of a computer. Further, to participate in today's information society a person must know how to use a computer to communicate with others and participate in electronic commerce. Even so, at present most universities only offer I.T. training through science and technology disciplines. This must be expanded to all students of the institution.

3. Providing quality education to anyone, anytime and anywhere

The key here is quality. Whilst it is possible to post lecture notes on a web page and make them available to everyone, everywhere, there is no link to learning and education. Not only do students want options, the challenge for universities is to ensure that those options do not degrade the standards of the institution but rather, in fact, enhance them.

4. Industry demands of higher education

Industry requires graduates with the skills that make them productive in a company. Many new graduates do not have the skills needed and industry complains about the cost of providing these skills. Often there is conflict between a university's pedagogical goals and industries' requirements.

5. One million vacant high technology jobs globally

The shortage of I.T. professionals is causing an increase in the number of students enrolling in I.T. related courses. Additionally, industry has raised salaries for I.T. professionals to such a degree that faculty are being attracted to industry, away from academic careers. Students, in their desire to earn large salaries, are by-passing formal education altogether and completing vendor-skills certification instead.

6. Technology does not necessitate better teaching or learning

Teaching and learning may not necessarily be better under an Internet platform. The Internet has the ability to make terrible instruction more widely available.

What can technology provide to address these Learning Challenges?

The Internet can enhance the learning experience and offer a mechanism to reduce current learning boundaries such as time and place. The key to 'Internet learning' is not the technology but remains still the content, methodology, framework and support provided by the teacher. With this in mind:

- the Internet can provide learning anywhere, anytime, to time- and place-conscious students;
- the learning experience can (and should) be enhanced by collaboration between students (anywhere), faculty and peers;
- rich media enhance the learning experience; the more senses used in learning, the more likely is it that a student will retain the message. The chalk and board method of teaching predates the invention of the printing press by Gutenberg, the last major change in the learning medium.
- Internet and other technologies can provide a framework for the sharing of curricula and industry/education partnerships.

In an experiment conducted by Maryland University, collaborative learning was tested in several ways. Without going into detail the most effective method of learning was found to be a Multiple Loop Collaborative Learning approach. This involved a teacher giving a case to be worked on electronically to several groups of students, by using a group-ware program. Each group submitted their completed case-work to a central server where it was routed blindly to another group for review and comment. The case-study was then returned to the server, where it was routed, along with group number 2's comments, back to the group who originally created the case-work response. The initial group then made modifications and submitted the final case-work to the teacher for marking. All case-work and responses were blind.

Now whilst this is an interesting experiment on learning models, the purpose here is to demonstrate an effective use of technology to facilitate learning. The technology is not being taught but it is a platform to build on. It could be argued that the Maryland Multiple Loop Collaborative Learning experiment would not have been possible without technology.

Access and Community Challenges

According to the *Federal Computer Week* (July 1999 NCES)

- Families with a household income of US$75,000 or below are less likely to have access to the Internet.
- Fewer than 20% of low income schools have an Internet connection for learning

1. Significant access disadvantages for minorities, rural areas and developing nations.

Education budgets are often inadequate to provide the latest in technology to schools. This is most obvious in areas with low-income families and geographic dispersion. Some countries are yet to experience a high penetration of telephones and other services required to enjoy Internet access.

2. The digital divide

Societies with the technology and resources are advancing at a rapid rate. This is true for commerce, learning and financial markets all mainly driven by the Internet and the information society. Unfortunately the others, who do not have the access, are being left further and further behind. This is known as the digital divide and results in "haves" and "have-nots".

3. Rate of change

The rate of change being brought about by information technology and the Internet forces some people, who can't keep up, to be left behind; whilst others never had the chance to participate in the first place. Additional effects are the costs to corporations, which must continuously reinvest in technology and their own reinvention to survive.

4. Human connections

The Internet must act as a catalyst to bring people together and must be an embellishment to existing communication methods not a replacement for them.

5. Technology as a positive catalyst

Given the widespread impact of technology, we must ensure it is used to enhance learning, interaction and experience, not restrict us to a pre-programmed script. Ways must be sought to put the Internet into the hands of the minorities and developing economies who will benefit the most.

What is Oracle doing to address some of these Learning, Access and Community concerns?

Oracle has created a dedicated group of people to focus on these issues. The group focuses on a range of initiatives known collectively as Global Learning Initiatives (GLI). The charter of Oracle GLI is:

> *"To deploy programs and services that build strategic relationships with government, education, and industry to address key information technology issues surrounding access, learning, and community."*

Oracle has invested US$250 million in more than 1,000 higher education institutions globally to help address the shortage of I.T. professionals through the Oracle Academic Initiative. Additionally, at the primary and secondary level, Oracle has provided teacher training and given away over 6,000 computers, software and content, to more than 125 schools, to provide access to the Internet and enhanced learning. More programs have been implemented to give students email access and even to teach introductory Internet skills and programming at the secondary education level.

Oracle's GLI team are committed to investing more in the education sector worldwide to increase the number of I.T. professionals, improve access to those less fortunate, and to demonstrate a leading role as a good corporate citizen.

The use of Information Technology and the Internet in higher education is a very large topic. Although I have covered only some of the issues and options available I would like to add the following points for consideration.

- Technologies should not be layered on top of existing courses; instead, instructional goals should drive the adoption of technology (University of Washington).
- Institutions alone cannot keep up with the pace of change and must explore partnerships with other institutions, content providers and industry.
- A student perusing all the information 'out there' alone is not the best way to learn. Teachers provide a framework, direction, coaching and PASSION.
- An integrated Learner Relationship Management (LRM) system provides a means of managing from lead to life-long learner.
- What will tomorrow's (today's) institution look like?

In the Information/Internet Age a school has not been built and the industry is undergoing significant upheaval to reinvent itself.

(Tapscott, The Digital Economy)

"When you take the first step of a journey you are half way there",

(Chairman Kun-Hee Lee, Samsung Corporation)

Technology and the Curriculum

The NTU Experience

Charng-Ning Chen
Nanyang Technological University

Introduction

As an island nation with finite human resources, Singapore has taken the stand that university education is primarily for the purpose of producing manpower for the economic benefit of the country. Recognizing that education in science and technology plays a key role in ensuring Singapore's economic success, the government has placed greater emphasis on its investment in engineering education.

To meet the manpower requirement of Singapore's restructured economy, with its strong emphasis on high technology, the Nanyang Technological Institute (NTI) was established by an act of the Parliament in 1981. There were three founding Schools in Civil & Structural Engineering, Electrical & Electronic Engineering, and Mechanical & Production Engineering. Newer degree programs were subsequently introduced, such as the Accountancy and Business program in 1986 and the Computer Engineering and Material Engineering programs in 1989 and 1991, respectively. NTI was renamed Nanyang Technological University (NTU) in 1991 with a view to facilitating the introduction of other disciplines complementary to the established courses in engineering, technology and business.

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Curriculum Structure

The curriculum structure of the engineering-related courses was designed primarily on the bases of the needs of the industrial, social and economic development of Singapore and the region, and the academic background and aptitudes of the students. To achieve the main objective of educating professionally-oriented engineers at university level, the curriculum was designed to provide a uniform mix of fundamental principles and empiricism throughout the entire span of the courses. Compared with typical courses at established universities, greater emphasis is placed on design, laboratory, projects and practical work. Much attention is given to the balance of "breadth" and "depth" of knowledge and skills in the curriculum. A broader range of knowledge and skills is introduced in the junior years, whereas more in-depth training of specialized subjects is given in the senior years.

Civil, Electrical and Mechanical Engineering

The Bachelor of Engineering degree courses in civil, electrical and mechanical engineering are conducted over a four-year period. The first year curriculum, common to all engineering students, has been designed to provide broad base coverage of mathematics, computing, graphics, economics, basic engineering, physics, material science, workshop/laboratory and technical writing.

The second year curriculum introduces the basic core subjects in each of the engineering disciplines, supplemented by laboratory, design and workshop projects. The aim is to introduce as many main-field subjects as possible. The early introduction of these subjects allows maximum time for students to learn engineering applications and to gain practical experience. Further, this provides more opportunity to motivate the student's interest in his main field.

Aside from the core subjects, two common subjects on engineering mathematics and computing and communication skills, are introduced. The title and contents of these subjects vary among the three schools to reflect the needs and emphases of the respective disciplines. The communication skills course is incorporated in the curriculum to improve the art and practice of written, oral and visual communication useful in the engineering profession. The introduction of communication subjects in the early years, is intended to facilitate effective practice of the skills in the subsequent years of study.

An 8-week In-House Practical Training (IHPT) component is scheduled at the end of the second year course. This training session is planned and supervised by the staff of each engineering school and is ideal for conducting the type of hands-on training, which cannot be effectively implemented during the normal term period. It also provides an excellent opportunity to facilitate staff-student interaction whereby the students' attitude towards the engineering profession can be best inculcated.

The third year curriculum comprises follow-on core subjects in which the basic knowledge and skills learnt from the previous years are applied. In addition to the core subjects, a subject on engineering economics/financial accounting is introduced. In the second half of the year, the students take part in a 24-week Industrial Attachment (IA) program. The aims of this training program are: to gain direct knowledge of day-to-day operations in the engineering profession; to apply the acquired professional knowledge and skills in actual planning, design, production, construction or operation/maintenance; to acquire first hand experience in working with people; and to learn about the problems and requirements of industry which can aid in the choice of field of specialization in the final year.

In the fourth or final year, subjects on engineering/industrial management, human resources management, contract law, professional ethics and entrepreneurship are introduced in addition to technical subjects. Appropriate prescribed electives in selected fields of the individual schools are introduced so that students will have more in-depth training in their chosen fields of specialization. The provision of more electives in the final year curriculum is considered appropriate because of conflicting demands for more engineering specialization than is compatible with the graduate degree programs and the market demand for engineers with a broader inter-disciplinary orientation.

Students are also required to carry out an in-depth project in the final year, preferably within their chosen fields of specialization. Problems encountered by the local industry as well as topics relevant to national development and regional needs may form the bases for the Final Year Projects. These projects are beneficial in developing students' ability to apply and synthesize the acquired knowledge and skills in solving problems arising in modern industry.

Computer and Materials Engineering

The curriculum of the Computer Engineering course is designed to give students an opportunity to acquire an in-depth understanding of computer systems and the principles underlying their production and implementation. Comprehensive training in both the software and hardware aspects of computers prepares the graduates for a professional career in design, applications, and use of computers. The curriculum of the Materials Engineering course represents a balanced integration of subject matter within the wide field of materials science and engineering. The course comprises study of the science of the structure, properties, behavior, and processing of materials, and their applications in engineering and industry. At the same time, students are heavily exposed to the study of testing, inspection and analytical techniques — skills which characterize the materials engineering profession.

Similar to those in the civil, electrical and mechanical engineering courses, all students in computer engineering and materials engineering are required to undergo the IHPT and IA programs that form an integral part of the curriculum of the respective courses. These programs are some of the special features deliberately incorporated into the undergraduate curriculum to enhance students' awareness and ability to tackle real world problems in engineering practice. These are particularly pertinent to students who do not have exposure to hands-on experience in technical areas, prior to entering the university.

The Broadening Program

With the rapid pace of advancement in technology and the associated change in the socio-economic setting, there is a need to prepare students not just for the jobs of today, but also for career challenges in the unforeseeable future. To a certain extent, this can be accomplished by broadening the students' curriculum exposure beyond their chosen fields of specialization. Exposure to different disciplines would also enhance innovation, creativity and thinking skills in our undergraduates. Furthermore, exposure to different disciplines would better prepare graduates for the workplace, which increasingly requires a multi-disciplinary and systems approach to problem solving.

Recently a more "structured" broadening program has been initiated. Being a

technological university producing professionals, such a program was deemed necessary to ensure that our graduates are exposed to a broader range of disciplines and thus become better prepared for the career challenges of the 21st century. This is accomplished by prescribing up to 20% of the Academic Units or credits in the syllabuses for subjects outside the main discipline of the degree courses. Undergraduates are required to take a group of core subjects which are unrelated to the main discipline of the course but are deemed to be important for the students' acquisition of essential generic knowledge and skills. Students are also given the opportunity to select other broadening subjects in the form of "general electives" to suit their interests.

Beginning in Academic Year 1998-99, all students in the engineering degree courses are required to take five essential non-technical subjects under the "core subject" category of their syllabuses. These are Principles of Economics, Principles of Law, Communication Skills, Human Resources Management & Entrepreneurship, and Engineers and Society. In addition, they are required to take an assortment of subjects in the fields of languages, sociology, management, etc. under the "General Electives" category of the syllabus. It is believed that this approach will provide a more balanced education, while maintaining the proper focus on professional requirements.

Future Trends

Engineering education will inevitably be shaped by the future trends of economic, social and political developments, and by the pace of technological advancement. As a result of the diverse demands for engineering services in the region, the undergraduate curricula in engineering will most likely retain its current approach of providing a uniform mix of fundamental principles and empiricism. There will be a more balanced treatment of the regional and domestic needs. Arising from the increased involvement in regional development, the Industrial Attachment Program will see a wider spread of students across the region, in regional offices and project sites. Likewise there will be a drastic increase in the number of graduates working overseas. This in turn will dictate an increase in the number and variety of general electives related to regional languages and social and economic developments in the region.

The rapid pace of advancement in science and technology, and the dynamic

growth of international services and business have made it imperative for graduates to keep up with new developments through life-long learning. This is particularly true in the Information Technology field. In this regard, NTU has initiated a critical review of the role of our Center for Continuing Education. In time to come, continuing education will play an increasingly important role in complementing basic education. The Center will strengthen its services to our graduates, as well as to the general public, in the traditional modes of conducting short courses and organizing conferences and seminars. It will also broaden its services by providing distance-learning programs locally and in the region, making full use of the versatility of multi-media presentation tools and the attractiveness of the interactive information environment.

Advancement in information and communication technologies will have a tremendous impact on modes of teaching and learning in the future. With the advancements in software and hardware technologies, the use of multi-media Computer-Aided Instruction (CAI) to supplement or replace textbooks/manuals will become a way of life in most engineering courses, especially in laboratory and design related subjects. To facilitate effective development and delivery of computer-aided instructional and learning packages by the academic staff, the Center for Educational Technology will have to be re-oriented with a strong professional team to support multi-media software development and applications. Many of the physically-based laboratory experiments will also be replaced by more versatile computer-simulated experiments using artificial intelligence with multi-media presentation. The students will master the principles by manipulating the input parameter and observing the changes in the output. Similarly, a large proportion of the instrumentational hardware for teaching and research will be replaced by highly sophisticated software packages which are linked to miniaturized sensors. However, in spite of the dominance of simulation software, there will still be a need for physical experiments in cases where the physical behavior and/or boundary conditions are not well understood or defined. There is always a limit to a "virtual reality" simulation as the real world is not virtual.

The advancement and popularity of various forms of digital publications and information dissemination will make the university library look more like a computer center in the future. Storage and retrieval of information, including journals, texts, standards and films, will be executed through the computer. To develop NTU's library as a premier digital library, a new program, Gateway to Electronic Media Services (GEMS), was launched recently. GEMS is designed

with the aim of providing a one-stop access to a wealth of knowledge and information for staff and students. Designed to be used in a web environment, services provided through GEMS are easily accessible. A variety of resources such as audio-visual material, multi-media CD-ROM, on-line databases, electronic journals, electronic books and internet resources are offered. At present, GEMS has been set up on 100 PCs in the library. The system is closely integrated with the existing IT infrastructure on the campus. The use of IT for teaching is also promoted by extending media services to lecture theatres. In addition, the dynamic nature of GEMS' design allows for scalability and expandability in incorporating future changes and additions for new services.

In short, the engineering curricula will continue to change in direct response to the current and anticipated future need for engineering manpower in Singapore and the region. The rapid pace of advancement in technological fields will introduce drastic changes in the modes of teaching and learning with extensive use of computer-aided tools. The library will be transformed into a digital information center, providing one-stop access to a full range of knowledge and information resources. Continuing education in general and distance learning in particular, will play an increasingly important role, due to the need to keep up with new developments and the versatility of multi-media interactive tools.

Science and Technology in Universities of the 21st Century

Yoshiyuki Naito
Tokyo Institute of Technology

1. Introduction

The scope of the title given to me is rather large; too large I think for me to be able to manage in the available time. So I propose to restrict my presentation by inserting the word "Japanese" in front of Universities.

The most obvious national characteristic of Japan is that it is a country completely surrounded by the sea. Over many centuries this has allowed our society to develop, culturally isolated from many external factors. Indeed, much selectivity was used to control those external factors that were allowed to be introduced. Yet over time, many of the components of our society, now accepted as central to our culture, were brought from overseas.

From 600AD, key elements came from China and Korea: Buddhism, rice, ceramics and metals technologies.

Approaching modern times, a deliberate policy of isolation from foreign countries (with the limited exception of the Netherlands) was imposed from 1600 by the Edo government. But when the Meiji government was established in 1868, this policy was reversed. Great emphasis was placed on seeking information from overseas and importing new ideas and processes. The new government sent large numbers of excellent young people to Europe, with the express intent of learning about Western culture and civilization.

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They learned much, and in many areas: political structure, bureaucratic organization, military operations, educational systems and industrial developments. To disseminate the benefits of this learning, the government built many national schools in its early years so that an educated elite would be able to introduce these new, foreign methods into Japan. Significantly among them, there were created the first modern universities — with foreign professors (hired at high salaries) and with an explicit purpose of educating subsequent generations of Japanese academics, bureaucrats and industrial leaders.

One consequence was that, with increased military capability, Japan was able to take action through war against China in 1894 and subsequently in three more wars. The sequence of military actions finally ended after World War II when Japan adopted a constitution that excludes war.

After the end of World War II, America influenced much more than the government of Japan. A whole new culture emerged. Many Japanese people were able to visit America, to learn about and to bring back to Japan many of the perceived benefits of its democratic, affluent society. Notable among these imports were new political and educational systems and new technologies.

You will see that this follows a well-established pattern. When Japan faces change, it expects to find it from overseas. An immediate response to the need for change is to send people overseas to study foreign systems. What are seen to be the best or most successful foreign systems are then adopted, uncritically and with only minor changes. This seems to constitute one of our national characteristics.

We have a significant Japanese word: "舶来品".
Its literal meaning is "goods bought from a foreign country", that is "imported goods". But the implications carried by the word lie deeper: they are "first class" or "of a superior quality". In other words, in the modern era, we have developed a way of thinking that things are done better overseas.

Even now, after many years when the Japanese economy was seen by those in other countries as an enviable model, this attitude persists. Many missions are being sent overseas from Japan, by politicians, government departments, companies and universities, to survey operations and practices in other countries. At present, with changes sought in Japanese universities, overseas experience is

expected to provide the necessary models. A former President of T.I.T. often said that "Japanese professors are black holes: they only absorb, never illuminate the outside".

2. Science and Engineering Faculties in Japanese Universities

The Meiji government attached high priority to developing industry so that Japan could enjoy the economic benefits found in Europe from the industrial revolution. Education was seen to be an essential component of these developments. Technical schools, technical high schools and Faculties of Engineering in universities were established. Seven Imperial Universities were created and in each of them were faculties of Science and of Engineering. The dates of foundation of these faculties are shown in the Table (For brevity, I have designated the universities alphabetically; my Japanese colleagues will doubtless want to try the exercise of identifying them).

	A	B	C	D	E	F	G
Science	1930	1919	1877	1942	1914	1931	1938
Engineering	1924	1919	1886	1942	1914	1933	1911

There were both advantages and disadvantages in the way this was done in Japan. The aim of government was to facilitate economic development, enriching and strengthening the nation. The chosen route, by establishing Faculties of Engineering in the Imperial Universities, differed from the familiar European and American practice. There, Faculties of Engineering were commonly placed not in universities but rather in the specialized Polytechnics, Hochschule or Institutes. The disadvantage of placing Faculties of Engineering in universities lies in the academic environment. In universities, the main emphases lie in academic matters, not practical issues. This has had a continuing influence, both on the progress of technology and of the universities in Japan.

3. Special Features of Engineering and Science in Japan

It is possible to use many criteria in comparing the characteristics of education among different countries. One simple, basic statistic is the number of students. If we compare the numbers of science and engineering students in Japan, the figures show a very high proportion of them are in engineering.

	Science	Engineering	E/S
National	7,570	33,733	4.5
Public	981	3,127	3.2
Private	12,836	78,187	6.1
Total	21,387	115,047	5.4

Schools Basic Survey, 1998 Ministry of Education, Science and Culture

The proportions in other countries are very different.

	E/S
Japan (1997)	5.5
Britain (1996)	0.7
Germany (1996)	1.3
America (1995)	0.7

Now the distinction between science and engineering courses, faculties and students may well vary among countries. So the student number ratio, E/S may also differ and quantitatively be far from ambiguous. Qualitatively though, the differences are so great that we cannot be in any doubt that the situation in Japan is quite different from that in other countries. In the past, people from other countries, seeking to emulate Japan, have argued that the numbers of their engineering students have been too small; in Japan it must now be said that the number of science students is too small.

The priority on application of technology, which was emphasized in the Meiji era, is still reflected in the Japanese E/S ratio. Its consequences are evident in modern developments. Consider a wide range of familiar, domestic appliances. In the Table below, I list both the country in which they were first developed and the country in which current major manufacturers are based.

- Camera (Germany ··· Leica, Contax)
  Nikon. Canon (Japan)
- Transistor Radio (America··· Bell Telephone)
  Sony (Japan)
- Television (America ··· RCA)

Sony, Matsushita (Japan)

- VTR (America, Anpex)
  Victor, Sony (Japan)

- Electric Oven (America ··· RCA)
  Toshiba, Hitachi (Japan)

- Automobile (America, Ford)
  Toyota, Honda (Japan)

4. Creativity

In Japan we are regularly told of the need to become creative. One of the objectives of revision of the curricula in schools and universities is to encourage creativity. But it is not so easy to define just what this is — or even to agree on what we mean by it.

One definition is to identify creativity with finding or making something new, or doing something for the first time. But in practical terms these do not tell us anything helpful about the process.

I have my own definition. It is a multi-definition that derives from a sequence of propositions. There are 5 levels.

1. Proposal of a new structure, a new idea or a new way of thinking; implicit in the concept is a requirement that the nature of the newness is understood and can be validated.
2. Proposal of an application for the use of a level 1 creation.
3. Proposal of ways in which level 2 ideas can be implemented.
4. Proposals for construction of level 3 proposals.
5. Proposals for improving level 4 creations.

An example of this hierarchy of proposals is:
1. electromagnetic waves; 2. radio-communication; 3. antennae; 4. linear, surface, slot antennae; 5. dipole, Yagi parabolic antennae.

The levels 1 to 3 are generally regarded as scientific advances; and those from 3 to 5 as advances in engineering. My experience suggests that, in Japan, our creativity has achieved excellence only at level 5 with perhaps a little at level 4 but only a trace at level 3.

5. Education for the Future

There are deep problems implicit in the cultural characteristics of Japan. It presents us with a serious problem of identifying processes that can change our attitudes. Without offering any explanations or rationalizations, I would like to list 3 areas of change for us to address.

1. We must change the character of education provided in our primary and secondary schools.
2. The ratio of the numbers of students in science and engineering courses in our universities should be changed. Even if it is not possible to maintain the same total number of students, we should change the ratio.
3. We should attach priority to developing those attitudes and abilities that allow us to contribute to the higher levels of the hierarchy of creativity.

TRANSCRIPTIONS OF THE DISCUSSION PARTS

Transcriptions of the Discussion Parts

September 20, 1999

Presidents' Session 1

Chair: Dr. Zemsky

Dr. Zemsky asked the discussants to remember President Mortimer's keynote address, and to consider whether the framework of public policy had changed fundamentally. He invited the European representatives to speak first, since there had been presentations by the Japanese, Chinese and American delegations.

Dr. Luc Weber expressed his difficulty reconciling the address by Dr. Mortimer and the presentation by Dr. Zinser. Dr. Mortimer emphasized the need for the university to be responsive to the market and society, while Dr. Zinser stressed the necessity for the university to be responsible for defending long-term views and objectives for society. Dr. Weber thought the latter more important, given that no other social institution will be capable of acting as transmitter of societal values and objective analyzer of social problems if the university abandons that role.

Dr. Zemsky asked about Germany's position in light of the tension between civic engagement and responsiveness to the market.

Dr. Kuenzel responded that the German system is increasingly in danger of being too controlled by political forces as a result of being predominately publicly funded. The question of university autonomy is therefore much under discussion, and the feeling is that universities must move away from intricate state-control mechanisms and toward forming their own policy. In the long run, that would require funding from different sources. On the other hand, autonomy can also be lost through dependence on private funding and student tuition fees, such as in the United States. Universities tend to become service institutions directing programs to meet the goals of the providers of money. Universities need different funding

sources, but also need stable basic funding from public sources in order to be independent from market forces, so that they can retain their autonomy in order to fulfill their critical role in society.

Dr. Meissner agreed with Dr. Kuenzel that the relationship in Germany among universities, government and society is changing. He gave as an example the current discussion in Germany about the role of boards of governors, which German universities are beginning to establish. Each German state is taking a different approach as to which sectors should be represented on these boards.

Dr. Mortimer stated that he was not arguing in his presentation that the university should give up its basic mission in responding to the marketplace. The university will always play the critical role of protecting culture, but as it moves toward market-driven phenomena its responses will be different.

Dr. Zemsky asked each delegation to discuss the most important political issues the universities in each country must address, inviting Singapore's delegation to begin.

Dr. Chen explained that Singapore's unique socioeconomic circumstances had led not so much to political debate but to close discussions between government and universities. Because Singapore's government realized early that the island's best resource was its people, and education was the only way to use this resource to generate wealth, the government prioritizes education and tries to make resources available to the universities. As a result, government ministries and universities are in close discussion about how to support education so that it may in turn support the society.

Dr. Teichler presented his impression that the need for social services and government support was similar among all of the participating nations, but one important factor differed: the issue of internationalization. He distinguished between the phenomenon of students seeking abroad knowledge unavailable at home; and true internationalization, i.e. introducing contrasting, cross-border experiences as part of education in order to enable students to be versatile in multicultural environments. He noted that the papers from China, Japan and Singapore included comments regarding student mobility, but no discussion of the topic appeared in the papers from the United States. From this he drew the conclusion that a major debate is occurring in most countries about the traditional

pattern of going elsewhere to obtain knowledge unavailable at home. In contrast, true internationalization is an important topic to define and discuss because there is less agreement in this area.

Dr. Zinser agreed that the United States was not as advanced in comprehensive definition of and engagement in international education; however, there is growing development of international curricula and introduction of international content into all fields. She believes the focus now should be on developing partnerships to further these goals.

Dr. Du commended the Chinese government for opening China to the outside world by promoting overseas study by Chinese students and study in China by foreign students. Globalization continues to be a priority, through measures such as compulsory foreign language study and sending Chinese professors abroad to teach.

Dr. Zemsky announced the end of the first session. He urged the delegates to consider the following points for further discussion:

- Dr. Teichler observed the need to define internationalization. This group is uniquely positioned to discuss that element.
- Dr. Du discussed the rise of parallel educational institutions. There should be further discussion about alternate providers of education.
- There is another form of internationalization: multinational businesses. Dr. Zemsky invited the representatives of such businesses to join the discussion.

Presidents' Session 2

Chair: Dr. Gruber

Dr. Heinz Gruber observed that the presentations demonstrated how the role of university president is variously defined, and how that role can be a difficult one due to inherent tensions and external pressures. He suggested that university presidents who are forced to reconcile conflicting interests seek a patron saint in the two-faced Greek god Janus. He then began the discussion by asking Dr. Harada to what extent presidency involves balancing the external demands of the

outside world and the internal demands of the university culture.

Dr. Harada replied that the role of the university president is to act as a mediator between the pressures of a rapidly changing environment and the logic of research and scholarship, negotiator with the market and defender of the enterprise.

Dr. Gruber asked whether at some point university presidents will be able to say they cannot live up to outside pressures because they are incompatible with the core mission of the university.

Dr. Mortimer noted that he was currently in such a position, given that the University of Hawaii has suffered budget cuts for eight consecutive years. There have been protests due to his decision to close the School of Public Health, and he is in the position of explaining to the public that, at the current level of support, there are certain things the university can no longer do.

Dr. Kuenzel commented on Dr. Harada's description of the effect of demographic changes on the Japanese system, and his proposal that the curriculum should be changed as a consequence. Dr. Kuenzel agreed with this proposal, since the alternative would be increased selectivity and subsequent shrinking of the system.

Dr. Zinser referred to the morning's discussion about the need for university autonomy on the one hand and the desire to be engaged with the public on the other. She invited discussion about her belief that the traditional approach of increasing autonomy by distancing the institution from the public might not be the best approach, since greater contact with the public might create a higher understanding of the university's role, mission and needs.

Dr. Meissner added a question to Dr. Mortimer regarding his presentation, and his observation that the process of establishing a strategic plan provided a sense of ownership in the process. He asked for further conclusions from Dr. Mortimer about the value of producing such reports.

Dr. Mortimer stated that the reports were initially very helpful, particularly in convincing the state legislature to grant more freedom on internal matters; however, at this point the faculty senate is composed of entirely different members, who did not participate in the reports and are now disavowing them. There is therefore currently a need to re-legitimate the process.

Dr. Arimoto referred to Dr. Weber's presentation and asked how to manage the important problem of integrating administration with teaching and research.

Dr. McGinn suggested that Dr. Meissner's paper proposed a solution to Japan's demographic challenges, by guaranteeing and expanding demand for higher education well into the future. He asked whether this could be a viable alternative for Japan and other post-massification stage countries like the United States.

Dr. Teichler agreed with Dr. McGinn's suggestion and asked Dr. Harada why there is hesitation to move in that direction given the availability of resources. He suggested, in addition, a reconsideration of the traditionally segmentalist concept of initial versus adult education, and that universities consider breaking down the clear division between higher education and continuing education.

Dr. Harada observed that the university did intend to accept retired persons as ten percent of the university.

Dr. Weber added that politicians are more concerned with short-term issues such as the costs of an ageing population than long-term programs such as higher education or research. He believes it is necessary to face this reality and be more pro-active in seeking funding rather than asking the government for more money. In addition, universities must also face the reality that politicians correctly expect greater accountability regarding university performance. Presidents must therefore decrease the responsibility of faculty for appointing future colleagues, since departments tend to reproduce themselves instead of adapting to the changing environment. Faculty input is obviously important to the process, but since faculty selection involves an investment of twenty-five or thirty years, these important decisions should not be left exclusively to the individual departments.

Dr. Teichler offered four points regarding continuing education. First, at the University of Frankfurt there are 35,000 regular students and a growing body of retired students (currently 2,000). Dr. Teichler is reluctant to see fees imposed on these continuing education students because they largely represent a generation deprived of higher education due to the war and other factors. Second, there are no alumni associations in Germany, but that might be a way to reinforce the efforts underway. Third, continuing education could be a way to initiate and accelerate the process of introducing tuition in the German context, if aimed at those active

segments of the population who earn and who generate income and so can contribute part of it to their education. Fourth, more and more foreign institutions are entering the German market, such as American universities offering executive MBA programs. Dr. Teichler believes German institutions should become involved in this sector as well.

Dr. Yamamoto proposed additional discussion of strategic management as a system, not simply as limited to the role between government and university or between faculty and president. He further observed that few decision makers in Japan are specialists in university management, and suggested there is a need for people trained in university management and higher education policy.

Dr. Fujita observed that university leadership has changed dramatically in Japan in the last fifteen years. In particular, there has been a shift in decision making away from faculty to other decision makers, leading to frustration among faculty. He inquired whether others observed similar tensions. Also, since the expansion of higher education and the changes brought about by continuing education and increasing diversification, he believes there is a need to consider how structures and policies may be different from institution to institution.

Dr. Kuenzel returned to the question of funding through tuition and fees. He recommended caution in using them as a supplementary funding device because of the tendency of the state to withdraw funding as a result, leaving the university vulnerable to the interests of private funding sources. Similarly, because the productivity and growth promoted by universities is a public rather than private good, it is unfair to place the burden on the individual seeking education. Funding must come from other sources, particularly the state.

Dr. Du agreed that education is primarily the responsibility of the government and that tuition should not be the university's major source of financing given the danger of decreasing educational opportunities due to income discrepancies. He suggested that the government should formalize the structure of fee systems for the universities, to counteract the universities' desire to rely on substantial fees. In response to Dr. Yamamoto's question, he agreed that strong management skills are an important quality in university presidents. Until the present decade, Chinese university presidents were politicians, not academics. Since the shift to a market economy, academics have been appointed and while academic achievement is an important asset, it would be even more favorable for the university presidents to

have strong management skills.

Dr. Morgan added that it would be naive to believe that, if tuition is more widely introduced, the government will not see it as a new source of revenue and withdraw government funding for other purposes, or increase accountability for government funding. This has been the case in the United Kingdom. The government has begun a detailed survey linking funding to expenditures to ensure block grants are spent in a manner it believes appropriate.

The session concluded with a summary by Dr. Zemsky of the day's discussion. He described it as a fascinating day that demonstrated the internal conflicts within the delegates about many issues, particularly autonomy versus responding to the market, and the role of the university as preserver and promoter of values and culture.

He suggested that these tensions are the result of the difficulty of reconciling two truths. First, the delegates are of the academy, and the academy is first and foremost about values. Academics are interested not in management, but process, and want nothing done which will jeopardize the fundamental values of the academy. On the other hand, the delegates are also engaged in markets. Markets reward enterprise, and focus not on values or processes but customers and outcomes.

It is the struggle to reconcile these conflicting truths that raises the questions discussed during the sessions, such as the question about autonomy. Dr. Zemsky suggested that, although the discussion focused on university autonomy, the faculty may be indifferent to university autonomy and interested instead in their own autonomy from the university. Dr. Zemsky noted that, in the United States, as institutional autonomy is shrinking, faculty are increasing their own autonomy through appeals to the market. As an example, he discussed his own research institute, which is able to free itself of university control as a result of obtaining separate funding.

Similarly, Dr. Zemsky described the difficulty of accepting the influence of the market on the university, which many delegates discussed during both sessions. As an example, Dr. Zemsky indicated the discussion about the current demographic crisis in Japanese higher education. He observed that Drs. McGinn and Teichler had both urged consideration of the alternative possibility of

expanding the market as a solution. Dr. Zemsky explained that when the United States underwent a similar crisis fifteen years ago, American universities had responded by creating new markets to ensure their own survival.

As a third example, Dr. Zemsky pointed to the discussion about funding, particularly through tuition fees. He cautioned the delegates not to conclude that successful university systems funded primarily through tuition were impossible, since the United States currently operates such a system. A more interesting question raised by Drs. Mortimer and Weber is the question of subsidies for needy students. Also, Dr. Zemsky proposed that the more important issue is intellectual property rights, which may make public funding considerably less important in the future.

Finally, Dr. Zemsky suggested two points to consider during the following day's discussion. First, for the discussion regarding economic growth: can the academy promise economic growth without surrendering economic values? Second, for the discussion in the afternoon, he proposed asking the discussants from the for-profit sectors whether the academy is merely a source of money or whether these sectors wish to join the academy's enterprise?

Transcriptions of the Discussion Parts

September 21, 1999

Presidents' Session 3

Chair: Dr. Zinser

Dr. Zinser suggested the discussion begin with reactions to the presentations. She reminded the delegates of Dr. Zemsky's summary of the previous day's discussions, and his comments regarding the tensions between university as academy and university as market enterprise. She proposed an addition to his model: university as partner in social progress.

Dr. Wei noted that China is facing challenges as a result of the reform process and the shift to a market economy. Since China is still in a stage of expansion, when problems are emerging in reconciling the desire to produce quality graduates and to accommodate other forces influencing education, it may be too soon for solutions to materialize. Looking to the experiences of other nations will therefore be particularly valuable.

Dr. Teichler agreed that the presentations highlighted the issue of the goals of higher education. This tension between providing high-quality knowledge and encouraging rational skepticism is not new. But he has been impressed by the presentations by Singapore and China, which demonstrate that while a utilitarian approach is stressed, conflicting demands exist and the universities feel that their role in society is also to question the demands put upon them. The German situation is slightly more similar to the Japanese situation: strong external pressures claiming that the university is too self-serving rather than providing for the immediate needs of society. He observed that, while the Japanese and Singaporean presentations were cautious about recommendations for management in the future, they generally proposed moving in the direction of the United States model. He found this interesting, given that questions are now being raised about

the US model and, indeed, whether a solution exists at all.

Dr. Harayama similarly illustrated the parallels between the Swiss and Japanese systems, particularly the low numbers of graduate students. She also asked Mr. Murata whether there had been thought given to instituting more post-doctoral programs as part of the reforms of graduate programs, since this would provide additional incentives for graduate study.

Mr. Murata replied that support for post-doctoral students was increasingly being provided. In addition, graduate students will be able to teach undergraduates in order to support their research and obtain experience. However, industry is also part of the problem due to companies' reluctance to hire post-doctoral students.

Dr. Zemsky observed that both presenters had talked about markets but also suggested that someone outside the market could be responsible for a grand design for the university. Dr. Zemsky does not believe this is the case.

Dr. Zinser suggested to Dr. Zemsky that, although it may not be possible to have and grasp an overall design, it may nonetheless be fruitful to engage in dialogue with industry, government, and the non-profit sector about a common vision. She finds it particularly encouraging that, despite the differing levels of development of the countries represented at this seminar, there was still agreement about the central role of the university in society. Dr. Zinser then invited Mr. Golding and his colleagues from the corporate sector to comment on the universities' role in technology transfer as contributing to economic growth.

Mr. Golding observed that over the past ten years there had been a fundamental change in this area in the United States. Research was previously seen as very theory-oriented rather than application-oriented. Now, contracts are routinely established between universities and industries for practical research. Also, venture capitalists have been targeting graduate students as an integral part of their activities. This is in many ways an exciting development because it brings together parties at the peak of their ability, although the model is still in its early stages.

As a final comment, Dr. Zinser invited Dr. Fujita to present his perspective on the University Council report.

Dr. Fujita observed that many in Japan are still very influenced by the United

States model. The elites at the universities are providing ideas based on this model, particularly those who studied in the United States. However, rather than "mission-oriented and market smart," many are "mission-confused and market naive," so that many challenges will arise in the future.

Dr. Arimoto added that Japan is very different from the United States in that 80% of American students study in the public sector, whereas, in Japan, as a result of the push to privatization, 80% study in the private sector. The move toward privatization is raising important and unique issues in Japan about autonomy and resource allocation, and Dr. Arimoto invited further discussion of this during the remaining sessions.

Dr. Zinser thanked the participants and noted that the discussion had illustrated the commonalities across the countries. In particular, the discussion demonstrated the delegates' drive as a professional calling to maintain control of their own destinies within the institutions while acknowledging that this control will depend on many things, including a willingness to engage in a shared vision with all sectors of society with an eye toward globalization of economies and addressing important social problems.

Presidents' Session 4

Chair: Dr. Yamamoto

Because little time remained in the morning sessions, Dr. Yamamoto asked the moderators of the afternoon sessions to continue the discussion of the morning's topics. He then invited brief comments from the delegates in the time remaining.

Dr. Keel asked how non-technology oriented topics, such as sociology and history, could benefit from cooperation between industry and universities.

Ms. Beck replied that, from the educational perspective, there could be a cooperation that develops new content for course instruction or perhaps funding support for research. However, cooperation can come at a price, and part of the discussion must include how to use creatively such partnerships to further the university's goal.

Dr. Du asked where technology would lead. Would there be more conferences such as the present one, where different sectors interact, or would there be fewer because of the development of technology? He asserted that the more technology develops, the more people wish to come together.

Mr. Rushworth replied that technology provides more opportunities for people to converse together more often. Perhaps instead of annual conferences such as the present one, there would be conversations every quarter.

Dr. Teichler observed that historical innovation follows two phases. In the first phase, opportunities are presented. In the second stage, there is both digestion and recognition of the limits of those opportunities. He asked at which stage the United States currently is.

Ms. Beck noted that one of the things the University of Pennsylvania has experienced is that many faculty have noticed improvements in their classroom environment as a result of having adapted their teaching to new technologies. One problem of the new technology is an increased ability to disseminate bad teaching, but on the other hand those faculty who do a good job of adapting their teaching to the new technology have improved teaching and learning in the classroom. Therefore, there is decided movement into the second phase Dr. Teichler identified.

Mr. Rushworth agreed and pointed to the failure of "virtual" universities as an example of the first phase. It was believed at the beginning that virtual universities would have many advantages because of the need for fewer resources and less faculty. However, it was discovered that the demands on faculty time were in fact higher because students had 24-hour access to them. He believes there is already maturity on the administrative side, however, since most of the systems were adopted from the industrial sector.

Plenary Session

Chair: Dr. Teichler

Dr. Teichler asked the chairpersons of each session to provide a brief summary before opening the floor to comments. He also encouraged further discussion from

Session 4.

Dr. Zemsky reflected that the message of the first session was that the delegates saw conflict between the demands of the market and the need to preserve the universities' historical role.

Dr. Gruber described the second session's experience as "Is there life beyond the market?". He proposed that in the area of strategic planning it is important to ask where strategies come from. There is, of course, the market. In addition there are students and parents exercising their consumer power to optimize their careers, academics with their own culture of scholarship, and politics as a major factor defining strategies. Dr. Gruber suggested that, while American presidents have a wide margin in defining strategies, Japanese and European presidents have political constraints that make it more challenging to execute their roles. The discussion of the second session illustrated these challenges and offered approaches for addressing them.

Dr. Fujita explained that session three raised the question of central planning and the feasibility of manpower planning. Singapore is working in that direction but Japan has abandoned the idea of tight planning. The delegates discussed state controls versus privatization. In discussing education, the focus is ordinarily on the individual rather than the public good, but education is a mixture of private benefit and public benefit. Therefore, the question is "What role should politicians have in governance?"

Dr. Zinser added that, in addition to the discussion about creating a vision of a future education system that can be aligned with the interests of the nation, there was a focus on who directs the policy and the framework of fields to be offered and the shaping of admissions in different fields. However, what wasn't discussed was the extent to which both public and private institutions are becoming involved with for-profit educational systems or the policy issues involved in technology transfer.

Dr. Yamamoto identified four points from the fourth session. First, the shortage of time for discussion was unfortunate. Second, Dr. Yamamoto was impressed by the fact that three of the five presenters used PowerPoint in their presentations, illustrating how pervasive technology is becoming in the area of educational research. Third, although everyone recognizes the importance of technology in

higher education, not everyone approaches technology in a positive rather than passive way. Fourth, every country needs reforms of research infrastructures, including in the areas of funding, training and technology utilization.

Dr. Wei added that Mr. Rushworth and Ms. Beck had provided very vivid pictures of the positive impact of technology application. However, it is also important to recognize the negative impacts. For example, virtual universities provide a broad opportunity to access higher education, but neither a campus nor direct contact with faculty.

Dr. Kaneko invited the delegates to provide their comments and advice regarding the Japanese reform programs. He explained that there are two reform programs currently underway. First is the establishment of a national agency for university evaluation; second is the change in status of national universities to independent administrative institutions. Under the second plan, it is understood that the national universities will be somewhat independent of the government but their budget will still be provided primarily by the government and employees of the universities will still be considered government employees. The plan for this transition is not firm yet and the specifics of the plan are still being formulated; both politicians and university presidents are expressing some confusion about the process. Dr. Kaneko welcomed suggestions from the delegates in this area.

Dr. Mortimer stated his belief that it might be dangerous to give advice to the presidents about how to position themselves in this transition. Positioning is a delicate matter, since alignment with faculty against the government, for example, could have large ramifications for funding. Dr. Mortimer suggested determining whether this change is part of a move to provide less government funding, and if that is the case to begin seeking alternative funding sources.

Dr. Teichler observed that, unlike the United States, in some countries the role of the president is kept deliberately weaker. This "soft" attitude ensures that the president will not be an instrument of the government to do something to the academy that it cannot accept. When the Japanese government makes this change, university presidents should ask themselves whether this change is merely to the presidents' relationship with the society, or whether it is also intended to change their relationship with the government. For example, the Dutch government made similarly rapid changes that included changes to the function of the Ministry of Education.

Dr. Kuenzel noted that a similar discussion is underway in Germany, and there has recently been a decision that all universities will be taken out of the chain of government bureaucracy in the next two years. The universities will receive lump-sum funding from the state, which will be allocated according to performance criteria. As a result, the universities will have a mix of contract funding and performance-based funding. Dr. Kuenzel is confident that, as time goes on, the government will withdraw funding and universities will be left to find it on the market.

Dr. Gruber stated that in most countries, including Austria and Japan, there is a lack of trust between the public and political systems regarding universities. However, there is a possibility that university associations, such as the Rectors' Conference in Austria, have the potential to rebuild trust by providing an opportunity to react to changes such as these. He asked whether such an approach might be taken in Japan.

Dr. Kaneko replied that the Association of National Universities has been resistant to reform but has not succeeded in establishing a framework for discussion of the position it should select.

Dr. Zemsky reiterated his belief that the Chinese and Japanese cases have brought out all the important issues. He was reluctant to give advice to presidents, not being a president himself, but suggested that advice could be given about university positioning. Dr. Zemsky believed the issue was not about academics or trust but about funding: relative to other countries, the funding situation in Japan is critical. Similarly, the Japanese government is likely to be downsizing in the future, as other governments are downsizing. Japanese universities would therefore be well-served by asking themselves what they really need and how they can get it, instead of fighting an incremental battle over this particular reform.

Ms. Davis suggested that the change may be a positive one. The Japanese universities will be able to obtain funding from various sources instead of merely one.

Dr. Meissner asked what was at stake for Japanese universities in this reform. If there is more freedom, the universities should take it. If the price is not less money but merely redistribution of money among the universities, the more prestigious

universities may have to give up something in exchange for the freedom.

Dr. Kaneko repeated that the reform currently consists of the basic plan, and university presidents are being asked to provide their suggestions as to the specifics. This is why the question of the positioning of the presidents is important.

Dr. Zinser asked whether there was an informal presidents' council in Japan where the presidents recognize that they are competing for funding, and will be more competitive after these reforms. In the United States, some informal councils have been effective in reducing conflict between universities and their governments. She suggested that this format might be helpful in the Japanese context.

Dr. Naito observed that very little information has been provided to the presidents so far, and most of the discussion has been largely speculative. There is a formal committee to discuss the issue, and at the emergency meeting of the Council of National University Presidents there was a consensus, but it was also discovered that there were significant differences of opinion.

Dr. Teichler thanked the discussants for their contributions.

Concluding Session

Chair: Dr. Mortimer

Dr. Mortimer noted that presidents operate in a world of forced choices, and priorities must be understood in the context of those forced choices. There was much discussion during the sessions about the value choices to be made, and the separate cultures have different answers about who should go to college, who should pay for it and who should govern the institutions. The dynamics of leadership are likewise different in the separate cultures. It is also important to note that internal priorities pale in significance to the change being directed from outside, and changes are happening so fast that there is little time internally to react. This was clearly demonstrated by the situation faced by the Japanese presidents.

As a final point, Dr. Mortimer asked the delegates to consider where they should

go next as a conference. First, they should consider whether to continue at all, whether there was a unique contribution to be made and what that contribution would be. Second, they should consider whether to form a higher education group, and if so, what the group would do and how it should be structured. Finally, they should consider where to obtain funding for any future activities.

SUMMARY COMMENTS

Brief Comments on the Presidents' Session 2 Which Ideal must Lead "Strategic Management for Universities"?

Shigetaka Imai
Hiroshima University

1. What is the ultimate purpose of management for universities ?

Such topics as efficient management, strategies for lifelong learning, financial management and strategic planning processes were dealt with in the Presidents' Session 2 "Strategic Management for Universities". There were difficult problems pointed out, such as the balances of power between state and universities, president and faculty, and market and universities. But one of the most important topics not to be discussed is what is the ultimate purpose of management for universities.

The word management comes from an economic field. A company must make profit. The objective of companies is self-evident. Therefore the management in companies can pursue efficiency. But as to academic achievement it is difficult to judge its quality. It is necessary, therefore, to discuss what is the objective of strategic management for universities.

Science for the sake of science has been an ideal of the academic world since the scientific revolution. But application of science and technology not only promoted the convenience of social life but also destroyed the natural ecological environment, a situation that makes it impossible for scientists to do research for its own sake. The scientists must be accountable for their activities. The scientists must be not only intelligent but also ethical. In order to fulfill this request universities must have their own principles.

The market principle cannot rescue universities because to sell well or to

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make profit does not automatically mean to be ethical. The present economic system itself must be also reformed. Not competition but philanthropy must become a principle of economics, as was asserted by a famous economist Silvio Gesell, one whom Keynes regarded as a most promising economist.

The state is said to follow the political principle of equality. Our political system is sustained by democracy, which principle is itself based on the principle of equality: each person has an equal right to vote or to be voted on. The political system coordinates the interests of people by guaranteeing equality of access.

But in an academic field specialists must decide what is true. Scholarship plays a great role. But as to deciding what is ethical, not only specialists but also every citizen can participate in the final decision-making. Universities must listen to the voice of the people in the street in order that they can decide things ethically. Universities must be autonomous in order to promote academic achievement, but in order to be accountable for the ethical side of the academic achievement they must listen to what the public thinks and says. There must be a communication channel between academia and laymen.

For such a purpose, it is necessary to organize an advisory committee consisting of people in the region where the university is established. In this committee, academics should have to explain what subjects they research and for what purpose they do research. Academics must expect to answer to the elementary questions of laymen in order to be accountable to them.

One of the most important functions of universities is to criticize what is going on. Professors must be sensitive to the influences of their academic products. Indeed, universities should be centers of common sense and conscience. Who can care for the safety of the earth except academics, who can and must think independently? Managing Directors are primarily accountable for their companies and not for the earth or the human beings. Politicians are primarily accountable to their constituents and not to the people in general. In the long run, it is presidents in universities who must be accountable for the future of the earth.

Unfortunately there are some professors who do research for its own sake but who are not conscious of their responsibility to be accountable for the social influence of their academic results. Therefore universities should avoid, or at least exercise control, over wrong directions of research: for example, the dangers of gene recombination technology. If presidents in universities are to take over this kind of difficult role, their power must be increased in order that universities may be accountable for the future of the human race.

2. What is an ideal university?

In this post-massification stage of the development of higher education can there still be an ideal for universities? There used to be Humboldt's ideal. Is this ideal already dead? There is the concept of the multiversity in the USA as Kerr asserted. Or is it, as Riesman wrote, that student consumerism can be a new ideal for the university? Or do universities need to become vocational institutions? Does general education or liberal education still survive? We assert that we need a new ideal of higher education adjusted to the new age of 21st century.

Liberal education or general education aims in principle at educating a whole person. Both terms find their origin in the classical ideals. The Greek word for education is *paedeia. Paideia* implies the complete education of a child; and from it grew the concept of *septem liberalis*, the scheme of education for Roman aristocrats, which contained the aim of providing holistic education. Some say that this Humboldtian ideal is dead; or that the ideal of liberal education is now antiquated and stratified. Moreover, a distinction is drawn between general education, as an aim not inappropriate to the needs of democratic society, and liberal education, which is essentially elitist. These assertions and distinctions appear to be erroneous, as both general and liberal education aim to achieve the same ideal, that of holistic education. If it is necessary to draw a distinction, then general education offers holistic education to all who wish to study at universities; liberal education provides similarly for those who learn at high school

Because the sciences become more and more specialized, the ability of science to provide holistic education becomes weaker and weaker. Since the scientific revolution in the 18th century, the ability to achieve an holistic education through academic specializations has become weaker. Especially is this true since the new curriculum, which is discipline-centered, was introduced in the 1960's with the result that the entire education process is carried out following a schedule of isolated academic disciplines. Consequently, one of the most important things that educationists today ignore is the risk of teaching science directly when educating pupils in elementary schools. Science consists of objective knowledge. Objective knowledge is normally value-neutral, so that it is necessary to abandon value-judgment in order to observe things objectively.

Indeed, a science teacher is not allowed to express any sympathy with the subjects of scientific observations. But, when educating children up to the age of 14 years, the most important thing is that they feel and sympathize with things. So for example, you must teach pupils at elementary schools how beautiful nature is, how wonderful the lives of plants and animals. After they have learned deeply

about living nature, then the scientific and objective laws can be taught. Teaching science must be compensated by cognition of nature and society. In some cases, the most intelligent scientist can be the worst person in the world when he uses his knowledge in the wrong way. Therefore all education, including higher education, must be holistic. In ideal universities, holistic education and holistic research must be the most important principle of their management. Research must be combined with ethical judgment. Education at universities must be holistic. The aim of university management must therefore be to guarantee these characteristics in research and education.

Commentary on the Concluding Session, Day 1, Higher Education Summit

Robert Zemsky
University of Pennsylvania

The Higher Education Summit provided a remarkable window for viewing the tensions now swirling around universities across a broad spectrum of national contexts. What we discussed in Hiroshima last September testifies to both the strength of the ideal of the university and the extent to which external pressures now threaten to recast what universities are about — how they operate, the kinds of values they pursue, and their relationships with the external agencies on whose goodwill universities are more dependent than ever. Once more, universities everywhere are asking, "How can we be in this world without becoming part of it?"

The theoretical basis for our discussion was framed by our host, Professor Akira Arimoto, in his detailing of the changing dynamics that post-massification is bringing to higher education. It is the notion of a university education as a broadly based good which can no longer be rationed that is forcing governments, faculties, and students to see their universities in a fundamentally different light — essentially, as agencies providing special access to economic well-being.

As the summit amply demonstrated, discussions of these issues highlight the fissures that often divide those both within and outside of the academy. To a significant degree, these differences also reflect substantial variations in the national contexts in which universities operate. There was a general consensus about the problem at hand — principally, the need to preserve institutional autonomy and the university's commitment to research and cultural values in an

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age of markets. However, what was equally apparent was just how much individual responses reflected national traditions and perspectives. Those from the United States were more likely to embrace or be resigned to a world of markets in which enterprise is rewarded, students are treated as customers, and attention is focused on educational outcomes as much as educational processes. Those from western Europe were more likely to define the same set of basic problems in terms of established practice and precedent, on the one hand, and of law, decree, and governmental regulation on the other. Those from Asia, in general, and Japan, in particular, were more likely to define basic issues in terms of the operational role of government and whether or not universities ought to be independent of the ministries that heretofore have been responsible for their well-being.

As the Summit also demonstrated, when the discussion of these issues takes place in a cross-national context, the principal touchstone becomes the tension between institutional autonomy and the increasingly intrusive role of the market in determining the future of individual universities. This tension has occasioned a mix of unexpected dilemmas. In the United States, for example, while institutional autonomy—in particular, freedom from market forces—is probably on the decline, individual faculty members are actually enjoying increased autonomy because of their success in the market. The Institute I head at the University of Pennsylvania is now largely free of university control because of its success in obtaining external funding in a highly competitive market for research in the United States. Not surprisingly, the next big issue in the United States may center on when the faculty or when the institution owns the intellectual property rights to academic products. Traditionally, individual faculty own that which is subject to copyright—principally books and texts—while the university owns that which is subject to patent law—products, processes, and procedures. Perhaps the most explosive aspect of this issue is the question of who owns "teaching" as the act of instruction becomes increasingly distributed through information technologies.

Such market perspectives, admittedly cast in an American idiom, also provided an interesting way of redefining many of the national challenges related to institutional autonomy that were aired during the Summit. One of the issues at the center of Japan's rethinking of its higher education system is the dramatic decline in the size of its youth cohorts. Delegates to the Summit from both the United States and western Europe speculated whether or not the answer to diminished numbers might lay in a dramatic expansion of the notion of who should attend a university, when, and for what purposes. Two decades ago, when

facing much the same dilemma, institutions in the United States dramatically expanded their markets, making themselves more financially independent, on the one hand, but more subject—as well as responsive—to the vagaries of the market on the other.

At the Summit, questions of the role and level of student tuitions within institutional economies raised similar kinds of concerns about the trade-off between institutional and financial autonomy. Most Europeans believe that a truly successful university system funded primarily through fees is not possible. The American case provides the counter-example, though it is also clear that, as student fees rise, institutional autonomy from market forces declines—students who pay hefty sums for their educations have a persistent habit of demanding that they "get their money's worth!" It is also the case that the American students who pay the most for their university educations, principally at highly selective private institutions, may not be purchasing better a education, but rather enhanced prestige. To the extent that institutional autonomy and prestige are linked, then an increased reliance on student fees will not necessarily erode institutional quality.

Such consideration raised two final, speculative sets of questions at the Summit. First, can a university in search of financial autonomy, in exchange for what it receives from public agencies, promise to foster economic growth? If the university becomes an explicit agent of economic policy, what happens to its commitment to autonomy and the pursuit of questions of value—including questions relating to the efficacy of economic growth itself? And, second, what happens when for-profit providers enter the picture? Will these businesses see the academy as merely a source of money or will they want to join in supporting the academy's traditional autonomy?

Reflections on the Presidents' Summit of the Six-Nation Research Project

Noel F. McGinn
Harvard University

It has been a unique privilege to attend this meeting so rich in information and insights into the past, present and future of the university. I came expecting a conventional academic meeting, full perhaps of important data but often lacking in vision. The reality of the Summit has been quite different: abundant in facts but more importantly offering suggestions for what response to make to those facts.

The history of the university is similar and a key to the future. Only 50 organizations operating 500 years ago in the Western World remain in existence today. One of these is the Roman Catholic Church, another the English parliament. The other 48 are universities. How is it that universities have survived while so many other organizations have disappeared?

The answer lies in the highly responsive and adaptive nature of universities. Contrary to the common complaint of universities as "ivory towers" distant from reality, insulated from political, economic and social conflict, universities are closely linked to a variety of different stakeholder groups in society. These groups both penetrate the university but also are affected by the university's actions.

As a consequence, universities change over time. Consider, for example, my university. It began, more than 350 years ago, as a seminary to train Congregational ministers. At a later stage it educated "young gentlemen" for American society. Only in the latter half of the 19th century did it begin to pay a national role as a center of scientific research. And today it qualifies as an international university, with professors, books and curriculum drawn from around the world. Universities have changed often. They have contributed to changing society and they have been changed by their societies.

Universities as institutions have responded in varying ways to changes in

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their political, economic and social environments. Some have chosen to respond primarily to market pressures while others have attempted to shape or lead the market. Some have focused primarily on instruction while others have emphasized research. The wide variation found in universities today is testimony to their inventiveness and their capacity to respond to and direct processes of change.

Critical to this responsiveness have been strong leaders who had led their institutions in the process of re-invention. The central role of these leaders has been to capture or invent a vision of the future that mobilizes support and reaction from the various stakeholders. The leaders have educated and negotiated with their own faculties as well at external groups, consumers of education as well as citizens and their political representatives.

The leaders have tapped three sources of power: the academy; the market; and the polity. These leaders have been, in the language of this Summit, mission-centered, market smart, and politically savvy. The combination of these three sets of values and skills is essential to enabling the university to detect what is insufficient in current offerings and practices, to re-build the university even while it is running.

In all this, it is clear that our presidents, those leaders at this Summit who are enabling their institutions to re-invent themselves, think in political terms. They think "politically" in the sense that they have visions for the future. Their visions are of peace minded people, committed to civic engagement, building distinctive universities in a competitive environment, re-building society. The scope of their actions, and the ability of universities to affect every part of society, poses the rhetorical question: Who else can lead society?

The questions raised and positions taken by leaders of this type necessarily provoke controversy. The central issues in each of our societies are concerns precisely because we have not yet found those answers that will attract consensus. In addition, however, the Hegelian contradictions raised in the discussions during this Summit are a reflection of vitality, and lively interest in learning from each other, about how others define not only problems but also how they design solutions.

The learning process takes two forms. Some learning is by imitation or replication, as we apply solutions from other societies or institutions to our problems. We can learn from what others have done. Much of that kind of learning may have occurred during this Summit.

Another kind of learning occurs through direct experience, from observation of the results of our actions. Many believe that this second kind of learning is preferable. It is described as being organic, as generating solutions that are

culturally relevant, and as more likely to be sustained. Direct experience may be better in most circumstances, but it too has limitations that are important to keep in mind. It is possible to learn the wrong things, as we often have observed in our students. And it is possible to learn the right things so well that we become highly resistant to change when change is necessary. One of the important Hegelian contradictions to be acknowledged is that success does not teach us what can go wrong. As a consequence, organizations with a long history of success often become rigid and resistant to recognition of failure when it occurs.

Successful organizations, no matter their past record, are those that accept that mistakes are not only possible but also probable. Especially if we seek to produce what is new, we are likely to make mistakes. We cannot avoid stumbling when we move into unknown territory. A hallmark of strong leaders and successful universities is that they are able to admit and correct their mistakes and therefore continue to learn.

Technology of various kinds helps in the process of not only identification of mistakes once made, but also in the provision of an early-warning system to detect future problems. Speakers in the Summit suggested kinds of technologies that would be helpful to universities attempting to understand how well they are in fact doing, and to mapping those events in their environments that might prove problematic in the future.

Ultimately, however, as various speakers noted, the prime requirement for university leadership is courage. The future is unknowable, and therefore we cannot predict what will happen nor how best to respond or initiate in order to achieve our objectives. We can, however, build the future through our direct action. To propose reforms that challenge existing practices, and to call for new interpretation of old values, takes courage. Couched in different nuances and cultural forms, courage emerges from this Summit as the major element in a process of higher education reform for quality higher education in the 21st century.

Reform for Higher Education in the 21st Century

Ulrich Teichler
University of Kassel

1. Managing Future Challenges

The aim of the joint deliberations among university presidents and other experts was not to analyse management of higher education in general and to explore means of its improvement. Rather, the task of management was understood to be determined concretely in its relationships to those societal conditions which higher education faces at present and is likely to face in the near future. No efforts were made to clarify optimal management per se. Rather, efforts were made to identify the most suitable managerial means of coping with the most salient challenges for higher education.

There is a widespread consensus as regards the major challenges higher education faces at present and in the near future.

> Agreement tends to be reached easily as regards the major issues higher education has to tackle: the massification of higher education and its underlying forces; internationalisation or globalisation; the need for life-long learning; new technologies; and development towards a knowledge society. Demands put on higher education tend to be expressed by all concerned with a stronger sense of urgency than ever before.

The move towards a knowledge society does not simply suggest that the university as a generator, storehouse and transmitter of systematic knowledge is bound to gain from this development. Higher education also loses in some respect because it will no longer have an oligopolistic position. The pressures for providing evidence of its utility might undermine the character of the university,

Ulrich Teichler is a Professor, Centre for Research on Higher Education and Work, University of Kassel.

serving society not only through professional training, useful research results and knowledge-based service, but also more indirectly through the fruits of pursuit of knowledge for its own sake and through critical thinking.

Higher education is put under pressure to achieve more with less, i.e. resources. Guarantees of sufficient basic funding and of a stable environment tend to fade in many countries.

The leadership of higher education institutions becomes a more powerful factor notably in those countries where a weak position was customary in the past. It would be misleading, though, to call this trend a growth of autonomy because we observe an increasing complexity of power games and actors.

2. Shared Views

It is striking to note how much key actors, such as university presidents, and experts in higher education from various countries tend to agree on major issues and on major directions of reforms. Three major themes tend to be put forward currently.

Obviously, a need is felt for a strong role of high quality higher education management. This is more frequently advocated than ever before, for outside pressures seem to grow whereby many expectations from outside do not match the potential and the character of higher education. Higher education management also has to step in, because government loses its role of balancing the pressures based on the dual role of government in the past of being the legitimate voice of external expectations and a guardian angel against undue pressure from outside. Further, higher education management is expected to counteract the dangers inherent in higher education of favouring segmentation, inward-lookingness and a collegial spirit which might end up in leniency as far as low-performing colleagues are concerned. Moreover, higher education management has to take care that increasing pressures for social relevance of higher education do not lead to utilitarian attitudes to the extent that the sceptical rationality (or the rational scepticism) of higher education get lost. Finally, higher education management has to take up the pressures for increasing efficiency without losing sight of the goals to be pursued.

The university obviously is challenged to find a proper course in balancing its functions of stressing pursuit of knowledge for its own sake, serving as a critical agent in society and providing useful knowledge. The university cannot be responsive to all the expectations put forward. University management has to help

all members of the university to explore which expectations can be met in principle and which contradict the nature of higher education, the extent to which demands put on the university by various societal actors really meet the economic, technological, societal and cultural needs, what the tasks are of the individual university in these respects as part of a diversified system of higher education and research.

The university has to act in an increasingly complex system of powerful actors. Whereas Burton Clark named only three key actors in the early 1980s, i.e. the state, the market and the academic oligarchy, we are inclined to point at three additional major actors today: the university management, members of higher education institutions other than the academic oligarchy and the management, and finally the so-called stakeholders. Obviously, there has been a loss of confidence as far as the proper handling of higher education matters by the academic oligarchy under the shelter of academic freedom. Mistrust has also grown as far as the policy and planning capacities of government are concerned (This has led, among others, to a substantial growth of the number of buffer agencies). Finally, mistrust of both the state (as the old visible hand) and the market (as the invisible hand) has contributed to the current fashion of strengthening the position of the stakeholders as a new visible hand. This situation requires higher education management not to overestimate their growing room for maneuver as autonomy but rather as a need and challenge to balance the various forces aiming at shaping higher education.

3. Current Controversies

A summary of the current debates on the changing function of higher education would be biased, if only shared views were pointed out. A close glance reveals a striking diversity of views. First, the changing conditions of higher education are interpreted differently. For example, views differ strikingly about the character of internationalisation affecting higher education. Second, though consensus seems to prevail about a growing responsibility of university leadership, some key actors and experts expect higher education to act vis-a-vis a growing steering role of government, whereas others believe that higher education management will take over an increasing responsibility in formulating major policy direction. The views also vary whether forces of centralisation or decentralisation will prevail within institutions of higher education.

Third, higher education institutions can choose among a broad range of

policy options. They have to decide, whether they

want to put all their energy on reinforcing economic growth or on serving a wider societal rationale; support internationalisation or globalisation as a tool of international domination and imperialism or as a step towards removing international tensions; opt for a clear stratification of higher education, a flexible diversification or for a more or less even quality of all institutions of higher education; emphasize a growing role of general competence of specialized knowledge, or whether they pursue other curricular approaches; encourage study programmes to be offered under the roof a single institution of higher education, or whether they advocate temporary student mobility or the import of course programmes from other institutions with the help of new media.

The diversity of views does not have to be deplored. Rather, it shows the diversity of options and opportunities higher education experiences today. One might ask, however, whether higher education is bound to lose public acceptance and visibility and whether the potential of creative cooperation is bound to erode, if no consensus can be reached anymore about a proper role of higher education.

4. A Genius Loci of Hiroshima?

The deliberations addressed here about the changing tasks of higher education management were the outcome of a conference held in Hiroshima. The location of the conference could be viewed as coincidental. Hiroshima also can be viewed as a symbol. If we strive for increased knowledge and technological process without addressing the social responsibilities of higher education and research, we might serve uncontrolled destruction.

International cooperation in redefining the role of higher education management in reforming higher education can be helpful in overcoming mere operational perceptions of higher education. It might make us aware how higher education management can help defining goals of higher education which are worthy of pursuit.

APPENDIX

Program and List of Participants

Program

Six-Nation Higher Education Project Seminar

◇◇◇ *Main Theme* ◇◇◇

HIGHER EDUCATION REFORM FOR QUALITY HIGHER EDUCATION MANAGEMENT IN THE 21ST CENTURY

September 19th (Sun), 1999

12:00- Registration for Overseas Participants
At Rihga Royal Hotel Hiroshima

September 20th (Mon), 1999

8:30- Registration

OPENING SESSION

9:00-9:30 Chair: Keith J. Morgan and
Akiyoshi Yonezawa (RIHE, Hiroshima University)
Opening Remarks
Yasuo Harada, President, Hiroshima University

Report of the Six-Nation Higher Education Project
Akira Arimoto, Project Director and Professor, RIHE, Hiroshima University

9:30-10:30 Keynote Address
Kenneth P. Mortimer, President, University of Hawaii

10:30-10:45 Tea Break

PRESIDENTS' SESSION

10:45-12:45 **Presidents' Session 1**

Framework for Higher Education Policy

Chair: Robert Zemsky (University of Pennsylvania) and Takekazu Ehara(Kyoto University)

Discussants:

- ☐ A System in Transition — Higher Education Policy Update and Future Plans from China- Ruiqing Du, President, Xi'an Foreign Language University
- ☐ Policy and Future Plans from the United States Perspective — Elisabeth A. Zinser, Chancellor, University of Kentucky Lexington Campus
- ☐ Present and Future of Higher Education in Japan — Makoto Nagao, President, Kyoto University

Discussion

12:45-14:00 Lunch

Afternoon

14:00-15:30 **Presidents' Session 2**

Strategic Management for Universities

Chair: Karl Heinz Gruber (RIHE, Hiroshima University, University of Vienna) and Shigetaka Imai (RIHE, Hiroshima University)

Discussants:

- ☐ A Trial of Making the Efficient Management of Higher Academic Organization - Yasuo Harada, President, Hiroshima University
- ☐ Strategies for Lifelong Learning — Re-thinking University Education in Terms of Continuing Education - Werner Meissner, President, University of Frankfurt
- ☐ Financial Management and Planning — Luc Weber, Professor and Former President, University of Geneva
- ☐ From U.S. Perspective — Kenneth P. Mortimer,

President, University of Hawaii

15:30-15:45 Tea Break

15:45-17:00 Continued Discussion

17:00-17:30 Summarize Today's Discussion and Adopt Next Day's Agenda
Chair: Robert Zemsky (University of Pennsylvania)

Welcome Reception

18:30-20:30 At Banquet Room 'Crystal Hall', 4th Floor, Rihga Royal Hotel Hiroshima
Chair: Keith J. Morgan and
Atsunori Yamanoi(RIHE, Hiroshima University)

Greetings: Yasuo Harada, President, Hiroshima University
Akito Arima, Minister of Education, Japan
Yuzan Fujita, Governor, Hiroshima Prefecture
Tadatoshi Akiba, Mayor, Hiroshima City
Kazu-hiro Mori, Director, RIHE, Hiroshima University

September 21st (Tue), 1999

8:30- Registration

9:00-10:15 **Presidents' Session 3**
Higher Education and Society: The Role of Universities in Economic Growth
Chair: Elisabeth A. Zinser (University of Kentucky) and
Hidenori Fujita (University of Tokyo)
Discussants:

- ☐ Singapore's Experience in Higher Education — Linda Low, Associate Professor, National University of Singapore
- ☐ A Vision for Universities in the 21st Century and Reform Measures — To Be Distinctive Universities in a Competitive Environment — Naoki Murata,

Director, Private Education Institution Administration Division, Ministry of Education, Science, Sports and Culture, Japan

Discussion

10:15-10:30 Tea Break

10:30-12:45 **Presidents' Session 4**

Higher Education and Technology

Chair: Xin Wei (Peking University) and Shinichi Yamamoto (University of Tsukuba)

Discussants:

- ☐ Technology and Efficiency — Stephen Golding, Principal, Morgan Stanley Dean Witter Investment Management
  Robin Beck, Associate Vice President, Information Systems and Computing, University of Pennsylvania
  Darren Rushworth, Director, Oracle Academic Initiative
- ☐ Technology and the Curriculum — The NTU Experience - Charng-Ning Chen, Deputy President, Nanyang Technological University
- ☐ Science and Technology of 21st Century and University — Yoshiyuki Naito, President, Tokyo Institute of Technology

Discussion

12:45-14:00 Lunch

Afternoon

PLENARY SESSION

14:00-15:45 Where Do We Go From Here: Building a 21st Century Framework

Chair: Ulrich Teichler (University of Kassel) and

Motohisa Kaneko (University of Tokyo)

15:45-16:15 Summary of Discussion
Chair: Kenneth P. Mortimer (University of Hawaii) and
Ulrich Teichler (University of Kassel)

16:15-16:30 Tea Break

16:30-17:15 Six-Nation Administrative Matters
Chair: Cheng Y. Davis (University of Pennsylvania)

- ☐ Press Release for this Meeting
- ☐ Planning for 2001 Meeting

17:15-17:30 Closing Remarks
Akira Arimoto, Six-Nation Education Research Project Director, RIHE, Hiroshima University
Noel F. McGinn, Senior Advisor to Six-Nation Project, Harvard University
Farewell and Greetings
Kazu-hiro Mori, Director, RIHE, Hiroshima University

List of Invited Participants

OVERSEAS PARTICIPANTS

National Representatives

China

Mr. Ruiqing Du	President, Xi'an Foreign Language University
Mr. Xin Wei	Professor, Peking University

Germany

Mr. Werner Meissner	President, University of Frankfurt
Mr. Rainer Kuenzel	Vice President for International Affairs, Hochschulrektorenkonferenz (Rectors' and Presidents' Conference)
Mr. Ulrich Teichler	Professor, University of Kassel

Singapore

Mr. Charng-Ning Chen	Deputy President, Nanyang Technological University
Ms. Linda Low	Associate Professor, Department of Business Policy, Faculty of Business Administration, National University of Singapore

Switzerland

Mr. Luc Weber	Professor and Former President, University of Geneva
Mr. Alex Keel	Professor, University of St. Gallen
Ms. Yuko Harayama	Lecturer, University of Geneva

U.S.A.

Mr. Kenneth P. Mortimer	President, University of Hawaii
Ms. Elisabeth A. Zinser	Chancellor, University of Kentucky, Lexington Campus
Mr. Robert Zemsky	Professor and Director, Institute for Research on Higher Education, University of Pennsylvania
Ms. Cheng Y. Davis	Director, International Programs Graduate School of Education, University of Pennsylvania
Ms. Robin Beck	Associate Vice President, Information Systems and

	Computing, University of Pennsylvania
Mr. Noel F. McGinn	Senior Advisor to Six-Nation Project Professor of Education, Emeritus, Graduate School of Education, Harvard University
Mr. Stephen Golding	Principal, Morgan Stanley Dean Witter Investment Management
Mr. David Lu	Research Analyst, Morgan Stanley Asia Limited
Mr. Darren Rushworth	Director, Asian/Pacific Division, Oracle Academic Initiative

Observers

Thailand

Ms. Sumonta Promboon	President, Srinakharinwirot University

JAPANESE PARTICIPANTS

Invited Presidents

Mr. Makoto Nagao	President, Kyoto University
Mr. Yoshiyuki Naito	President, Tokyo Institute of Technology

Invited Experts

Mr. Shinichi Yamamoto	Professor and Director, University of Tsukuba
Mr. Motohisa Kaneko	Professor and Director, University of Tokyo
Mr. Hidenori Fujita	Professor, University of Tokyo
Mr. Akiroh Beppu	Professor, Meiji University
Mr. Yoshinaga Ishibashi	Councilor, Kyoritsu Women's University
Mr. Takekazu Ehara	Professor, Kyoto University

Ministry of Education, Science, Sports and Culture Japan

Mr. Naoki Murata	Director, Private Education Institution Administration Division, Private Education Institution Department, Higher Education Bureau
Mr. Junichi Hirata	Official, International Affairs Planning Division, Science and International Affairs Bureau

Hiroshima University

Mr. Yasuo Harada	President, Hiroshima University

Research Institute for Higher Education (RIHE)

Mr. Kazu-hiro Mori	Professor and Director
Mr. Akira Arimoto	Professor
Mr. Atsunori Yamanoi	Professor
Mr. Shigetaka Imai	Professor
Mr. Takashi Hata	Professor
Mr. Akiyoshi Yonezawa	Associate Professor
Mr. Naoyuki Ogata	Assistant Professor
Mr. Hirotaka Nanbu	Research Associate
Ms. Fumi Kanno	Research Associate
Mr. Masataka Murasawa	Research Associate
Mr. Yuji Hirata	Research Associate
Mr. Karl H. Gruber	Visiting Professor / Professor, University of Vienna
Mr. Fu-tao Huang	Visiting Research Fellow / Associate Professor, Xiamen University, Institute of Higher Education Research
Mr. Keith J. Morgan	Visiting Professor(1999) / Former Vice-Chancellor, University of Lancaster

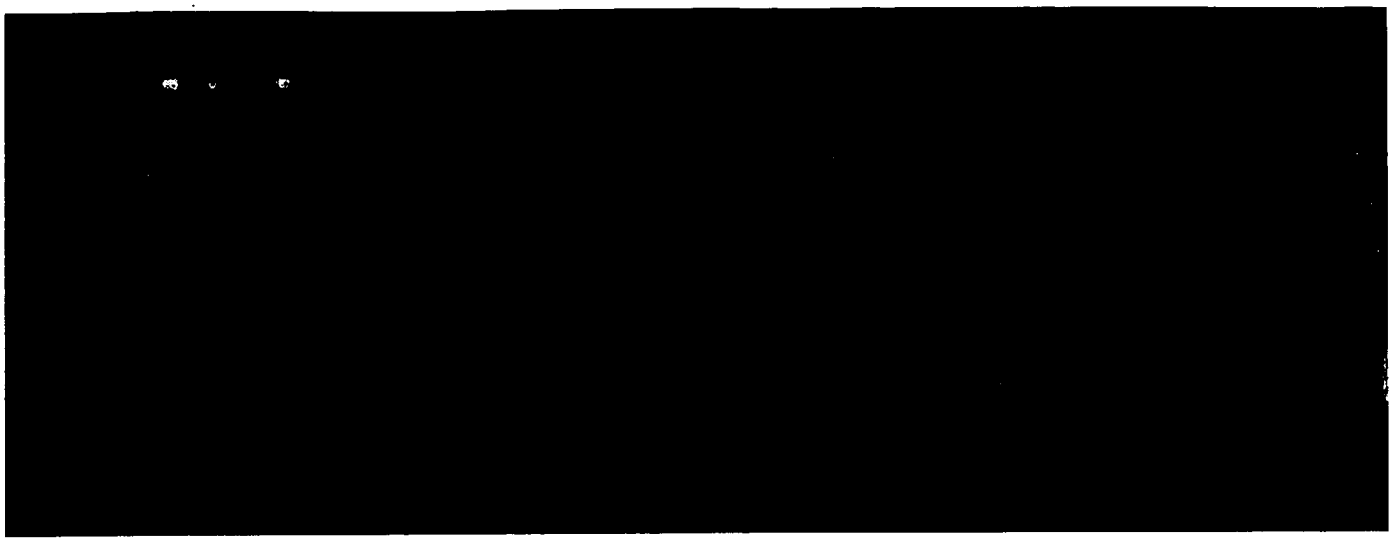
R.I.H.E. PUBLICATION IN ENGLISH

International Seminar Reports

1. *Perspectives for the Future System of Higher Education* — Report of the Hiroshima International Seminar on Education, 1977, 149p.
2. *Higher Education for the 1980s* — Report of the Second Hiroshima International Seminar on Higher Education, 1980, 189p.
3. *Innovations in Higher Education* — Report of the Hiroshima/OECD Meeting of Experts on Higher Education and the Seminar on Innovations in Higher Education, 1981, 179p.
4. *Comparative Approaches to Higher Education — Curriculum, Teaching and Innovations in an Age of Financial Difficulties* — Reports of the Hiroshima/OECD Meetings of Experts, 1983, 247p.
5. *The Changing Functions of Higher Education — Implications for Innovation* — Reports from the 1984 OECD/JAPAN Seminar on Higher Education, 1984, 229p.
6. *Higher Education Expansion in Asia* — Reports from the 1985 International Seminar on Asian Higher Education, 1985, 169p.
7. *Public and Private Sectors in Asian Higher Education Systems— Issues and Prospects* — Reports from the Third International Seminar on Higher Education in Asia, 1987, 111p.
8. *The Role of Government in Asian Higher Education Systems — Issues and Prospects* — Reports from the Fourth International Seminar on Higher Education in Asia, 1988, 125p.
9. *Foreign Students and Internationalization of Higher Education* — Proceedings of OECD/ JAPAN Seminar on Higher Education and the Flow of Foreign Students, 1989, 300 p.
10. *Academic Reforms in the World: Situation and Perspective in the Massification Stage of Higher Education*, 1997, 304p.
11. Higher Education Reform for Quality Higher Education Management in the 21st Century-Proceedings of the 1999 Six-Nation Presidents' Summit in Hiroshima, 2000, 183p.

International Publication Series

1. Motohisa Kaneko, *Enrollment Expansion in Postwar Japan*, March 1987, 111 p.
2. Zhang Guo-cai, *Higher Education Research in China*—An Annotated Bibliography, March 1989, 124 p.
3. Yoshiya Abe, *Non-University Sector Higher Education in Japan*, March 1989, 85 p.
4. Motohisa Kaneko, *Financing Higher Education in Japan—Trends and Issues*, March 1989, 120 p.
5. Motohisa Kaneko, *Higher Education and Employment in Japan—Trends and Issues*, March 1992, 121 p.
6. Keith J. Morgan, *Universities and the Community - Use of Time in Universities in Japan*, November 1999, 88 p.



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