29-30 AUGUST 2007
TOKYO, JAPAN

INTERNATIONAL CONFERENCE

Pathways Towards a Shared Future: Changing Roles of Higher Education in a Globalized World

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TABLE OF CONTENTS

WORKSHOP SESSION 1: RESEARCH FOR INNOVATION AND HUMAN AND SOCIAL DEVELOPMENT

204-209

WORKSHOP 1 REPORT

Presenters:

Hebe Vessuri, Senior Researcher and Head, Department of Science Studies, IVIC, Venezuela and Vice-Chair, Council of UNU

Luc Soete, Director, UNU Maastricht Economic and Social Research and Training Centre on Innovation and Technology

Shinichi Yamamoto, Director and Professor, Research Institute for Higher Education, Hiroshima University

Hiroyuki Yoshikawa, President, National Institute of Advanced Industrial Science and Technology

Mohamed H.A. Hassan, Executive Director, the Academy of Sciences for the Developing World

Mary-Louise Kearney, Director of the Secretariat of the UNESCO Forum on Higher Education, Research and Knowledge

Chair:

A.H. Zakri, Director, UNU Institute of Advanced Studies

Coordinator:

Balakrishna Pisupati, Research Fellow and Team Leader of Biodiplomacy Programme, UNU-IAS

Rapporteur:

Wendy Elliot, Junior Professional, UNU-IAS

WORKSHOP 2 REPORT

Presenters:

Emile Rwamasirabo, Ambassador Extraordinary and Plenipotentiary, Republic of Rwanda

Kazuo Takahashi, Visiting Professor, UNU

Deepika Udagama, Head, Faculty of Law, University of Colombo, Sri Lanka

Gabriela Warkentin de la Mora, Director of the Department of Communication and UNESCO Chair in Communication, Universidad Iberoamericana, Mexico

Chair:

Yozo Yokota, Special Adviser to the Rector, UNU

Coordinator:

Vesselin Popovski, Senior Academic Programme Officer; Director of Studies on International Order and Justice

Rapporteur:

Morten B. Pedersen, JSPS-UNU Postdoctoral Fellow

WORKSHOP SESSION 3: INTERCULTURAL LEADERSHIP AND CHANGE

218-223

WORKSHOP 3 REPORT

Presenters:

Ingrid Moses, Chancellor, University of Canberra and former Chair, Council of UNU

Pornchai Mongkhonvanit, President, International Association of University Presidents and President of Siam University

Mona Taji, Higher Education Specialist, Higher Education Reform for the Knowledge Economy Project

Andrei Marga, Professor of Contemporary Philosophy and Logic, Babes-Bolyai University, Romania; Member, Council of UNU

Salah Hannachi, Ambassador Extraordinary and Plenipotentiary, Republic of Tunisia, and Dean of the African Diplomatic Corps

Chair:

Jairam Reddy, Director, United Nations University International Leadership Institute

Rapporteur:

Nicholas Turner, Research Assistant, Peace and Governance Programme, UNU

WORKSHOP SESSION 4: EDUCATION FOR SUSTAINABLE DEVELOPMENT

224-230

WORKSHOP 4 REPORT

Presenters:

Carl Lindberg, Special Advisor to the Swedish National Commission for UNESCO on Education for Sustainable Development

Dzulkifli Bin Abdul Razak, Vice Chancellor, Universiti Sains Malaysia

Ryokichi Hirono, Professor Emeritus, Seikei University

Eun-kyung Park, Director, RCE of Yonsei University

Antoni Giró i Roca, Rector, Technical University of Catalonia and President, Global University Network for Innovation

Antonio Augusto Dos Santos Soares, Manager, Distance Education Programme for Sustainable Development, Banco do Brasil

Charles Hopkins, UNU-Chair; UNESCO Chair; Professor, York University

Chair:

Maria C.E. (Rietje) van Dam-Mieras, Chair, Natural Sciences, Open University of the Netherlands; Visiting Professor at UNU on Education for Sustainable Development

Coordinators:

Katsunori Suzuki, Senior Visiting Fellow, UNU-IAS and Yoshihiro Natori, Senior Fellow, UNU-IAS

Rapporteurs:

Yoko Mochizuki, ESD Specialist, UNU-IAS and David Mutekanga, JSPS-UNU Postdoctoral Fellow

WORKSHOP SESSION 5: ACCESS AND SUCCESS

232-243

WORKSHOP 5 REPORT

Presenters:

Goolam Mohamedbhai, President, International Association of Universities

Mala Singh, Executive Director, Higher Education Quality Committee of the Council on Higher Education, Pretoria, South Africa and Vice Chair of the Regional Scientific Committee for Africa, UNESCO

Paulo Speller, Political Scientist, and Rector, Federal University of Mato Grosso, Cuiabá

Masafumi Nagao, Professor, Center for the Study of International Cooperation in Education, Hiroshima University

Chair:

Eva Egron-Polak, Secretary-General, International Association of Universities

Coordinator and Rapporteur:

Christina Lloyd, Head of Teaching and Learner Support, Student Services, the Open University, UK

WORKSHOP SESSION 6: E-LEARNING

244-253

WORKSHOP 6 REPORT

Presenters:

Hideyuki Tokuda, Chairperson/ Professor, Faculty of Environmental Information and the Graduate School of Media & Governance, Keio University

Peter F. Haddawy, Vice President for Academic Affairs, Asian Institute of Technology

Derek Keats, Executive Director, Information and Communication Services, University of the Western Cape, South Africa

David Wiley, Director, the Center for Open and the Sustainable Learning

Chair:

Norman H. Okamura, Telecommunication Specialist, Social Science Research Institute, University of Hawaii

Coordinator & Presenter:

Brendan Barrett, Head of UNU-Online Learning and co-founder of the Media Studio, UNU

Rapporteur:

Andreina Lairet, eCourse Producer, Media Studio, UNU

FOREWORD

The process of globalization has increased the interdependence of people, information, ideas and institutions around the world. Its many positive benefits include facilitating dialogue and exchange among people from different cultural and religious backgrounds and providing access to knowledge and opportunities through information communication technologies. However, globalization has also deepened inequalities for individuals and countries alike, and there is a growing gap between those who have access to knowledge, and learn to master it, and those who do not. It is no longer sufficient to focus on the "digital divide": we must also tackle the "knowledge divide". If we do not, the risk is that it will grow exponentially.

Higher Education has an indispensable role to play in closing this divide. It can both reinforce the beneficial aspects of globalization and mitigate its negative impacts for the common good of humankind. By providing access to knowledge, and imparting the skills and values needed to resolve and manage the impediments to sustainable development and peace, higher education and higher education institutions can make a substantial contribution towards achieving the Millennium Development Goals. Higher education institutions also have a unique potential to serve as platforms for international and intercultural dialogue, for analyzing and exchanging ideas and perspectives, and for establishing common solutions to address other global challenges, such as climate change.

While higher education institutions have the capacity to influence globalization in a more sustainable direction, they too are being transformed by the forces of globalization. These forces have certainly encouraged greater international cooperation among higher education institutions, governments, private-industry, multilateral organizations, and civil society. But they have also increased inequalities between higher education institutions in developed and developing countries in key areas such as research for innovation.

The International Conference "Pathways Towards a Shared Future: Changing Roles of Higher Education in a Globalized World", jointly organized by UNESCO and the United Nations University in August 2007, was an opportunity for these two multilateral organizations to join forces with decision makers from government and civil society to advance our understanding of the complex relations between globalization processes and higher education. In an excellent example of international cooperation and intercultural exchange, conference participants worked through the themes of research for innovation and social development, education for dialogue and peace, intercultural change, education for sustainable development and e-learning, to identify positive ways in which higher education and higher education institutions can contribute to the creation of sustainable and inclusive knowledge societies.

It gives me great pleasure to present the result of the discussions and debates of that highly fruitful conference through this publication. I hope that it will stimulate others to engage in similar efforts at national, regional and international levels in the search for shared solutions to the challenges and opportunities facing higher education today.

Koïchiro Matsuura
Director-General of UNESCO

INTRODUCTION

Tadamichi Yamamoto

Director-General
Public Diplomacy Department, Ministry of Foreign Affairs of Japan (MoFA)

Tadamichi Yamamoto began his diplomatic career in 1974. In the late 90s, he served as the Minister of Political Affairs at the Embassy of Japan in the Republic of Korea and then later as the Minister of Political Affairs at the Embassy of Japan in Washington, D.C. In 2005, he held the post of Ambassador in charge of International Counter-Terrorism and Reconstruction Assistance to Iraq and North Korea's Nuclear Issue (Dismantlement and Verification) in Japan. Since 2006, he has been the Director-General of the Public Diplomacy Department at the Ministry of Foreign Affairs of Japan (MoFA).

SHAPING HUMANKIND THROUGH EDUCATION

This conference was organized with the aim of making globalization something that brings happiness to all people on Earth. I am honoured that this conference, with its valuable discussions featuring highly knowledgeable experts from various fields, is held in Japan every year.

When I learned of the themes to be discussed during the conference under the title of "Changing Roles of Higher Education in a Globalized World," I was amazed anew at the diversity of angles. I believe this indicates the possible roles of higher education as well as our high anticipations. Education is what is crucial to offset the negative aspects of globalization. Education shapes humankind, and higher education is our source of knowledge for society.

Human intellect is our only means to sift through the overflow of information, and to select and use what is relevant to our happiness. With the rapid development and prevalence of information and communications technology, knowledge becomes the main driving force of growth, and the role of higher education has become more important than ever.

With the significance of higher education for developing countries, as well as the needs of these developing countries themselves, Japan has been enhancing its support and cooperation for not only primary and secondary education, but also for higher education.

I would like to offer one example. When the Electronics Engineering Polytechnic Institute of Surabaya (ITS) was established in 1988 in Indonesia, our country supported the development of teaching material, teacher training, and school operations. We also provided school building construction materials as well as equipment for teachers so that they could conduct experiments. Further support was provided from instructors from Japan's technical colleges and universities. From 1993, a third-country training programme targeting higher education teachers in Asian countries was held to disseminate its achievements, and ITS became widely known both domestically and abroad as a leading electronics polytechnic institution. In 2001, ITS also won the university category at the NHK Robot Contest against universities from other countries, including Japan. Since then, ITS has been a regular participant of the ABU Robot Contest, where students of Asian-Pacific universities and polytechnic colleges are selected to represent their countries or regions.

Another example is the ASEAN University Network/Southeast Asia Engineering Education Development Network (a.k.a SEED-NET). We have implemented this since 2003. This is composed of 19 universities in 10 ASEAN countries and 11 supporting universities in Japan. The target of this cooperative is to build up an education/research collaboration network and to improve research/teaching capabilities in the engineering fields of participating universities through an alliance with Japanese universities. This project has two aspects: South-South cooperation between developing countries, and the wider-region cooperation of Japan for ASEAN.

At SEED-NET member universities, international students with differing cultural, religious, language and educational backgrounds come together across borders to dialogue and to develop a shared deeper understanding. This network is not mere support for international students. These students are cutting-edge researchers in their home countries. By cultivating their international minds and having them recognize that they are members of the ASEAN region, we anticipate that solidarity will be enhanced across the region.

I expect that many straightforward opinions will be exchanged at this conference regarding Japan's experiences as I just described, as well as regarding the initiatives undertaken in each country, and the challenges we need to address in the future.

Finally, I would like to express my profound respect to UNU and UNESCO, both valuable institutions for Japan, for their ongoing efforts to conduct thoughtful dialogue regarding globalization. I extend my best wishes for the success of this conference.

Isao Kiso

Director-General for International Affairs
Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT)

Isao Kiso has been working in the area of education since 1976. In 2001, he was the Director of the International Affairs Division at the Ministry of Education, Culture, Sports, Science and Technology (MEXT). In 2002, he became the Director-General of the Cultural Properties Department, Agency for Cultural Affairs (MEXT), and in 2007, he became the Director-General for International Affairs (MEXT). He holds an M.B.A from the Yale School of Management and a L.L.B from the Faculty of Law at the University of Tokyo.

THE CHANGING ROLES OF HIGHER EDUCATION INSTITUTIONS

I believe that globalization is one of the themes discussed most often in recent years. Because globalization has advanced so quickly, significant changes have occurred in our society. Information can now be transmitted halfway around the world instantly, and we can learn about the lives of people and events going on in far away countries, all in the comfort of our own homes. With the increasing interaction of cultures and values across borders, there is heightened interest in countries with differing languages, societies, cultures, and religions. It has become possible to acquire even more new knowledge and experience.

On the other hand, globalization has resulted in the emergence of issues that are new to us. These are difficult issues that don't have simple solutions, such as how to conduct dialogue among civilizations and how to address problems of a global scale across borders. It is now necessary for us to think together, embracing these problems as our own.

With changes brought upon us through globalization, the roles of higher education institutions (HEIs) have shifted also. It is now anticipated that HEIs should contribute to conducting more mutual exchange beyond regional and country borders in their educational research fields, to accelerating mutual cooperation, and to solving various problems and issues. To adequately respond to these expectations, the HEIs must first understand the diversity of issues arising from various countries and cultures, and then work to heighten problem-solving capabilities in the international context.

To support the HEIs, MEXT has been executing the "Support for University Education Reform throughout National, Public, and Private Universities." As part of this, we have implemented initiatives such as the "Support Programme for Internationalization of University Education" and the "Global COE Programme." In addition to supporting the dispatch of students and faculty members overseas, we promote education research through international alliances with foreign universities. We also work to help form education research bases that will be outstanding on a global scale. Through support activities like these, we aim to develop education research that leverages the distinct features of each Japanese university, to advance globalization, and to enhance international competitiveness.

UNESCO aims to contribute to world peace and safety by accelerating cooperation between countries through education, the sciences, culture, and communication and information while UNU aims to contribute to efforts in solving urgent global-scale issues through academic research and capacity development. For these two organizations to come together and jointly hold a conference like this is very significant in itself.

I extend my sincere hopes that this conference will be a deeply meaningful and valuable one. I also wish to express my gratitude to UNU, UNESCO, and all involved in the planning of this conference. Thank you.

Koïchiro Matsuura

Director-General
United Nations Educational, Scientific and Cultural Organization
(UNESCO)

Koïchiro Matsuura began his diplomatic career with a posting to Ghana in 1961 covering ten West African countries, leading to a lifelong passion for the cultures and people of Africa. He worked in development cooperation throughout his career, and in political affairs with a focus on North America. In the 1970s, he served as Counselor at the Embassy of Japan in Washington, D.C., and later as Consul General in Hong Kong. As Deputy Minister for Foreign Affairs from 1992-1994, he was Japan's Sherpa for the G-7 Summit. In 1999, while serving as Japan's Ambassador to France and chairing UNESCO's flagship World Heritage Committee, Mr Matsuura was elected by Member States to his first term as Director-General of UNESCO. After a first term marked by programme and reform accomplishments, as well as the addition of new countries, including the United States, to membership in UNESCO, he was re-elected to a second term in October 2005. Mr Matsuura has authored books in Japanese, English and French on UNESCO, international relations, the intersection between diplomacy and development cooperation, Japan-US relations, Japan-France relations, and a history of the G-7 Summit.

THE FORCES OF GLOBALIZATION: CHANGING THE NATURE AND FUNCTION OF HIGHER EDUCATION

It is my great pleasure to welcome you today to the annual UNU/UNESCO International Conference. This year's event will focus on the theme: "Pathways towards a shared future: changing roles of higher education in a globalized world".

I wish to begin by welcoming the many distinguished participants, who have travelled from near and far to be with us here in Tokyo. They demonstrate by their presence the growing importance of these meetings, whose overarching aim is to assess the impact of globalization on our societies, to identify where action is most needed, and to ensure that globalization serves human interests and is of benefit to all.

I would like to also thank the Government of Japan, and especially the Ministry of Foreign Affairs and the Ministry of Education, Culture, Sports, Science and Technology, for their support to this event.

I wish to also express my gratitude to those who helped to organize today's Conference, and especially to UNU Rector, Professor Hans van Ginkel.

As Mr van Ginkel is now retiring from his post, I would like to take this opportunity to pay tribute to his dynamic and sterling leadership. For ten years, he has directed this University with remarkable professionalism, outstanding dedication, and inspiring vision. I personally appreciate deeply what he has done to enhance the longstanding cooperation between UNU and UNESCO; there now exist a real spirit of dialogue and shared understanding between our two organizations, as demonstrated by today's Conference.

Let me also seize this occasion to congratulate Professor Konrad Osterwalder, who will be taking over at the helm of UNU. I greatly look forward to working with you and to strengthening our collaboration yet further.

The relation between globalization and higher education is complex and dynamic. It is clear that the forces of globalization are transforming the nature and function of higher education. At the same time, higher education is driving globalization, as it transcends borders and cultures in the pursuit of knowledge and the free exchange of ideas. Higher education also empowers young people to participate in and help shape the processes of globalization. It is a factor in promoting democracy, sustainable development and economic growth – a foundation for building a better future for all.

Globalization, therefore, poses both new challenges and opportunities for higher education. What are these challenges and how can the international community respond to them? Let me address some of the most salient issues.

The first is mobility. Figures demonstrate a dramatic increase in the international mobility of students, researchers and academics. According to the UNESCO Institute for Statistics, in 1998 there were 1.5 million students studying abroad. By 2004 this figure had doubled to 2.4 million.

Students from developing countries, in particular from Africa, are the most mobile. One million people from developing countries are studying at higher education institutions in industrialized countries. An estimated 1 out of 16 students from sub-Saharan Africa study in a country other than their own.

Such increased mobility creates many positive new opportunities – especially in terms of fostering greater intercultural dialogue and international cooperation.

However, it can also constitute an enormous loss for countries in terms of development. UNESCO and UNU are working hard to mitigate the negative impacts of the brain drain, in particular through capacity-building programmes and the promotion of intellectual collaboration, knowledge exchange and networking. Strengthening North-South, South-South and triangular North-South-South cooperation is a central aspect of this work.

But mobility also poses other challenges, beyond that of brain drain. One key issue is the portability and recognition of higher education qualifications. In this regard, UNESCO is revising its regional conventions on the recognition of academic qualifications to ensure that they respond to changing learner needs. The aim is to ensure coherence, while still recognizing the diversity of peoples and the specific character of their education systems.

A second issue is the massive increase in student population. In 2004, there were 132 million students – including part time students – enrolled in tertiary education globally, up from 68 million in 1991.

Demographic pressures make such expansion particularly marked in developing countries. Estimates foresee a population of 8 billion in developing countries by 2020, of which 50% will be young people in search of educational opportunities.

How to meet this demand? How to expand access while at the same time ensuring quality?

This leads me to my third point: the emergence of new forms of higher education provision.

The use of information and communication technologies (ICTs) is expanding rapidly, and can play a vital role in increasing access to education, especially in developing countries. At a

time when state budgets for higher education are decreasing, ICTs provide a cost effective means of delivery. In a technological era, virtual and e-learning can also create an education experience that is more responsive to learner needs and aspirations.

However, the use of ICTs does bring new kinds of problems, such as those regarding content, intellectual property, and linguistic diversity. These challenges must be navigated carefully if we are to maximize the benefits and minimize the risks.

Another trend is the rise in private higher education, as the fastest growing segment of higher education worldwide. The greatest expansion can be seen in Latin America and Asia, but steady growth is also taking place in Africa as well.

This commercialization of higher education, alongside the trend towards the liberalization of trade in educational services, places renewed focus on the ethical challenges facing higher education in an era of globalization.

UNESCO has been actively assisting governments and academic leaders in their response to these issues. In particular, we have jointly developed with OECD "Guidelines for Quality Provision in Cross-Border Higher Education". Launched at the end of 2005, the Guidelines provide an international framework to promote dialogue and international co-operation between providers and receivers of higher education, with a special focus on student protection.

My fourth point relates to the unprecedented emphasis being placed on research within higher education and its contribution to national development.

This "research revolution" has important consequences for the relationship between the university and government, industry and private-sector research centres, raising important questions about academic autonomy.

Another challenge is the deepening of inequalities between developed and developing countries. A profound "research divide" already exists, and will become more marked if concerted efforts are not made to strengthen capacity in the South. Those countries – like Brazil, China and India – that have established effective innovation systems have seen the rewards. Yet elsewhere, in particular in Africa, stronger national commitment – and greater international support – is needed. Toward this end, UNESCO is working closely with the African Union to establish centres of excellence as catalysts for strengthening research capacity across the continent.

My fifth and final point regards gender equality. There is a pressing need to enhance education opportunities for women, especially in developing countries. Gender disparities in higher education tend to be much deeper than at the lower levels, acting as a break on women's empowerment and equal participation in society. Overcoming the obstacles to women's access to higher education is a priority for UNESCO, as part of our commitment to achieving gender equality in all spheres of life.

Together, we must explore the challenges and opportunities for higher education in a globalized world. We must look at the range of issues that face us today, from those of access, equity and quality, to how to strengthen higher education and research institutions so that they can better contribute to the development of our societies. And together, we must work to find the answers, in order to ensure that globalization works for the benefit of all.

I am convinced that this conference will offer valuable guidance to the international community on the way forward. The outcomes of this event will provide input into the 2009 World Conference on Higher Education, as well as the ongoing work of the UNESCO Forum for Higher Education, Research and Knowledge.

Hans van Ginkel

Rector, United Nations University (UNU)
United Nations Under-Secretary-General

Hans van Ginkel is the Rector of the United Nations University, Tokyo, and Under-Secretary-General of the United Nations (since September 1997). He was elected President of the International Association of Universities (IAU, Paris) in August 2000 and served until July 2004. He was Vice-Chair of the Board of Trustees of the Asian Institute of Technology (AIT, Bangkok), Member of the Academia Europaea, Honorary Fellow of the Institute for Aerospace Survey and Earth Sciences (ITC, Enschede), and was the longest serving university rector in the history of the Netherlands at Utrecht University (1986-1997). Among his many distinctions and awards is "Knight in the Order of the Netherlands' Lion", received in 1994. Rector van Ginkel holds a Ph.D. degree from Utrecht University and honorary doctorates from universities in Romania, USA, Ghana, Slovakia, and Canada. His fields of interest are urban and regional development, population, housing studies, science policy, internationalization, and university management. He has published widely and contributed extensively to the work of various international educational organizations.

A BETTER FUTURE FOR ALL: ROLES OF EDUCATION AND SCIENCE IN BROADENING UNDERSTANDING

A Copernican change has taken place with regard to the position of universities and other higher education institutions (HEIs) such as polytechnics, teacher training colleges and specialized medical schools. No longer do national systems of higher education lend prestige to their constituent parts, the institutions. Rather the opposite is true: it is the internationally acknowledged qualities of individual institutions which lend prestige to the national systems they belong to. It is in line with this trend that in Japan, and in many other countries, governments have given universities both more freedom and more responsibility for their own activities and future. Improved transparency, accountability and accreditation are crucial for enhanced self-organization, responsibility and autonomy.

We are living in a time of profound change; in an increasingly interlinked world. The rapid development of improved systems of communication and transport has changed our world from a complex and sometimes chaotic blanket of territories and borders to a hierarchical system of nodes and channels. The frequency and volume of the exchange of goods and the mobility of people, money and ideas have created a situation in which no one, not even the strongest nations, can allow him-, her- or itself to live in isolation.

Our world is becoming ever more globalized and knowledge-based. Our society is getting more complex and heterogeneous, consisting of individuals characterized by intriguing sets of multiple identities, based on their gender, ethnicity, religion, nationality, profession, hobbies, etc. Together, we are set out on an unsustainable course, using so much of our planet's resources that the future of younger generations is jeopardized. The pressure on the limited resources available leads to more and more political tensions between 'haves' and 'have-nots,' within countries and between countries. Climate change is no distant threat anymore, but an immediate danger and in many places: a reality.

These changes are for better and worse. The positives can also be negatives and the negatives positives. When international terrorism can strike from a great distance, good can also be done over great distance. Together we can make the choice to contribute to a better future for all, a better life and a safer world for all... now, and for our grand children and theirs. When we ourselves live in an affluent society we cannot ignore poverty, either in our own society or in poverty-stricken countries. We can no longer ignore the interlinkages between globalization, trade, poverty, development and environment: the five highly interlinked topics on which the 'World Summit on Sustainable Development' five years ago in Johannesburg rightfully focused.

This is what *complexity*, *diversity* and *sustainability* are all about: to understand the whole, diverse, complex reality and to act in adequate, informed ways. And it is clear: there will be no sustainability, when there is no peace, democracy, tolerance, dialogue; no understanding and acceptance of each other around the world, within our country, but also within our village, town or city. That is where education comes in, to help us be aware of our individual responsibilities to contribute, to make responsible choices, to respect other people, nature and diversity. Universities and other HEIs have indeed a great responsibility.

UNIVERSITIES

Universities and other HEIs, as major centres of creativity and innovation, and as the privileged schools to prepare the next generation for their future, are increasingly called upon to address the challenges facing us, our children, grandchildren and theirs. We cannot afford ourselves, anymore, to continue our "business-as-usual" approach. This is what sustainable development and education for sustainable development are all about. This is why the General Assembly of the United Nations declared 2005-2014 to be the Decade on Education for Sustainable Development. Why UNESCO, UNU, UNEP and many others are working so hard, together, to make this UN-Decade a success.

The universities and other HEIs must engage themselves and must contribute in adequately addressing the challenges of all humankind. In our globalizing world they also find themselves, increasingly, in a position from where they have to both compete and cooperate internationally. They have to prepare their students for globalizing labour markets. Their campuses are becoming increasingly international. This challenge goes far beyond what is generally understood as 'internationalization' in universities, mainly only meaning having more foreign students.

The universities themselves must become international, in many ways multi-lingual institutions, as they were always intended to be. The rise of the modern state and the relation established between certain university degrees and specific professions have led over a century to universities that have become increasingly "national," which are often even called the "National University of ...." That is not what universities, throughout a millennium and longer, were meant to be, and it will not be enough for our increasingly globalized and knowledge-based future. Creativity and innovation are not bound by national borders. Research and development need openness and exchange rather than limitations.

Higher education, once seen as the privilege of the elites, is now viewed by most nations as an indispensable tool for shaping, directing and promoting economic growth and even beyond that to secure the future of our societies, but only – and only then – when this education is up to the international standards. The President of John Hopkins University, William R. Brady, called this trend "College goes Global." "New Agri Varsity will help fulfil the need for experts," said the Minister for Agriculture and Agro-based Industry of Malaysia, Tan Sri Muhyiddin Yasin, only three weeks ago. "We need more research universities. This would be good for the nation," said

his colleague, Datuk Mustapa Mohamed, Minister for Higher Education, the same day. Just days before, four universities in Malaysia, had been given the special status of "research university," with additional funding to enable them to achieve international, competitive standards and strengthen their capacity for creative and innovative contributions to society. It is an illustration of the fact that those who see universities only or primarily as teaching institutions are lagging far behind. Some countries, from India to Qatar, even try to attract universities from the USA to enhance their status and international competitiveness.

KNOWLEDGE-INTENSIVE SOCIETY

Globalization, indeed, dominates more and more the agenda of the universities. A second process dominant in the long term, shaping our society and its education and science, is the increasing knowledge-intensiveness of society and science itself. This does not require great elucidation. Roughly speaking, it rests on three basic assumptions:

1) that *more and more knowledge* will be produced: estimates say the amount of knowledge now doubles in less than every five years;

2) that the *shelf-life* of knowledge is *declining rapidly*: it is indicative, here, that American publications cited in the patent rolls in 1975 were eight years old on average, but only six and a half years old on average ten years later; this process has even accelerated since;

3) that *average levels of education* are *rising*. The whole concept of education is shifting as a result of this knowledge intensification. *Multiple careers* and learning throughout the course of one's working life will play an important role. As a consequence the profile of the student population, as well as the learning styles and study programmes of schools and universities must change fundamentally. The internal organization and external presentation will have to follow.

The *knowledge-intensive economy* is replacing the work-intensive economy and the capital-intensive economy. The Government of the Netherlands was one of those to have already – very early! – stressed the increasing importance of education and science to our future society: *"Today we are witnessing waves of important discoveries. These are so significant that some people even compare them to those of the first industrial revolution"*. This fundamental change seems to occur in the newly industrialized countries even far more rapidly than in many developed countries; in this way the knowledge gap between these two groups of countries seems to be closing rapidly.

Indeed, education and science themselves have also become highly knowledge-intensive. Managing education, knowledge, processing other people's research, and staying abreast of development elsewhere are all becoming increasingly important. The profession of *knowledge-broker* stands in the wings. Whole infrastructures will change. Polytechnics and, indeed,

increasing numbers of universities, will in their regions and countries focus on this function rather than on pursuing fundamental research. Education and science have to contribute to next generations of locally rooted, but well-informed global citizens capable of jointly ensuring "peace and progress," the ultimate aims of the UN. Those working in agriculture are really no exception to this general trend and become increasingly part of an international system of production, marketing and consumption.

Good academics have always *pushed back frontiers,* not only in the sense that the limits of human knowledge and ability are expanded, but also in the sense that political and geographical borders are continuously bridged. As increases in scale and globalization progress further, as well as the knowledge-intensivity of our society, we need good academics, and citizens who are adequately prepared to contribute to bridging frontiers, in order to create a better future.

ETHICS AND VALUES

There is a third process going-on, which has a profound impact on the roles education and science can perform in broadening understanding to create a better future for all. Here, we understand peace as far more than the absence of war between states: and as including the absence of civil strife and violence within states; positively – *the growth of a Culture of Peace*, the prevalence of tolerance and harmony. To win such a peace is not an easy, straightforward task in an increasingly complex world and global society. Many new dilemmas and paradoxes have come up, sometimes precisely as a consequence of economic, scientific and technological progress. These new issues create confusion and tension.

We are, therefore, increasingly confronted with questions about the direction which education and science must take on a number of crucial issues: bio-ethical dilemmas, bio-diversity and bio-technological questions, access and benefit sharing, legal and equity issues, social and cultural aspects of our interconnected world. Indeed, one of the major issues today is *cultural diversity*. In our diverse, and intensely interconnected world we have many neighbours, nearby and faraway, neighbours who often come from very diverse backgrounds. More than ever, a strong development of international activities and relations is needed. This is crucial today, in particular, to promote better understanding, as *fear is often the consequence of a lack of knowledge* and a lack of precise information. It will, thus, be essential to increase and improve knowledge and information. It will be crucial to increase and improve knowledge and information about other people, cultures and societies. To achieve this, one must be prepared to engage actively *in dialogue*; unconditionally and with a truly open mind. *Not trying to "win"* as in a debate, *but trying to understand the other by listening carefully.* Such broader understanding is crucial for development, as development can not just be achieved by introducing new varieties or new technologies. This must be properly adopted by the local population, embedded in their ways of doing things, which in themselves may change over time.

A core value, today, is *democracy*, as present-day society is, increasingly, made up of diverse groups. In fact, all societies today are diverse, even if they are ethnically more or less

homogeneous, because social and economic differences do exist and will continue to exist everywhere. To create a better future for the present and future generations, we must learn to live with all the diversity that is characteristic of our complex world. In our diverse societies, the needs and preferences of the different groups will need to be reflected in political decisions in order to maintain equality of opportunity and with this, ultimately, to sustain peaceful societies. The best way to ensure that different preferences can be introduced into the political debate is to *give every member of society a voice*. This is obviously what *democracy* is about: to give voices to all and to facilitate compromise as a means to accommodate diverse preferences. It may be clear that this is most urgent for *the most diverse society on Earth: the world community!* However, for such democracy to function well, the *understanding* of *diversity, nuance, complexity* and *sustainability* is crucial. Dialogue is at the basis of such understanding. The democratic system should not erase diversity through the application of the "one winner takes all" principle, but rather protect diversity.

BROADENING UNDERSTANDING

Increasingly, therefore, universities must grow into international platforms for dialogue; platforms for opening, analyzing and exchanging new ideas. The globalizing, knowledge society brings into focus new themes in education and research well beyond the regular discipline-based programmes: ICT, bio- and nano-technology; ethics and values; ageing and migration; issues of cultural diversity, dialogue and integration; intercultural leadership and entrepreneurship; climate change and sustainable development; disarmament, reconciliation and peace-building; among others. Indeed, new themes must be addressed, new challenges taken on, but globalization also creates major opportunities for a broader understanding, exchange of knowledge, cooperation to advance teaching, research, services to society, at an ever faster pace.

Universities must truly become international to keep up and fulfil their mission as centres of creativity and innovation, to serve their societies well, in many diverse ways. To achieve that, however, they must also enhance their capacity for syntheses. The progress of modern science is characterized by a seemingly endless fragmentation. Without a better capacity to bring all available fragmentized knowledge together in meaningful ways and ultimately in a coherent worldview, science and scientists in the humanities, social and natural sciences, including engineering, might miss their ultimate goal to understand better the human condition, and ultimately lose the support of the larger public, as has been observed many times by among others Dirk van Delft, the leading science-journalist of the Netherlands.

The International Conference "Pathways towards a Shared Future: Changing Roles of Higher Education in a Globalized World," organized by the United Nations University, jointly with UNESCO, in Tokyo's UN house on 29-30 August, focuses on these issues. A Copernican change challenges our universities. Their response is crucial for our lives and future.

KEYNOTE PRESENTATIONS

Yoriko Kawaguchi

Member, House of Councillors, Japan

Yoriko Kawaguchi is a Member of the House of Councillors, Japan. She was formerly Minister for the Environment (2000) and Minister for Foreign Affairs (2002). She has served as Director-General, Global Environmental Affairs, Ministry of International Trade and Industry, as a Managing Director, Suntory Ltd., and as Special Advisor to the Prime Minister of Japan, responsible for foreign affairs. She serves on the jury of the Zayed International Prize for the Environment (UNEP) and is Chair of the Asia-Pacific Forum for Environment and Development (APFED). She is a member of the Foundation Board of the Forum of Young Global Leaders, World Economic Forum, the President's Council on International Activities, Yale University, and of the Club of Madrid/ UN Foundation High Level Task Force on Climate Change. She holds a B.A. in International Relations from the University of Tokyo and a M.Phil. in Economics from Yale University (U.S.).

HIGHER EDUCATION IN A GLOBALIZED WORLD

I am not an authority on education. Therefore, I would like to speak as an informed individual regarding the ideal education in Japan. This is based on my ideas of Japan's desirable future and the current status of Japan's education system based on my own educational experiences and my children's educational experiences.

There are three points I wish to convey. Japan has fallen behind other nations in this globalized era and may increasingly continue to do so. However, there does not seem to be a sense of urgency in addressing this problem. According to the latest data, (as of 2005) Japan's GDP per capita ranked number 14. This is a significant fall from number 1 in 1994.

Looking at the profit structure of multinational corporations in Japan, it's clear that operating profits are increasingly becoming dependent on other countries. According to the August 20th edition of the *Nikkei Shimbun* newspaper, in the fiscal year ending March 2007, other countries accounted for 31% of operating profits at listed companies (total 500 companies). This signals consistent growth from 27% in the fiscal year ending March 2004. Listed below are some examples of major corporations' ratio of foreign operating profit (March 2007): Toyota 35.1%, Honda 73.7%, Nissan 64.8%, Bridgestone 39.6%, Ricoh 34.2% (March 2006), Itochu 45.1%, Marubeni 62.0%

According to the Recruitment Center for International Organizations at the Ministry of Foreign Affairs in Japan, the number of Japanese personnel in executive positions at United Nations agencies is eight (three are listed as Executive Directors or above, and five are listed as Assistant Secretary-Generals or above). The percentage of Japanese workers in executive posts of Assistant Secretary-General or above is approximately 2% (about 4% for general positions).

If Japan continues to lag behind in the international race in this era of globalization, our economic power will decrease even more profoundly. This will clearly impact our lifestyles. Not only that, Japan's presence in world politics will diminish.

Looking at education, Japan's academic ability and the level of Japan's universities are also far from high. In the OECD international educational attainment survey of 15-year-old students in 41 countries and regions in 2004, it was indicated that Japan's academic ability has declined, especially in reading literacy. The survey indicated the following for Japan:

- Reading literacy ranking no. 8 (2000) → no. 14 (2004) equivalent to OECD average;
- Mathematics literacy ranking no. 1 → no. 6;
- Science literacy ranking no. 2 → no. 2 maintained;
- Problem-solving no. 4 (surveyed for the first time).

According to the National Institute of Science and Technology Policy, the Japanese universities in the international top 30 for research paper citations are: the University of Tokyo at no. 6, Kyoto University at no. 21, and Osaka University at no. 30 (during 2001-2005; all subjects).

Another set of figures I've seen recently is the enrolment of foreign students at Stanford University's graduate school in 1990. Students from Japan, Korea, and China were respectively 90, 90, and 90. In 2005, those numbers shifted to 60, 250, and 300.

For Japan to maintain its strong economic foundation over the long-run and sustain its top position in various fields despite a decreasing population, our most crucial task is to develop personnel. But with this current situation, we cannot be very optimistic about the future.

It's a fact that policies of the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) are shifting to become more conscious of an increasingly globalized society. Based on my experience of overseeing education in the Regulatory Reform Committee and serving as member of the Central Council for Education in the latter 1990s, this is changing gradually. However, I feel that the pace is not fast enough. This is the responsibility not only of MEXT, but also of the government. I would even go a step further to say that Japanese society should also be held accountable since it is backing the government. Of course, if we think that it is fine for Japan to have a smaller global role in the future, than our expectations for education should be different. The education system should be responsible for encouraging citizens to think about what kind of country they would like Japan to become.

To become a country with a recognized presence in this era of globaliaztion, I feel that we must discuss education from two angles. One is the development of human resources that have global competitiveness.

This is often recognized as a challenge to address. Japan can draw on its experiences from the past. It was successful in supplying workers suited for an era of mass production when economy of scale existed. We were also successful in developing personnel who fit a certain standard, so to speak. When I was Minister for Foreign Affairs, leaders in Asia, the Middle East, and Africa requested the dispatch of experts because they wanted to learn from Japan's education system. I thought they were very observant of the characteristics of Japan's education system. What Japan needs now is diversity of personnel, with distinct individual qualities. A long time ago, a Swiss ambassador to Japan once told me, "Progress comes from the outside." In other words, blending in different elements stimulates progress. I completely agree with this. I often feel it would be more beneficial to have a culture in Japan where stating a differing opinion was viewed as a "contribution." It's unfortunate that being different seems to lead to situations like bullying.

It's also necessary to stimulate competition, especially among higher education institutions to improve the quality of students. We must move forward more quickly in the direction of policies recommended by the Education Rebuilding Council and the Central Council for Education.

The next thing we need to do is to succeed in following Wimbledon's example. I've heard that the last time a British player played at the Wimbledon Centre Court was 1936, yet Wimbledon continues to be the centre of international tennis. In Japan's professional sumo competitions, about 8% of all sumo wrestlers are foreigners. This percentage increases among *makuuchi* (top level) ranking wrestlers to 30%. For *sanyaku* (champion or titleholder ranks), it's 40%; for *yokozuna* (the highest rank), it's 100%. Yet, or perhaps because of this, sumo is loved around the world and aired on television. It has become an international sport.

I feel that having a more open Japanese society that is accepting of foreigners will make Japanese society more dynamic. It's crucial to increase understanding of other cultures through primary and secondary education. Accordingly, we must fundamentally re-examine the content of our English language education and improve the quality of instructors.

Lastly, the times are changing at a much faster rate than our educational systems and content. One example is the environment. In 1969, "pollution and health" was brought up as a subject when Education Ministry guidelines for junior high schools were revised. When revised again in 1977, the topic of "preventing pollution for environmental conservation" was covered. In 1989, the focus shifted from pollution to environmental education, and "life environmental studies" was added as a new subject for the lower grades in elementary school. In the current Education Ministry guidelines of 1998, this mainly covers global environmental issues and growth in harmony with the environment.

If we consider that inertia always comes with institutional change, it's better to have a flexible educational system that can be more freely adapted onsite at the schools, rather than shaping it rigidly at the government level. It would also be desirable to enhance the mobility of teachers or to increase mid-career training opportunities as much as possible. We also must remember that education takes place not only in schools but also in non-formal settings, and is therefore applied to people of ages.

Jozef Ritzen

President of Maastricht University

Jo Ritzen is President of Maastricht University and formerly Minister of Education, Culture, and Science of the Netherlands. Before assuming these positions, he was the World Bank's Special Adviser to the Human Development Network, Vice President of the Bank's Development Economics Department, and Vice President of the Bank's Human Development Network which advises on innovative approaches to improving health, education and social protection. He has held academic appointments with Nijmegen University and Erasmus University in the Netherlands, and the University of California-Berkeley and the Robert M. LaFollette Institute of Public Affairs at the University of Wisconsin-Madison in the United States. He has written or co-authored eleven books. He holds a Ph.D. in economics from Erasmus University in Rotterdam where his dissertation on education, economic growth, and income distribution earned him the Winkler Prins Prize.

HIGHER EDUCATION'S PERFECT STORM

INTRODUCTION

Kirsch et al (2007) observe that dark clouds are gathering above US education and consequently above the US economy. Literacy is not keeping up with the demands from the labour market. The demography aggravates this because the young population has increasingly a minority background with shorter than average education participation rates. These are the ingredients of Kirsch et al for a perfect storm in the U.S. They focus on education in general and on the U.S.

I have borrowed (with permission) their image of a perfect storm to sketch the dangers for the future of Higher Education (HE) as well as for HE intensive production in the "rich" world at large.

"Rich" is used as an equivalent to 'developed countries' in the country definitions of the United Nations. "Poor" are the 'developing countries'. This includes fast developing countries such as the BRIC countries (Brazil, Russia, India and China), as well as countries like Mexico and Turkey.

The threat to rich countries is at a standstill (or even decline) in HE participation. This might lead to a decrease in the number of students and therefore to a shake-out of institutions. It also would lead to serious shortages of HE graduates on the labour market which in turn might make international business move HE intensive production away from rich countries.

This threat is the consequence of demography and its composition. The HE relevant age group (18-24 years of age) is not increasing. Within that age group the proportion of minority youngsters is increasing, who are much less likely to participate in HE.

The development in "poor" countries is quite different. Here, the age cohort is increasing, with some exceptions like South Korea, and participation rates are increasing as well. Hence, this is why the word "asymmetry" is used to describe the gap between rich and poor countries.

This is sketched in sections 2 (demography) and 3 (participation). International student mobility has been on the rise and presumably will continue to grow further (Ritzen, 2006). However, it is a mistake to assume that international mobility will continue to be a one way traffic from poor to rich countries. "Poor", but rapidly developing countries, like China, Singapore and Malaysia, are now quickly building up high quality HE capacity. This HE capacity might also serve other poor countries as well as attract students form rich parts of the world (see section 4).

The future flow of student mobility between rich and poor countries depends to a considerable extent on the way the quality of HE institutions in poor countries develops compared

to that in rich countries. In section 5, we analyze the innovation potential in poor countries, and evidence shows that it is much higher than that in rich countries. This might reduce and – in the long run – even wipe out the present quality dominance of rich countries, such as the US.

The last section deals with the prevention of the perfect storm in rich countries' HE.

Three lines are proposed:

- Raising participation rates in all types/provisions of HE. This is becoming a matter of high economic urgency.
- Brain circulation rather than brain drain as the starting point for international student migration.
- Innovate, innovate, innovate.

Government policy has to give universities the possibility for innovation, but universities also have to become themselves more innovative. In Europe, despite the Bologna Agreement and the ambitions of the Lisbon Agenda, European universities are in need of fundamental reforms (Jacobs and Van der Ploeg, 2006). Governments should become serious about the Bologna process and truly arrive at joint accreditation and quality control for all "Bologna" countries instead of doing this on a national basis. It also means releasing HE from public sector regulation and abandoning the tuition fee phobia (Ritzen, 2007).

ASYMMETRY IN DEMOGRAPHY

It has been well recognized that demographic developments between rich and poor countries differ substantially. While most rich countries experience a low population growth (with some countries soon facing a declining population), the population in poor countries is increasing rapidly. The baby bust in rich countries of the late sixties has increased this discrepancy further. The echo of the baby boom of the late forties is but a minor ripple in this trend. According to the 'Medium variant' of the UN Population division, the population in rich countries is expected to grow from 1,19 billon in 2000 to 1,25 billon in 2020 (+ 5%), while the population in poor countries could grow from 5 billon in 2000 towards 6,5 billon in 2020 (+ 30%). This has consequences for HE.

In the past 50 years this demographic asymmetry has not translated itself into numbers of students, because it was compensated for by an asymmetry in participation. Participation rates in rich countries have risen much faster than in poor countries.

It shows that driven by participation rates until around 1990 the number of students grew faster in rich than in poor countries, while the poor countries' demography gradually made the growth in student numbers catch up. If we now look to the future we realize that this trend of higher growth of the number of students in poor countries to that in rich countries is going to continue, and will even accelerate.

This is not a crystal ball prediction: the group of youngsters participating in HE in 2020 is already born! The exact translation of the future HE relevant age group into student numbers depends on how participation rates will evolve, and on the rate by which new target groups and other age groups are drawn into HE (lifelong learning).

PARTICIPATION IN HIGHER EDUCATION

There is vast literature supporting the commonly held notion that participation in HE is "a good thing" for the individual concerned. HE clearly gives better life chances: better employment opportunities, more interesting jobs, longer and healthier lives and higher incomes. This is captured by economists in the "human capital" theory: individuals (or their parents) "invest" in HE because the rate of return on the costs they make (income foregone and direct costs) is higher than that on other investments. So why does not every one participate?

There are three constraints to participation in HE:

- "Capital market imperfections", as they are called, where parents or the individual can not afford HE, while a capital market for borrowing money to participate does not exist. In most rich countries this is no longer a significant constraint for participation. Also poor countries, in particular middle income countries, are working hard to eliminate "capital market imperfections" by means of scholarships (grants and loans).

- The perceived risk in succeeding based on secondary school experiences. HE demands a certain minimum level of cognitive, attitudinal and psychomotor abilities to succeed. These demands are translated into admission requirements for HE. It is not entirely clear what the maximum percentage of the relevant age group is which might qualify for admission to HE in a stable rich society, without capital market imperfections. The past has taught us that the percentage (gradually) moved upwards.

- Awareness and perceptions at home on the possibility to be admitted to HE as well as on the return to HE. ETS (2006) documents how high ability children of low income Latino immigrants achieve educationally far less than other children with the same ability. In general, large segments of minority communities in rich countries have no experience within their immediate social circle with higher education and as a result consider it "beyond reach" for their children. However, having said this, there is on the other hand the paradoxical situation that in the US there are growing expectations by high school youngsters to attain a bachelor degree (US Department of Education, 2004). While this trend is desirable, it is placing enormous accountability pressures upon colleges and universities to demonstrate that they are sustaining quality in the credentials they are awarding.

Or could it be that youngsters fear that the rates of return on HE in the future might drop because there are too many graduates fighting for a limited number of places? In the eighties many economists predicted that the wage rates of HE graduates would fall as a large number of graduates flocked into the labour market. Yet they ignored technological progress, which leads to a shift in the production function, making the production function more HE intensive. Tinbergen (1975) observed in the fifties and sixties this "race between education and technology": a gradual shift in the "production function" in rich countries, making the economies more "HE or knowledge intensive" as a result of technology and creating a higher demand for HE graduates, which could easily absorb the increase in the numbers of graduates. The production function captures the different combinations of factors of production (physical capital, labour by level of education) which can lead to the same product, recognizing the degree of substitutability. A typical example is the constant elasticity of the substitution production function. It has been recognized that production functions shift over time due to technological change.

The race between education and technology was clearly won in rich countries by technology until around the first oil crisis. Then there was a "sur place" between education and technology with a "wavering" in technological progress, while the number of HE graduates grew quickely.

The rising relative wages of HE graduates world wide at the end of the nineties and into the 21st century is evidence of a decisive continuation of the lead of technology. The rise was slightly smaller in rich countries then in poor countries. This can easily be explained by the differences in the composition of the graduate labour force between rich and poor countries. In poor countries, in particular in Asia, many more students choose science and engineering studies – in line with the demand of the labour market.

Let us look more closely at the world wide shift in the "production function". The question is whether the critical labour-market distinction is, and will remain, between highly educated (or highly skilled) people and less-educated (or less-skilled) people as Blinder (2006) argues: "The critical divide in the future may instead be between those types of work that are easily deliverable through a wire (or via wireless connections) with little or no diminution in quality and those that are not. And this unconventional divide does not correspond well to traditional distinctions between jobs that require high levels of education and jobs that do not."

True as this might be, globalization and trade liberalization have wiped out many low education/low wage jobs in those sectors of rich countries where production can be easily moved away. It should not have come as a surprise that this would mean a shift towards HE intensive production in rich countries. But this holds also true for poor countries which are gradually moving out of poverty.

The good news of the past five years has been that average growth rates (also in per capita terms) in many poor countries have exceeded those in rich countries. For the first time since the sixties there are signs of a convergence in per capita incomes of rich and poor countries, with the BRIC countries (except Brazil) and countries like Mexico and Turkey as leaders. To illustrate this

further: the BRICs created 22 million jobs a year in 2000-2005 while OECD countries created only 3.7 million jobs according to the OECD Employment Outlook, 2007.

Poor countries can only grow if they are also able to shift their production function in the direction of that of modern economies (i.e. rich countries). This means an increase in the HE intensity of production in poor countries, like for rich countries. A shift towards more HE intensity in the production implies a higher demand for HE graduates, and as a consequence, a higher wage rate. In other words, the participation rates in HE will world wide continue to be fuelled by high(er) rates of return to higher education.

Poor countries will see their participation rates rising as they can afford to gradually remove capital market imperfections and can exploit their pool of talent step by step. Projections on future numbers of HE students in poor countries may differ according to the assumption on the speed of the increase in participation. In another paper (Ritzen, 2006) I estimate that the number of students will increase from about 50 million in 2006 to 75 million in 2020, a growth mainly achieved by poor countries.

In most rich countries I would premise a conditional standstill in HE participation rates, despite the increasing rates of return. This is conditional because there might be policies which could increase the participation rate in HE.

Up to now, we have considered the demography of rich countries as homogeneous. Kirsch et al (2007) point to the heterogeneity as far as education is concerned. If one decomposes the demography of many rich countries, one notices a decrease in the original population and a sharp increase in the minority population. This is highly relevant for HE as participation rates of the minority population are substantially lower than those of the original population.

At the same time, these differences are not given by nature, but have a lot to do with the second and third reason for non-participation: awareness and perception at home on the possibility of admission to HE and on the returns to HE. For the low-income and/or minority part of the population, the absence of a well informed image of what HE can contribute to the participant, and how accessible it is, leads presumably to lower HE participation rates, or even overall education participation.

Educational policy aimed at substantially increasing HE participation rates of the minority population is equivalent to "uncovering" in rich countries the pool of talent of minority youngsters. The participation of women of those minority groups is of particular interest. The rapid rise in participation in HE in rich countries in the 60s and 70s was very much based on the increased participation of women in HE. To some extent the same exercise has to be repeated today with the female part of the minority population in rich countries. Many rich countries have some affirmative action plans to better motivate and prepare secondary school students with a minority background to participate in higher education. The message here is that they need to be intensified and expanded.

However, for the time being, some elements of a perfect storm in rich countries remain threatening: increasing shortages of HE graduates in rich countries with a relative abundance of HE graduates in poor countries. This might be sufficient reason for international business to move footloose research facilities and other footloose HE intensive production towards poor countries.

It might also be sufficient reason to intensify the global competition for talent which might imply substantial brain-migration, but not only to the traditional rich countries. According to the OECD, China became last year the world's No. 2 investor in research and development after the United States with spending estimated at around US$136 billion on R&D. It not only passed Japan's US$130 billion, but it is also just two years away from catching up on Europe's level of spending on research and development as the EU Key Figures 2007 of June 2007 on R&D show.

INTERNATIONAL MOBILITY

By now it is clear that the tempest is not uniform over the globe, but it is focused solely on rich countries (for a change). However, the ideal situation for both rich and poor countries is in the avoidance or mitigation of the tempest (section 6). In this globalized world the damage of every tempest, however local, has contagion effects world wide.

Rich countries can mitigate the tempest by further improving the quality of their HE as well as guaranting public research. The EU has recognized this by formulating the Lisbon goals in 2000. Unfortunately its actual implementation is still to be awaited.

The further improvement of HE quality in rich countries depends by and large on the speed of adaptation and innovation of HE in those countries. Without fast adaptation, the effects will be visible in a shake-out of HE institutions, including widespread discontinuities in the existence of HE institutions.

The likely increase in the interest of students to study abroad might help in the transition. But this is only realistic as an expectation if HE in rich countries is able to retain a substantial quality lead. The next section deals with the quality discrepancy and the (lack of) innovation in HE in rich countries.

Most students prefer to study relatively close to home because it is convenient; it reduces costs, and it allows them to keep their social contacts. At the same time, the interest to study further way has been increasing internationally, because it is seen as a way to increase prospective life chances, thus off-setting the additional real and psychological costs.

Studying abroad has an added human capital value for the labour market, which has become internationalized. In a recent survey, 80% of the alumni of European universities indicated that they work in an international setting (Borghans and Ritzen, 2006). This explains the interest, for example, to study in a university like Maastricht for both foreign and national students. Indeed, national students will be also better prepared for the international labour

market if they study in an environment where 40% of the students are foreign, and they use English as the language of communication.

Studying further away from home (whether in one's own country or abroad) has even more added value if it is better organized and of better quality. Indeed, (perceived) quality differences are also a major reason for international student mobility, as is (for example) clearly expressed in the opinions of international mobile students (ACA, 2006).

International mobility can be limited by capital market imperfections if the (extra) costs of studying abroad cannot be borrowed. It might also be limited by admission restrictions, whether physical of psychological in the countries of potential designation. The psychological and visa restrictions which the US has imposed on those whishing to enter the country partly explains the decrease of foreign students in the US after 2004, although it seems that international enrollments have stabilized according to the Open Doors Report of 2006 of the Institute of International Education. European HE is also at risk because of the visa requirements in Europe.

The number of foreign students grew even faster than that of the total number of students in the period 1990-2003. The estimate of 4.5 million international students might therefore turn out to be very conservative. The growth of foreign students originating from the BRIC countries, such as Indonesia, Mexico and Turkey, could indeed be helpful for the serious surplus in rich countries. But this only happens if students want to go there because they believe that the quality of education is better than in another BRIC country. Chinese students make up the biggest portion of mobile students. In 2006, their number was up less than 1% in the US. In the UK it decreased by 35%. In Canada (2004) it decreased by 34%. This might be evidence of the closing of the quality gap between China on the one hand and Canada and the UK on the other.

INNOVATION IN HE

All rankings of universities point out the fact that the distribution of high quality HE institutions is asymmetric between rich and poor countries. The World Bank report on Tertiary Education (World Bank, 2002) is further testimony of the plight of HE in many poorer countries. At the same time, there is a rising elite of high quality institutions in BRIC countries. This is especially so in China and India, but it also holds true in Mexico and Turkey. For example, China with 20 million HE students today has already surpassed the US with its 15 million students. Also, it should be realized that within rich countries, the US is far more dominant in HE than one would expect on the basis of its population size.

If there were world-wide rankings available in the beginning of the 20th century, they would likely have been dominated by European universities: Europe was leading in quality with the US at a stalwart. However, there has been a substantial development in the relative quality differences: nowadays US institutions are dominating the top positions in every world-wide ranking. All of this suggests that the future of HE in the years to come is a matter of dynamics, fuelled by the powers of innovation (and investments).

Derek Bok (2006), the former President of Harvard University, complains about the lack of innovation in HE institutions in the US, in particular where teaching is concerned. In several rich countries university research is clearly increasingly responsive to the broader issues that affect questions in society (including in business). One still can question whether the innovation glass for research is more half empty than half full. Yet for teaching the verdict is easier: teaching has remained in many HE institutions virtually medieval. This is compounded by the rankings which predominantly measure research output and reputation. The responsiveness of teaching to the changes in the needs on the labour market and to the new insights in effective learning has been limited, although the book of Bok has put the theme on the agenda.

The following text lists some items which are possible incentives for innovation in learning for universities:

- The labour market has changed considerably, with increasing attention within organizations on innovation brought about by teams. This has led to changes in the demand for combinations of cognitive, attitudinal and psychomotor skills, including for skills in communication, where 'cogito ergo sum' has been replaced by 'communico ergo sum'.

- There are many new fields on the labour market, like the development of the internet, which ask for new HE courses. We know a lot about more about effective ways of learning, yet even that this may depend on the characteristics of the student.

- Professor Hiroshi Komiyama (2006), the President of Tokyo University, points to the need for more helicopter learning to be effective on the labour market. Students are overwhelmed by trying to learn a vast accumulation of knowledge. It would be better to give them a broad overview. This also implies that students would be better prepared for the changing demands of the labour market.

- Companies like IBM plead for the introduction of "trilingual" learning, so that at least a segment of the student population is well informed about science, economics and the arts, as pointed out by Gina Poole (2006), IBM's Vice President, Innovation and University Relations.

This list does not purport to be complete. Very few universities or colleges have incorporated these changes. The resistance to change and innovation exists in every organization, yet may be greater in organizations which are self-managed – as HE institutions traditionally are in many rich countries. When I say self-managed, I mean that the leadership is selected by peers, and defacto, remains part of the peers. HE institutions run by deans and presidents elected from the faculty are bound to exhibit little innovative power because their room for maneuver is limited.

Innovations in teaching are more likely to come from new institutions. Here is the asymmetry between rich countries with little or no room to start new institutions on the one

hand, and poor countries which can quickly innovate in the face of a substantially increasing number of students.

When European Commissioner Figel (2006) said that European HE has to change quickly if it is not to be overtaken by Chinese or Indian HE, he made a realistic statement. European Higher Education is a special case. Van der Wende (2007) documents the response of European HE to globalization. The Bologna agreement in 1999 and the following process have created the potential to create a "European Space" without information barriers, as the structure of HE has become more or less harmonized around a Bachelor/Master/Ph.D. system.

The Lisbon agreements also might give a boost to European HE, as it would imply substantially increasing (public) research spending. Yet, all of this may be too little too late (Ritzen, 2007). "Bologna" was followed by national – rather than international – regulations on accreditation and quality control. And the commitment to Lisbon was simply not realized, especially with regards to the R&D in HE investments, despite favourable economic circumstances.

Moreover, European HE is underfinanced (compared to US or Japanese HE), and tuition fee phobia prevents most countries from using private contributions (with good scholarships) to improve the plight. Lastly, the European culture is adverse to differentiation, while differentiation within the supply of HE is essential to reach out to the diversity in the demand for HE. Recently, the European University Association (2007) recognized the need for innovation through more attention for creativity. At the same time, this report shows a clear lack of urgency.

PREVENTING A PERFECT STORM

There should be every reason on the part of rich countries to prevent a perfect storm, because it is a storm which hits them. Poor countries might be willing to assist in this prevention if this would also serve their interests. Rich countries might be inclined to rely on immigration of HE students and graduates as a solution. However, this is a short-lived solution as poor countries will resent such a brain drain. They will react by building up as fast as possible high quality HE institutions which can compete with or even out-compete HE institutions in rich countries, and continue to improve working conditions for HE graduates at home to increase the attraction to stay or to return.

The picture becomes decidedly different if the present brain drain could be transformed into brain circulation. HE institutions in rich countries could be helpful to poor countries through capacity creation. Students of poor countries who migrate for studies to HE institutions in rich countries could be part of the potential faculty of newly emerging or expanding HE institutions in poor countries. Also, graduates of HE institutions in rich countries, who originate from poor countries might want to return to their home country after obtaining experience abroad, because of attractive work conditions.

Experience on the labour market of rich countries by students from poor countries might contribute to the transfer of knowledge on business practices or manufacturing from rich to poor countries, if the graduate migrates back. India might be the example of a country which for decades suffered from brain drain to the US and the UK, but which now enjoys the fruits of brain circulation. Circular migration or brain circulation requires more attention as a win-win possibility for poor and rich countries. It requires the trust of both sides that in the long run openness and mobility are good. It may also be facilitated by institutional arrangements in the home (poor) country and the (rich) country of study, for example by university to university agreements between rich and poor countries for capacity creation.

Circular migration is then a very partial solution for the expected surplus of HE places and the shortage in HE graduates in rich countries. Perhaps the UNU model is a good example of a network within a network and could be of use here: different universities in different countries working together.

HE in rich countries has to remain attractive in order not to lose students to emerging HE institutions in emerging economies. This means that across rich countries far more attention should be given to the innovation of higher education in order to follow faster developments on the labour market and new insights in learning.

National governments have to facilitate their institutions to create favourable conditions to achieve these aims. However, this is not always the case, as the situation in Europe shows. The Bologna process has not brought about a common area because of the differences between nations in the implementation of the Bologna framework (e.g. accreditation and quality control). Europe's HE is still handicapped in innovation due to the fact that it is underfinanced and overregulated (in spite of reform efforts, HE institutions are still often part of a Government department, even though they have special characteristics). The overregulation also implies limitations on creating the highly necessary diversity in HE supply.

This forces rich countries to reexamine their policies on equality of opportunity. These policies were mostly based on social aspirations, on idealism, and on human dignity. Now they become an economic urgency. Rich countries have to boost the participation rates of those minorities which traditionally are underrepresented in HE.

This is no longer a utopian option. It is a must.

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HIGHER EDUCATION AND DEVELOPMENT

INTRODUCTION: GENERAL ISSUES AND THE GLOBAL CONTEXT

According to the classical definition of human capital theory, the higher the level of education of an individual, the higher his/her chances for socio-economic attainment. Similarly for nation-states, the theory stipulates that the higher the aggregate level of educational achievement, the higher the level of socio-economic development. This was the foundation for the high hopes and expectations during the decade of development that was declared in the 1960s by the United Nations. Based on the assumption behind this paradigm, the individual and the nation-state, as the two units of analysis, have also been the foundations for the conceptualization, design, and implementation of policies geared toward development through the use of education. I argue that in the current context of globalization that the concept of education for development must systematically take into consideration the "global village". The recognition of this global world is not in contradiction with the need to recognize and deal with local realities, knowledge systems, assets and challenges. This paper analyses some of the key issues that have been associated with higher education, and the development of higher, global socio-economic indicators since the middle of the 20th century. This analysis, and the current educational and socio-economic predicaments indicated by the increase of relentless and abject poverty, health challenges, the HIV/AIDS pandemic, and a widespread sense of physical and social insecurity, etc. constitute the basis for reflecting on the challenges and possibilities for the renewed role of invigorated higher education, especially in developing countries in promoting sustainable development on a global scale.

REVISITING THE ROLE AND MISSION OF HIGHER EDUCATION FOR DEVELOPMENT

The debate on development has consistently been an important guiding thread in the national and global agendas since the middle of the 20th century, especially since the 1950s, a period of discovered or renewed faith in the role of education in attaining development. The United Nations system has been playing a major role in giving meaning to the dialectical relationship between the theoretical articulation of concepts, such as development, and their practical and social applications in education, especially higher education. UN regional economic commissions for Latin America and the Caribbean and Africa and UN ECA Asia contributed to the thinking, in part, by analyzing development and under-development as ontologically linked, with the critical notion of resources as zero-sum commodities. This notion of conflicting interest has been the history. But history is not destiny in the world of social actors shaping the future. The major

question is: given the weight of this history and the illusion of key players who think that the past course can/should be pursued to preserve their exclusive interests, how do we break the cycle of the hitherto skewed and disgraceful tandem of development-underdevelopment at the world level and what role can higher education play?

The controversy and the efforts to interpret the concept of development to give it a universal meaning have been an important part of this debate. Divergence has not been about the substantive content of the concept. Indeed, all nations, people, academics, think tanks, NGOs, grassroots organizations, national and international policymakers, etc. agree that development means substantive and qualitative improvement in the living conditions of the people in any society. The difference has been more clearly articulated with regard to the assumed universal validity of the indicators of these living conditions. One of the major questions has been: Which parameters can be used for local communities that take into account national realities, the global context and cultural diversity? Which indicators can capture fairly and do justice to all dimensions of development? As mentioned earlier, development implies improved living conditions, structural and qualitative mobility and empowering individuals and communities.

Another area of agreement is that education plays a critical and indispensable role in enhancing human capability and societal resources to achieve and sustain qualitative gains. In this case, the agreement stops here, especially in societies such as the ones that have endured recent imposed external influence, particularly in the context of various forms of colonization until the middle of the 20th century. Which education can facilitate the preparation of individuals and societies in the quest for the competences for development? For instance, the well-meaning and seminal UNESCO publication known as both the Faure Commission Report and *Learning to Be*, was welcomed as a key document. The compelling argument for this report was that history shows that education is a basic need for the acquisition of what it takes to propel and maintain the course towards development. But here again, further reading led to disagreement or at least fundamental questions such as: "Learning to Be What?"

These issues and questions are still current and may serve as common thread in the efforts to address the role of education, and especially higher education, in the search for common ground to meet the needs of diverse societies. The challenge is to respond to fundamental questions in the conceptualization of higher education, and the design and implementation of policies with the common understanding of moving towards generalized wellbeing. In this address, I will emphasize the need to tackle gender equity as one of the centrepieces for a renewed commitment to bring education, especially higher education, back to the development discourse, particularly in Africa. This is a key issue that must be addressed if there is to be a substantive engagement on the path towards sustainable development.

TRENDS OF EDUCATION AND SOCIO-ECONOMIC SITUATIONS

In their 2004 published book entitled *UN Contributions to Development Thinking and Practice*, Richard Jolly and other co-authors recalled that given the objective role that higher education could play in actualizing individual and societal global development imperatives to foster well-being globally, The Universal Declaration of Human Rights asserted that higher education shall be "equally accessible to all on the basis of merit."

In a reflective reference to the euphoric engagements of the 1950s and 1960s that surrounded the debate and subsequent adoption of such resolutions, they wrote:

> *In a world where, at that time, 42 percent of people in Latin America, 63 percent in Asia, and 84 percent in Africa were estimated to be illiterate, these were extraordinary, bold, and forward-looking declarations. It is difficult to imagine similar statements being made today in a similar context and if they were to be made in the halls of the UN today, one can guess at the range of dismissive comments that would be directed toward those supporters who were so foolishly pressing for such an unrealistic resolution* (Jolly et al., 2004, p. 203).

The question to be asked is whether the resources to actualize such resolutions were beyond the reach of the world, or if it was rather the deficit of political will and commitment that led to the lack of mobilization of the existing resources that could have been sufficient for the actualization of these resolutions. In a world dominated by powerful players with parochial interest and short-term visions of the world, Richard Jolly and his colleagues also recalled regional goals such as the 1961 "Addis Ababa Plan" that included ambitious enrolment goals at all levels of the educational system, including higher education (p. 2005).

Enrolment in higher education in Sub-Saharan Africa (SSA) is relatively low in comparison to primary and secondary school enrolment, and also in comparison to other regions of the world. Higher education is expensive and cost intensive both in terms of infrastructure and resources needed. To set up an institution to cater to the needs of the offspring of impoverished segments of the population requires significant public funding. Even the existing private institutions rely on considerable subsidies from the state. In the case of African countries, a UNESCO report indicates that countries that have a per capita annual income under US $500 tend to have lower levels of enrolment in education, which is the case for most countries in Africa, especially in Africa south of the Sahara. How can such countries expand their higher education enrolment? Following the economic crises of the 1980s/1990s, and the equally devastating Structural Adjustment Programmes (SAPs), public expenditure per higher education student declined drastically, from $6,300 to $1,500 and then $1,000 in real terms (World Bank, 1994). At the same time, generally speaking, African countries have continued some of their initial post-independence public education finance policy of allocating large proportions of their GNP and public expenditure to education, with a large yet insufficient share for higher education.

How to pursue the quest for higher education expansion as a means to solidify the past foundation for future socio-economic development? In addition to the general problems of funding, there are other features of African higher education that hinder development. Indeed, in Africa, there has been a general pattern of wide gender gaps in higher education in terms of enrolment and distribution by disciplinary fields.

In a publication that was based on some of the proceedings of the 1998 UNESCO conference on higher education, and that focused on higher education in Africa (UNESCO, 1998) with twenty-five main chapters written by nearly thirty contributors, four chapters were devoted to "access, equity and gender." Among them, two authors (Mlama and Makhubu) presented, explained, and provided supportive evidence, that despite progress made, there are continued obstacles against gender equity in higher education. These authors make a case for more decisive policies to finally close the gender gap. The other two chapters under "access, equity, and gender" broadly presented the single mode Open University of Tanzania (Mmari) and the dual mode application of the World Bank's project of the African Virtual University at the Kenyatta University in Kenya (Juma). The few data that were disaggregated by gender showed signs of reproduction of past and current patterns of inequality in classical brick and mortar universities in these alternative institutions of higher learning. Based on these cases, albeit preliminary, there was a clear indication of the perpetuation of past gender imbalance in enrolment and distribution by disciplines with marks of unequal value. Thus, there has been a search for new or additional solutions to increase access and eradicate the social ills and anti-development policies and practices that are entrenched with inequity of which the most revealing has been gender inequity. Thus, there is a need to have a comprehensive approach in the search for solutions to close the gender gap and provide equal educational opportunities.

While in the past a justifiable emphasis has been on access to basic education and combating illiteracy, there is now an increasing realization that higher education is one of the vital areas in redressing social inegalities, of which gender injustice is an accurate measure, and investing in the future through equal distribution of education and commitment to develop the human potential of all.

ACTUALIZING A NEW CONVERGENCE: RENEWED ROLE OF AN INVIGORATED HIGHER EDUCATION IN DEVELOPMENT

In the educational imagination, conception, and structure within the context of the contemporary world, higher education constitutes the last ladder of national educational institutions. In essence, the upper level requires a solid base and intermediate steps. Thus, in our conception, the holistic imperative must remain consistent. The domain of gender equity in higher education offers a good illustration of this point. Indeed, in a multiplicity of manifestations, gender inequity constitutes one of the main grounds of infringement on equal rights to quantitative and substantive education. It is a persistent impediment to fully unleashing human capability and producing practical and critical knowledge for the goodness of humanity.

In this area, it is important to link the initial enrolment to all the obstacles and opportunities on the educational journey toward the upper level of the ladder.

Indeed, in addressing gender equality and other social inequalities in higher education, there is a need to go beyond the question of simple access, especially when it is reduced to basic education and literacy. It is argued that genuine equity must extend systematically to higher education (Mkandawire, 2005; Assie-Lumumba, forthcoming, 2007). Thus, this is an aspect that requires vigilance in conceptualizing, designing, and applying policies of higher education for development in the 21st century.

Even if access to higher education is achieved, other key issues persist and constitute a real hindrance to the actual realization of gender equality. Indeed, questions of academic freedom and slow processes of engendering the social learning space, teaching and the production of knowledge are solidly entrenched in institutions of higher learning. Any structural transformation requires systematic policies (Sall, 2000, Arnfred, et al. 2004a and 2004b).

A critical analysis of African contemporary education, which originated from colonial policies, reveals various historical moments that have been characterized by conflicts, divergence, and convergence in the interpretation, by the different stakeholders, of the goals and the means to achieve the expected results. These differences in the perceived and actual social outcome of education led to unequal commitment of the means to produce the educational output and the subsequent social outcome toward human development. I would like to submit that as the world community, we achieve the most when we have some form of convergence of goals, regardless of the multiplicity of perspectives, core beliefs, ideology, and how and where the process for achieving the common goals takes place.

Some historical examples can help guide our reflections and clarify our assumptions. For instance, it is worth trying to understand why and how the Africans, who adamantly rejected European education and used various means to resist and trick the Europeans, changed over a few years to demand more schools and to build more schools on their own. The colonial military could not succeed in bending the Africans' will to accept their rule under the condition of divergent educational goals. It was only when there was a convergence of goals, both under colonial rule and in the first two decades of the post-colonial period, that all the educational stakeholders from the community levels (e.g. various forms of the harambe model) to international organizations, private foundations and governments of industrial countries became commited to mobilizing ressources. There is a need to work toward findings ways to creatively mobilize the needed resources.

Based on people's aspirations to develop and build democracies, and taking into account tangible world resources, there are enough resources to boost higher education. But considering the expectations based on past and current realities, the exercise of critical reflection can be just that: reflections. Yet, given the urgency to fix the global imbalance of development and the role of education in general, and especially higher education, in the interconnected world, there is legitimacy in the call to search for integrative solutions for sustainable global development.

Indeed, the legitimacy of the global system itself and its agencies should depend on their capacities and the dynamics of their philosophical foundation to promote and sustain equality and equity in higher education. Equality and justice at the local level and the global level are also a developmental requirement.

CONCLUDING NOTE

My argument is that when we consider higher education, we need to consistently bear in mind the dynamic relation between all the levels of education. The driving force for the convergence to mobilize resources and to secure commitment at the global level must be the realization that the global village is real. In Africa, the emergence of private universities and the increased use of ICTs do not constitute a panacea. New apparent or real solutions can sustain or trigger new problems. Thus, vigilance and critical predispositions are permanently needed.

Higher education made accessible to more people irrespective of their ability to pay and their ascriptive characteristics can unleash human capability to promote global well-being and social progress. It is a moral imperative that is intrinsically and ontologically linked to our collective well-being in a globalized world.

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THE MAIN THRUSTS OF UNESCO'S ACTIVITIES IN HIGHER EDUCATION

I. INTRODUCTION

Institutions of higher education are critical catalysts for a country's adaptability and economic and social development, indeed its standing in the international competition for power and influence. Many countries are currently undertaking an overhaul and revamping of their university system – often at considerable cost and at a daunting scale. The quality of higher education will determine the scientific discovery, innovation and exploration of the future. While the competition among institutions of higher learning remains a powerful driver of innovation and change within individual countries or among some select countries, this competition now occurs increasingly and quite publicly at the global scale, as a consequence of the increased globalization of academic concerns. As policymakers, business leaders and universities must rededicate themselves to creating comprehensive learning and discovery environments, to ensuring quality education and to designing entirely new models and methods of teaching, UNESCO as the multilateral institution to promote international cooperation through education must review and adapt its orientations and engagement.

This must take account also of a new trend, namely the increasing privatisation of higher education especially in the developing world – where it has thus far been a virtual government monopoly. No longer will be affordable schooling for all, close to home, paid for by state and/or federal governments at all levels be the overriding guiding principle for all levels of education. Education is the largest and most costly societal system. It comprises 1.3 billion students and teachers in the formal educational system with a total public expenditure for education amounting to US$ 1,400 billion – of which some 1,200 billion are spent in industrialised countries and only 200 billion in developing countries. Higher education alone is globally a US$200 billion enterprise, involving 18 million students in almost 4000 public and private colleges and universities. This overshadows by far the often vilified military-industrial complex.

II. UNESCO'S STRATEGIC FRAMEWORK

UNESCO's Medium-Term Strategy articulates the strategic vision and overall programmatic direction for action in all of UNESCO's five domains at the global, regional and country levels for a period of six years. The current strategy will lapse at the end of 2007 and will be succeeded by a new one for 2008-2013, also called document 34 C/4. The roadmap of the 34 C/4 is translated into three consecutive biennial programme and budget documents (document C/5). The challenge is to ensure a **reliable linkage** and **coherence** between C/4 and C/5 ('**seamless transition**'). In the next period, all UNESCO action will be driven by and organized

around specific and complex global challenges and problems, calling for a mobilization of all of UNESCO's core competences. **A broadened interdisciplinary** and **intersectoral engagement** are integral parts of the programming process.

A single unifying **mission statement** for the 34 C/4 – to be adopted by UNESCO's General Conference in November 2007 – will guide UNESCO's action across all its areas of competences. It reads:

> *"As a specialized agency of the United Nations, UNESCO contributes to the building of peace, the eradication of poverty, sustainable development and intercultural dialogue through education, the sciences, culture, communication and information"*

Clearly, higher education and research are poised to make a major contribution to this mission. – The strategy consists of five **overarching objectives**, of relevance for the entire Organization (not only a particular sector) expressing the **unique core competencies** of UNESCO and its comparative advantage and14 **strategic programme objectives** which translate these overarching objectives into programme-relevant and thematic terms, combining both sectoral and intersectoral responses to the global challenges identified. Africa and gender equality are accorded priority in all of UNESCO's domains.

In implementing its medium-term strategy, UNESCO will perform five distinct, established functions, namely

- labouratory of ideas
- standard-setter
- clearing house
- capacity-builder in Member States and
- catalyst for international cooperation.

III. TOWARDS KNOWLEDGE SOCIETIES

In all domains, there will be a growing **focus on global knowledge exchange, networking, policy and advocacy**. Here UNESCO can capitalize on its comparative advantage – defined by its universality, its convening capacity, its mandate and advisory role in its areas of competence, its pluri-disciplinarity and its ability to mobilize and interact with various constituencies – governmental, non-governmental and the private sector. UNESCO, as a global clearing house and knowledge broker, collects, generates, processes, standardizes, synthesizes, disseminates, transfers and applies knowledge in a continuous cycle. The introduction of ICT innovations will open up opportunities for accelerating the flow of knowledge, making it more widely available and, often, enriching it in the process. UNESCO must follow a two-track approach: exploiting traditional technologies to the fullest and taking full advantage of new developments, maximizing the potential of ICTs to contribute to the realization of the MDGs. UNESCO is more than a mere

broker of knowledge, rather it is well-positioned to contribute to a clearer understanding of the priorities for scientific knowledge and knowledge management. Worldwide, **knowledge societies** will continue to develop and grow. As a result, there will likely be fierce competition for knowledge within a global labour market, bringing about brain drain and outsourcing. Access to knowledge has become a question of social justice and a critical factor for individual development, careers and success. Capacity-building at various levels is a unique means to enable individuals and institutions to access, utilize and sustain knowledge and skills. UNESCO's efforts in this area comprise numerous components – both in education, including in particular higher education, as well as research and knowledge creation. The modern university is the ideal environment for the creation and transfer of knowledge that drives national competitiveness in an increasingly global era. Institutions of higher education are destined to play a fundamental role in knowledge societies, based on radical changes in the traditional patterns of knowledge production, diffusion and application. Over the past 50 years, these institutions – modelled for the most part on the European university – have experienced an explosive growth in student numbers. Educational provision is becoming more varied as knowledge advances. Constraints on government spending are inducing more and more establishments to envisage other modes of financing, notably from private sources. As a result, higher education in most countries now consists of a complex network of public or private institutions – polytechnics, engineering faculties, business and management schools, distance education centres, research labouratories, or company subsidiaries.

While there is no single organizational model, it is important to ensure emerging systems of higher education a high enough level in terms of quality, relevance and international cooperation if they are to play their full role as key components in building knowledge societies. Generally speaking, most United Nations agencies, programmes and institutions have a purely sectoral approach to these problems. UNESCO is the only one in a position to undertake this mission in an interdisciplinary manner and to carry out the tasks needed to ensure the quality and relevance of systems of higher education, induce innovation, link it to science education and research, while at the same time furthering the development of international cooperation in this field.

In its 2005 World Report "Towards Knowledge Societies", UNESCO has developed a set of ten recommendations for the attention of governments on all levels, governmental and non-governmental organizations, and the private sector and civil society. Let me adduce some of the recommendations pertinent for the present conference:

- *Invest more in quality education for all to ensure equal opportunity.* This must include a strengthening of the productive capacities of knowledge as well as an increased mobilization of resources in favor of education for all through a better partnership between developing countries, donor countries, civil society and the private sector. The contribution of institutions of higher education to lifelong education for all must be encouraged by adopting diversified class schedules and designing relevant formulae. All of these steps must benefit in priority the poorest and most marginalized populations, as well as vulnerable groups such as orphans and people with disabilities.

Access to education and quality education must be thought of as interdependent and inseparable needs and rights. Education must teach learners how to cope with the challenges of the twenty-first century by encouraging, in particular, the development of creativity, the values of good citizenship and democracy, and the skills necessary for everyday and professional life. Education investments must aim to improve the learning environment and the status of all the teaching professions.

- *Widen the contents available for universal access to knowledge.* The main knowledge centres, such as institutions of higher education, research centres, museums and libraries, should play a greater role in the production and spread of knowledge through better networking made possible by low-cost high-speed connections. The availability and spread of knowledge in the public domain, especially in science, must be integrated into respective policies and laws. The creation of portals of protected works unavailable on the market should be encouraged – subject to the agreement of publishers and copyright-holders – by any entity interested in investing in them: libraries, companies, administrations, and international and non-governmental organizations.

- *Develop collabouratories: towards better scientific knowledge sharing.* Collectively managed scientific cooperation networks and infrastructures accessible to researchers from several countries and regions, including those working in developing countries, should be set up. These collabouratories, which enable scientists separated from each other by huge distances to work together on specific projects, offer an outstanding way of sharing and spreading knowledge more effectively. Setting up collabouratories might lead to the creation of sustainable platforms for sharing knowledge, research and innovation between the planet's different regions, especially along the North-South and South-South axes.

- *Move towards knowledge certification on the internet: quality labels.* It is important to promote thinking about the technical and legal feasibility of knowledge certification norms and standards with the aim of ensuring users' access to a certain number of reliable, relevant contents, especially in the area of scientific information. With regard to the internet, it would be advisable to encourage the setting up of norms and objective guidelines enabling web users to identify sites whose information is particularly reliable and remarkable because of its quality. The definition of norms and standards, necessarily a multidisciplinary task, could unite the efforts of public and private educational, scientific and cultural institutions, as well as the relevant international non-governmental organizations. For example, it could lead to the introduction of quality labels covering a very wide range of knowledge.

- *Increase women's contribution to knowledge societies.* Gender equality and women's empowerment must be at the heart of the constituent principles of knowledge societies. The public domain of knowledge must include the contribution of women's specific knowledge. It is important to facilitate women's acquisition of skills and

abilities that meet their specific development needs. It will also be important to work towards eliminating gender disparities with targeted measures, such as creating scholarships for girls, setting up special times to allow women in developing countries to become familiar with the internet, increasing the number of female teachers, promoting continuing training opportunities for women and taking steps to encourage their access to scientific research and technological engineering.

IV. EDUCATION – UNESCO'S VISION AND ROLE

Ever since its inception in 1945, UNESCO has a long history in higher education and the field of scientific research. However, this paper will only focus on the developments and orientations over the last decade.

Education is at the heart of sustainable human development and is the key means to achieve the Millennium Development Goals (MDGs), in particular its overriding goal of halving poverty by 2015 and the objectives of the two education-related MDGs. Human security and economic prosperity depend on the ability of countries to educate all members of their societies to be prepared to thrive in the rapidly changing world. An innovative knowledge society prepares its people to not only embrace and adapt to change but to also manage and influence it. Education enriches cultures, creates mutual understanding and underpins peaceful societies. UNESCO reaffirms the vision of education as a human right and as an essential element for the full development of human potential. It will particularly focus on bringing all the benefits of education to the poor, to women and girls, to the excluded, the marginalized and those with special needs – especially in Africa and in least developed countries.

UNESCO's strategies, approaches and modalities of action will take as their basic tenets the following, which pursue the six Education for All (EFA) goals adopted at the 2000 Dakar World Education Forum:

- education is a human right;
- education includes both formal and non-formal systems; and
- education for all refers to all levels of education, i.e. early childhood to higher education.

UNESCO works on all aspects and levels of education, from early childhood to higher education including formal and non-formal approaches, in a holistic, system-wide, value-based and integrated manner. UNESCO will continue to ensure global EFA coordination and assist national leadership through policy advice and capacity-building to achieve the six EFA goals. It pursues its mandated role in coordinating EFA partners and maintains their collabourative momentum towards the attainment of the six EFA Goals and the education-related MDGs. The "Global Action Plan: improving support to countries in achieving the EFA Goals" provides the platform for collabourative action in support of country efforts to achieve the EFA goals by 2015.

UNESCO is also monitoring the progress made by preparing the annual *EFA Global Monitoring Report*.

Beyond, UNESCO provides a platform for intellectual and thought leadership aimed at promoting dialogue and exchange of information among all educational stakeholders on issues, themes and factors that have an impact on the quality of education. It promotes development and implementation of innovative practices in the field of education to improve, monitor and assess education of quality, document and disseminate such practices and assist in setting standards, norms and guidelines for action. This includes the integration of innovative ICT-based approaches in learning at all levels of education and in teaching, including the development of ICT competency standards for teachers. UNESCO is developing on-line educational applications and repositories of open educational courseware.

UNESCO's normative actions to promote quality education as a fundamental right seek to enable people to manage and respond to a changing and challenging world which demand different skills and knowledge; critical thinking and innovativeness; as well as the ability to absorb and analyze information. Quality education will be grounded in international and regional legal instruments, including the Convention and Recommendation against Discrimination in Education, the Convention and Recommendation on Technical and Vocational Education, the Recommendation concerning the Status of Higher-Education Teaching Personnel, and the Recommendation on the Recognition of Studies and Qualifications in Higher Education. Teachers remain the critical element for successful learning outcomes. HIV/AIDS is a threat to both expansion as well as raising the quality of learning, and must be addressed at all levels.

Moreover, UNESCO draws on the contribution of research policy networks working on obstacles to the implementation of the right to education. Educational reform and innovation at country level is being supported both through the provision of technical assistance and policy advice and through institutional capacity development in policy and planning as well as implementation, monitoring and assessment of achievements.

All this is exceedingly relevant for higher education. Higher education is also closely linked to the natural and the social and human sciences, which are critical for poverty alleviation and sustainable development. A primary role of UNESCO is to support Member States to develop their national science, engineering, technology and innovation policies, to build individual and institutional capacities, to strengthen higher education, innovation and scientific and technological research, to foster regional and sub-regional cooperation and collabourative research, and to spread scientific results. Dialogue, cooperation and networking, among various stakeholders and centres of excellence as well as South-South and North-South cooperative programmes are particularly important features of such efforts. The promotion of science, engineering and technology, as well as environmental and ethics education at all levels is indispensable in this context.

V. FROM THE 1998 WORLD CONFERENCE ON HIGHER EDUCATION (WCHE) TO THE INTERSECTORAL PLATFORM TO STRENGTHEN NATIONAL RESEARCH SYSTEMS

The Organization has been working for decades to assist Member States, their higher education institutions and other stakeholders, especially with respect to the follow-up to the World Conference of Higher Education (WCHE), held in Paris in 1998. Furthermore UNESCO engaged in

- consolidating and strengthening the UNITWIN/UNESCO Chairs Programme;
- promoting quality assurance and accreditation and the academic mobility of students and staff
- developing policy options for an education response to emerging challenges of the knowledge society, such as the internationalization of trade in higher education and to all forms of cross-border provision of education;
- supporting Member States to improve the quality of teacher education and in taking account of the emergence of a new professional role for teachers; and
- strengthening national science and innivation systems for higher education and research.

WCHE provided the basic international framework for action in the area of higher education through the adoption of the 1998 World Declaration on Higher Education for the Twenty-first Century and Framework for Priority Action for Change and Development of Higher Education. The debates yielded basic principles for higher education development worldwide, involving, *inter alia*, a global network of 400 focal points, an international follow-up committee (60 experts) and five regional committees (60 experts) linking specialists to monitor renewal and to stimulate action at national, regional and international levels. 600 WCHE documents can be consulted on the electronic archive via the WCHE website (www.unesco.org/education/educprog/wche/index.html).

As a follow-up activity to both WCHE and the subsequent 1999 World Science Conference, held in Budapest, the UNESCO Forum on Higher Education, Research and Knowledge was established in 2001 in order to strengthen research and knowledge management as drivers of economic and social development in Member States and for the pursuit of the MDGs, especially poverty eradication and sustainable development.. It constitutes a platform for researchers, policymakers and experts to engage critically with research issues and research findings. The objective is to widen the understanding of systems, structures, policies, trends and developments in higher education, research and knowledge. Every year, Global Forum events are organized at UNESCO. Parallel meetings and activities are organized in the regions, contributing to shaping the global agenda. These activities serve to highlight and focus research areas and

to bring out challenges facing institutions and countries. In this way, the Forum seeks to build on and complement existing and ongoing research, and to facilitate networking and synergistic partnerships between actors. The activities of the Forum are supported by a Global Scientific Committee and five regional Scientific Committees.

Five years after WCHE, UNESCO organised a WCHE + 5 event (Paris, 2003) bringing together its partners in higher education (over 400 participants from 120 countries) to identify changes that have taken place in higher education since 1998 and to discuss their consequences, to identify examples of good practice, and more particularly, to try to define future action at the level of Member States and of individual institutions. The next global event is envisaged for 2009.

The Draft Programme and Budget for 2008-2009 envisages an intersectoral platform on strengthening national research systems involving four Major Programmes of UNESCO and the UNESCO Institute for Statistics (UIS). It builds on the results of the 2004 and 2006 editions of the UNESCO Forum on Higher Education, Research and Knowledge. The platform shall also draw on the contribution of the UNITWIN/UNESCO Chairs programme, the results of the UNESCO-supported policy dialogue and capacity-building for the formulation of national science, technology and innovation policies, the strengthening of research-policy linkages in the field of the social and human science policy elabouration. The platform will aim at strengthening UNESCO's contribution to integrated approaches facilitating the creation and strengthening of national research systems, linked with the development and implementation of holistic science and innovation policies and a strengthening of higher education institutions, particularly in the least developed countries. It will also seek to identify and respond to national priority needs of developing and in particular least developed countries, with emphasis on the integration of national research systems and science policies into an overall national strategy for sustainable development. Furthermore, the platform will promote enhanced cooperation and networking with other United Nations entities, regional organizations, in particular the African Union, committed to a strengthening of science, technology and innovation strategies and the development of requisite national capacities.

Action will also seek to integrate the ethics of science and technology into the institutional framework of national research systems, in cooperation with national ethics and research committees, to monitor the contribution of national research systems to sustainable development, particularly of social development and to support research-policy linkages regarding social transformations and social development.

VI. PROMOTING QUALITY ASSURANCE IN CROSS-BORDER HIGHER EDUCATION

As a response to the ethical challenges and dilemmas facing higher education in an era of globalization, UNESCO launched in 2002 a Global Forum on International Quality Assurance, Accreditation and the Recognition of Qualifications. Its mission was to provide a platform for

exchange between different partners and to initiate a debate on the social, political, economic and cultural dimensions underpinning the nexus of globalization and higher education. The participants agreed that there was a need to build bridges between education (i.e. academic values and principles) and trade in higher education services and that UNESCO, the World Trade Organization (WTO) and the OECD could act as complementary organizations providing a joint forum to address both the cultural and commercial aspects of trade in higher education. Furthermore, the Forum agreed that existing instruments, such as the regional conventions on the recognition of qualifications, could be adapted to address new challenges associated with globalization in the context of the values put forward in the WCHE. As part of this framework, UNESCO and OECD jointly developed Guidelines for Quality Provision in Cross-Border Higher Education – finalised at the end of 2005 as an educational response to the General Agreement in Trade and Services (GATS) – which provided an international framework to promote dialogue and international co-operation between providers and receivers of higher education, with a special focus on student protection.

The Second Global Forum, which was held in 2004, examined challenges to "Widening Access to Quality Higher Education", an issue at the heart of policy debates worldwide. It also proposed a strategy aimed at capacity-building for quality assurance and accreditation for traditional and cross-border higher education, based on a review of existing needs in different regions of the world.

The Third Global Forum to be held in 2007 in Dar-es-Salam, Tanzania, will deal with International Quality Assurance, Accreditation and the Recognition of Qualifications. It will focus on learners and the new higher education spaces as well as the challenges related to the recognition of qualifications and quality assurance. The Forum will also focus on, and further develop, the issue of providing learners with tools for informed decisions, and overall it will serve to foster South-South cooperation.

VII. NATIONAL CAPACITY-BUILDING FOR HIGHER EDUCATION AND RESEARCH

UNESCO's work in the area of higher education – carried out by the Education sector and the six (category I) UNESCO Education Institutes – is very much linked to helping achieve the broader objectives of EFA and the MDGs. UNESCO has been working to build and strengthen the capacities of Member States at the national level, particularly in developing countries, countries in transition and post-conflict countries, to implement reforms of higher education systems, to establish new universities, also by promoting South-South and triangular South-North-South cooperation. The institutes have been providing training for teachers and national educational planners and administrators, in-service training on the use of ICTs for education and innovative pedagogy, and encouraging research and exchange with other education related training and research institutions. An example is the reform of higher education systems that was undertaken in South-East Europe through the UNESCO-CEPES project "Ten Years After and Looking Ahead:

A Review of the Transformation of Higher Education in Central and Eastern Europe". It resulted in 12 case studies on CEE countries, a position paper on the "Further Development of Higher Education in South-East Europe", and a publication of the CEPES quarterly review *Higher Education in Europe*.

To strengthen the capacities of Member States, UNESCO has been providing assistance in developing new policies and strategies that ensure equal opportunity and wider access to quality higher education through mechanisms such as e-learning, distance education and electronic networking and assistance to teacher training institutions, especially in sub-Saharan Africa (see below). Several activities have been implemented with a view to introducing ICTs into teacher training curricula or providing ICT concepts to university instructors as well as to non-formal trainers through community centres. Sharing of experiences in using ICT tools and best practices has been promoted through regional and subregional efforts. For example, in Asia and the Pacific UNESCO Bangkok functions as a regional clearing house for ICTs in education in the region. Through UNESCO's Fellowship Programme, the Organization has been contributing to the enhancement of human resources and national capacity-building.

UNESCO has also been working to revise conventions on the recognition of qualifications, and establish national quality assurance and accreditation systems through the application of the UNESCO-OECD guidelines in cross-border provision. In this regard, support has been given to developing regional recognition instruments (e.g. launch of the Arusha Convention); capacity building (e.g. Mediterranean Convention on Recognition of Diplomas and ICT-enhanced distance education, with an IIEP developed e-learning tool for quality assurance; implementation of a distance education course on international credential evaluation by CEPES); and the launch of a pilot project for designing an information tool on recognized higher education institutions.

VIII. THE PROMISE AND IMPACT OF E-LEARNING

Several ICT-based networks and e-education approaches underline their potential for capacity-building. The Internet makes possible the virtually costless distribution of academic course materials around the world, potentially enriching the education of both individual learners and students enrolled in colleges and universities. Electronic access to books and scholarly journals that might enhance both education and research is expanding rapidly. These developments have great potential. In 2002 MIT inaugurated its Open Course Ware project. Today, two-thirds of its courses have materials available on line, free of charge. The course materials include syllabi, study guides, examinations, problem sets and assignments given to students, lecture notes in some cases, and, in a few cases, videotaped lectures. About 50 institutions around the world have followed MIT's lead in putting course materials on line, and the University of Texas has established a Web site that allows faculty anywhere to submit their course materials for posting. A recent survey showed that 77% of the off-campus users of MIT's materials are from outside the United States. It also revealed that 47% of the users are individual learners, 32% are students enrolled in classes at another educational institution, and 16% are

teachers seeking to design or improve their own courses. Materials such as those posted on line by MIT have great potential for enhancing the quality of education around the world, especially if used judiciously by faculty to strengthen the content of their offerings. There is similar potential in the use of entire lecture courses from world-class institutions. The combination of on-line lectures and course materials developed by global experts with a local instructor to interact with students could become an exciting and effective new approach to strengthening the curriculum in universities around the world.

The objective of the ICT-based *Resource Centres Network* in sub-Saharan Africa is designed to enable the development of capabilities for delivering training in the countries of the Great Lakes region and to build the capacity of end users – learners, teachers, trainers, and managers. – The *African Virtual University project* represents another capacity-building effort of an intersectoral nature, aimed at forming local capacity for developing tertiary courseware and for developing a quality assurance policy and methodology. – The *Space for Science projec*t aims at the provision of scientific information and services to South East European (SEE) research and academic institutions in cooperation with peer entities in Western Europe, taking advantage of the instantaneous links provided by satellite technology. – UNESCO provides expertise to the *African Institute of Science and Technology* and participates in the design of the campus network and related teaching processes. -- The *Avicenna project* is a self-sustainable virtual university, based on cooperation between institutions of Mediterranean countries. It focuses on the use of ICT-based knowledge centres to exchange course materials suitable to build capacities.

Research and higher education professionals have also been mobilized to contribute to policy developments in the social, cultural, scientific and economic spheres not only through the UNITWIN/UNESCO Chairs networks but also through other approaches: policy forums that bring together academic and research staff, university managers and officials from relevant government ministries (e.g. Global Forum); research publications and bulletins; and public/private partnerships (e.g. with Hewlett-Packard). Inter-university cooperation has been supported through the UNITWIN/UNESCO Chairs Programme, which serves to advance research, training and programme development in higher education by building university networks and encouraging transfer of knowledge across borders. Today 618 UNESCO Chairs and 67 UNITWIN Networks exist under the Programme, involving over 740 institutions in 125 countries. A number of UNITWIN/UNESCO Chairs have morphed into international networks (e.g. ORBICOM), and the Global Network for Innovation in Higher Education (GUNI) in partnership with the United National University, and the Palestinian, European and American inter-university cooperation through the PEACE Network (Palestinian-European Academic cooperation in education). Recently, a UNITWIN network has also been created among Chairs involved in intercultural and interreligious dialogue.

As a result, education decision-makers have been equipped to understand and respond better to global developments in higher education policy through publications (e.g. on implications of GATS) and capacity-building workshops (e.g. South Asian sub-regional workshop on cross-border regulation). Options for retaining qualified individuals to enhance national development

have been piloted through increasing the attractiveness of higher education institutions (e.g. grid computing technology project) and through encouraging self employment and endogenous economic growth with entrepreneurship training.

IX. TEACHER TRAINING

UNESCO has been particularly active in providing global leadership in teacher training and related policy issues. UNESCO is tackling the critical problem of improving and expanding teacher education through action affecting teacher-policy and teacher education in sub-Saharan African countries, where troubled educational and working conditions, as well as the impact of the AIDS pandemic, have created significant teacher shortages and impeded teaching-quality. The aim is capacity-building of lead teacher training institutions, to substantially increase the numbers of qualified teachers, especially those in primary education. Increased attention will be placed on ICT-based programmes, especially for in-service professional development, and on flexible-intensive community-based initiatives that seek to increase teacher recruitment and training among women and educated unemployed.

To address the acute shortage of teachers in sub-Saharan Africa, where an estimated 4 million additional teachers are estimated to be required by 2015 to meet MDG 2 alone, – as mentioned above – UNESCO launched in January 2006 the Teacher Training Initiative for sub-Saharan Africa (TTISSA) to help increase the quantity and improve the quality of the teaching cadres in sub-Saharan Africa. The TTISSA initiative is linked to UNESCO's two other EFA core initiatives: the Literacy Initiative for Empowerment (LIFE) and the Global Initiative on Education and AIDS (EDUCAIDS). Through TTISSA, the Organization will work to

- improve the status and working conditions of teachers;
- establish coherent management and administration structures;
- harmonize teacher policy and development goals; and
- enhance the quality and coherence of the professional development of teachers.

To achieve these goals, the Organization has been assisting Member States with policy development; reviewing, supporting, and producing evaluations/studies and toolkits; organizing regional workshops; and reviewing and developing teaching and learning materials for HIV/AIDS, literacy, life skills, education for sustainable development, science and technology education. All 46 sub-Saharan African countries will progressively participate by 2015 in TTISSA through a series of four-year cycles. 17 countries have been chosen as the initial reference group for 2006-2009. These 17 countries are: Angola, Burkina Faso, Burundi, Cape Verde, Central African Republic, Chad, Congo, the Democratic Republic of the Congo, Ethiopia, Ghana, Guinea, Madagascar, Niger, Nigeria, Sierra Leone, the United Republic of Tanzania and Zambia.

X. PROMOTING UNIVERSITY NETWORKS

Knowledge is expanding rapidly and diversifying through the establishment of new crosscutting disciplinary communities organized in the form of networks around international symposia and specialized research journals. International networks are an example of self-organization and their creation will spread rapidly within institutions of higher education.

The emergence of university networks does not however prefigure the eclipse of universities and academic institutions. There will always be a need for fixed geographical locations, labouratories and teaching institutions, bringing together researchers, lecturers and students, with permanent – and therefore public – sources of funding and hierarchical organizational patterns. However, the expansion and diversification of jobs, of knowledge and of the disciplines underlying them, mean that hierarchical structures may be supplemented by decentralized structures, organized along network lines. This kind of network organization is starting to develop within inherited institutions in both industrialized and developing countries. A policy-making lesson may be derived for the future: developing countries that have invested insufficiently in university-type institutions could and – above all, should – think of *investing in network organizations* that anticipate the foreseeable development of academic institutions. This is all the more advisable since the economic costs of academic networks are much less than those involved in the creation of large university establishments.

Paradoxically, the organization of research and higher education activities in international regional networks offers developing countries an unexpected opportunity to participate in the new international architecture now taking shape. There is a window of opportunity for the developing countries to participate in the university networks that are going to be set up and developed. In the follow-up to the 1998 World Conference on Higher Education, UNESCO has already contributed to this networking of higher education and research by creating and developing the UNITWIN/ UNESCO Chairs Programme. Networking enables developing countries to establish a higher education system or to improve its quality without having to wait to secure large investments or to be in a position to make long-term commitments.

I. IEP supports a number of training and research institutions and networks, which include: the Asian Network of Training and Research Institutions in Educational Planning (ANTRIEP), the Southern Africa Consortium for Monitoring Educational Quality (SACMEQ) and the ForGestion expert network for Latin America.

XI. BUILDING HIGHER EDUCATION CAPACITIES FOR SUSTAINABILITY

UNESCO can bring about a better understanding of sustainability, its underlying ethical premises and strategies to generate sustainable, healthy and safe living conditions for present and future generations. The Organisation is in a unique position to advocate the merits of scientific knowledge and to disseminate best practices and results widely through international

cooperation. Furthermore, UNESCO will be able to facilitate dialogue and networking among the scientific community and to provide a bridge for interaction with decision-makers and the public-at-large. New research networks will work on a better understanding of the "right to enjoy the benefits of scientific progress and application" as stipulated in the Universal Declaration of Human Rights. Particular emphasis will be placed on promoting access to scientific knowledge – also through the use of media and ICTs – science education and education for sustainable development. All this will be done to foster the emergence of a *science culture*, which is an important component of inclusive knowledge societies, committed to gender equality and the mobilisation of youth.

Action will also seek to integrate the ethics of science and technology into the institutional framework of national research systems, in cooperation with national ethics and research committees, to monitor the contribution of national research systems to sustainable development, particularly of social development and to support research-policy linkages regarding social transformations and social development. Top priority will be given to Africa and action will be undertaken in collabouration with the MOST regional networks, relevant UNESCO Chairs, National Commissions, ISSC and regional social and human sciences consortia as well as entities such as CODESRIA in Africa and FLACSO and CLACSO in Latin America. UNESCO's Social and Human Sciences Sector will undertake capacity-building in the field of ethics and bioethics at different levels, including institutionally and at individual levels through the Ethics Education Programme and the creation of networks of experts in ethics teaching.

To harmonize capacity-building efforts in marine sciences, and hence to maximize their impact, UNESCO's Intergovernmental Oceanographic Commission (IOC), and in particular its capacity-development section, coordinates closely with other capacity-building efforts of IOC programmes and with IOC regional offices. Furthermore, IOC coordinates and collabourates its capacity-building efforts with the UNITWIN-Chairs, as well as with UIS and the UNESCO-IHE Institute for Water Education. In particular, this concerns an extensive survey of marine institutes and capacities by country, which could take the form of an atlas or world report on oceanography. – IOC Chairs have been integrated with the revamped UNITWIN-Chairs policy of UNESCO. In this context, marine science Chairs have been encouraged to coordinate projects that span a network of universities. As regards the engineering sciences, technical capacity-building activities conducted by UNESCO include a virtual library for engineering education and sustainable development in Africa, being developed at the University of Khartoum.

As a measure that will impact the development of capacities at the institutional level, a UNESCO Chair has been established for South-South Co-operation for Sustainable Development at the University of Para in Belem, Brazil. Furthermore, ERAIFT in Kinshasa, DRC, has committed to develop a programme of South-South as well as complementary South-North-South triangular activities research and capacity building exchanges focussing on the themes of biodiversity, climate change and sustainable development.

To further strengthen support to Africa, the Director-General has outlined in a report for the 177th session of UNESCO's Executive Board in October 2007 UNESCO's contribution to the

implementation of Africa's Science and Technology Consolidated Plan of Action. African Heads of State and Government had adopted a Declaration in Addis Ababa in January 2007, which called on UNESCO to work closely with the African Union (AU) and its New Partnership for African Development (NEPAD) to implement the Plan of Action. To assist the AU/NEPAD in that regard, the Organization will focus on providing assistance in the areas where it has a comparative advantage in order to promote the *symbiotic relationship* between scientific research and higher education. In the area of higher education, UNESCO will work to build the capacity of Member States in science and technology by creating centres of excellence and strengthening national science systems for higher education and research; expand the UNESCO Chairs network; and ensure the implementation of sub-regional integrated scientific and technological education programmes, in particular the African Distance Training Networks. UNESCO will also provide support to assess the curricula of higher education institutions to ensure that they are capable of creating a critical mass of African scientists and technicians with the skills to engage in frontier life sciences and increasing access to, and sharing of, affordable state-of-art class research facilities for African scientists working in Africa in genomics, bioinformatics, gene technology, immunology, etc. Through its International Basic Sciences Programme (IBSP) and in close consultation with the Interagency Cooperation Network on Biotechnology (UN-BIOTECH), UNESCO will mobilize its networks and work with scientific NGOs to encourage intra-regional exchange and cooperation, including through the recently created Regional Centre for Biotechnology Education and Training in India, a category II centre under the auspices of UNESCO. Emphasis will also be placed on encouraging South-South co-operation with a view to strengthening existing infrastructure.

XII. PATHWAYS FOR THE FUTURE

The forces of globalization have made possible greater international cooperation in higher education. Such cooperation can contribute to peace and security among nations. Encouraging the flow of students across national borders; facilitating international cooperation in research; and supporting efforts to make educational and scholarly resources freely available on the Internet, will help reduce barriers imposed by national legal systems.

"Of the forces shaping higher education none is more sweeping than the movement across borders. Over the past three decades the number of students leaving home each year to study abroad has grown at an annual rate of 3.9 percent, from 800,000 in 1975 to 2.5 million in 2004. Most travel from one developed nation to another, but the flow from developing to developed countries is growing rapidly. The reverse flow, from developed to developing countries, is on the rise, too. Today foreign students earn 30 percent of the doctoral degrees awarded in the United States and 38 percent of those in the United Kingdom. And the number crossing borders for undergraduate study is growing as well, to 8 percent of the undergraduates at America's Ivy League institutions and 10 percent of all undergraduates in the United Kingdom. In the United States, 20 percent of newly hired professors in science and engineering are foreign-born, and in China the vast majority of newly hired faculty at the top research universities received their

graduate education abroad. " (Richard Levin, President of Yale University, October 2006 to the UNESCO Executive Board).

The bottom line is that the flow of students across national borders — students who are disproportionately likely to become leaders in their home countries — enables deeper mutual understanding, tolerance and global integration. Many universities are encouraging their own students to spend part of their undergraduate experience in another country. Universities are also establishing more ambitious foreign outposts to serve students primarily from the local market rather than the parent campus. And true educational joint ventures are gaining favor, such as the 20-year-old Johns Hopkins-Nanjing program in Chinese and American Studies, the Duke Goethe executive M.B.A. program and the MIT-Singapore alliance, which offers dual graduate degrees in a variety of engineering fields.

In the emerging knowledge societies, exponential growth in the quantity of knowledge produces a growing gap between those who have access to knowledge and culture, and learn to master them, and those who are deprived of such access. It is not sufficient to reduce the "digital divide"; we must also reduce the "knowledge divide", which is liable to grow exponentially. Training in the new information and communication techniques requires a high level of education, knowledge of English and the art of navigating in an ocean of information. Above all, it must not be accompanied by the temptation of compiling and juxtaposing information rather than using it as building blocks for constructing and organizing knowledge. The future of knowledge societies therefore rests in large measure on the excellence of the training of teachers, whose tasks and functions are destined to become more diversified in pursuit, among other things, of the objective of education for all. Hence, the importance of ensuring the relevance of higher education systems for the promotion of a healthy social and political climate within a country along with economic and cultural development. Political leaders should assign institutions of higher education a small number of crucial missions: producing, disseminating and upgrading knowledge; training teachers; and transmitting knowledge to society at large. Moreover, one of higher education's key functions should be to update knowledge, on a lifelong basis, in fields subject to constant changes. Institutions of higher learning are also places for dialogue and for the confrontation of viewpoints. This is why the new systems of higher education contribute not only to the production, transmission and upgrading of knowledge but also to education for citizenship.

Hiroyuki Yoshikawa

President, National Institute of Advanced Industrial Science & Technology, Japan

Hiroyuki Yoshikawa graduated from the University of Tokyo in 1956 and researched manufacturing technology at the Institute of Physical and Chemical Research (RIKEN). In 1963, he received a Doctor of Engineering from the University of Tokyo. He was appointed Associate Professor in the Faculty of Engineering there in 1966. He became Professor in 1978, Dean in 1989, Vice President in 1991, and President of the University of Tokyo in 1993. In 1997, he became President of the Open University and since 2001 has been President of the National Institute of Advanced Industrial Science and Technology. From 1997 to 2003, he was President of the Science Council of Japan and President of JSPS. From 1992 to 2002, he was President of ICSU. He has honourary doctorates from the University of Strathclyde, the University of Twente, the University of Birmingham, and NTNU-Norway. He is a member of the Royal Academy of Engineering, the Royal Swedish Academy of Engineering, the Royal Swedish Academy of Science, and the Academy of Engineering of the Czech Republic. In 1997 he was a laureate of the Japan Prize.

Higher Education, Innovation and Entrepreneurship

Hiroyuki Yoshikawa
National Institute of Advanced Industrial Science and Technology
Japanese National Commission of UNESCO

UNU/UNESCO International Conference

Pathways towards a Shared Future:
Changing Roles of Higher Education in a Globalized World
29 – 30 August 2007, UNU Tokyo

Contents

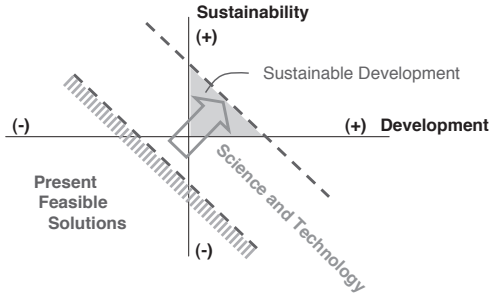
There are various factors which we need to consider for educating innovative entrepreneurs.

(1) Why do we need Innovations?

In the process of realizing sustainability, we must solve various problems which we have never experienced in the past.

Sustainable Development

Sustainable Development by G.H.Brundtland (1987)
= (Sustain the earth) ^ (Develop Less-developed Regions)



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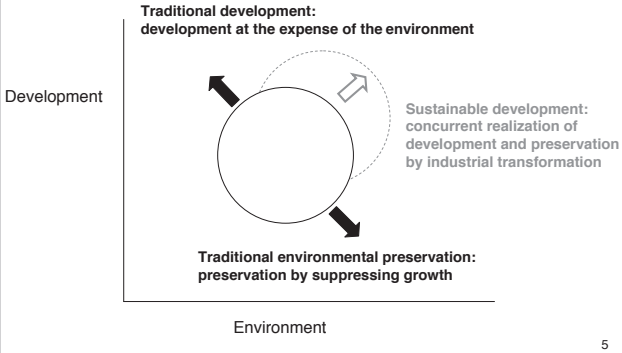
Making a Shift toward Sustainability

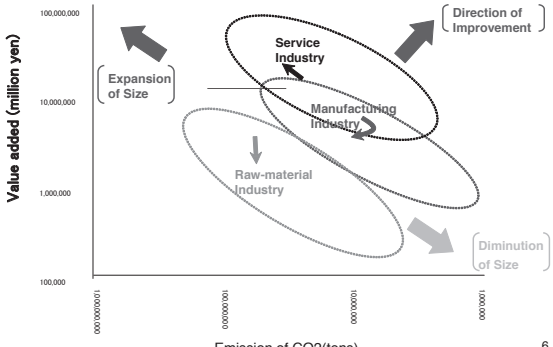
"Industrial Transformation by Innovations"



5

Move of Centre of Gravity of Industries (Japan)

Preliminary Metrics by AIST



持続性に向けた産業科学技術委員会(AIST)

6

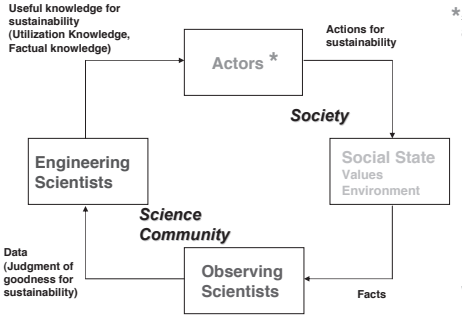
From Observation to Action

We have successfully observed changes in the global environment through science and technology. Now, we should make more scientific and technological efforts to prevent the deterioration of the global environment.

We shall discuss the manufacturing industry, which is based on science and technology, as the most useful means of promoting development in less developed regions and influencing the global environment. We will try to find a way for society to realize sustainable development through industry.

Actions in Society

Information Cycle for Sustainable Evolution



*Actors in Society are:

statesmen, policymakers, businessmen, administrators, engineers, educators, writers, artists, journalists, etc…

who move society.

We must design evolutional loops in society for sustainability.

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8

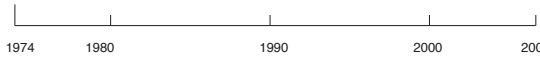
(2) Innovation Process

Innovation is not realized within a single discipline. Whenever an action is innovative, it is based upon the integration of diversified disciplines. Normally, it takes years to integrate them.

10

An Economical Innovation to Eradicate Poverty

Yunus of Grameen Bank



1974 Conception

1976 Experiment, Bangladesh University of Chittagong

1979 First success, Village of Jobra

1983 Legislated, Independent Bank

2006 *2100* Branches

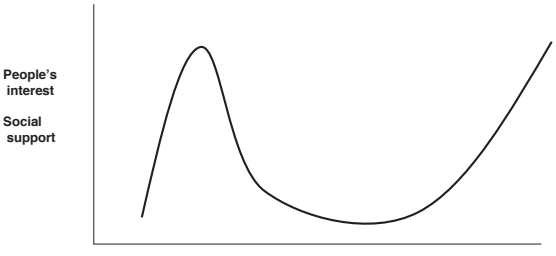
2006 Nobel Prize

Dr.Muhammad Yunus of Grameen Bank has successfully developed a bank which encourages women to become entrepreneurs and has amelioreted poverty in Bangladesh. The bank is innovative.
It is interesting to investigate the process of development after conception.

11

Dreams, Nightmares and Reality

General pattern of science-technology based innovation process



1985 J.Hatvany, H.Yoshikawa

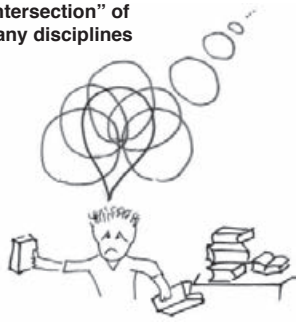
12

Integration of Disciplines is Necessary

Thought process within their own disciplines

Dream Research

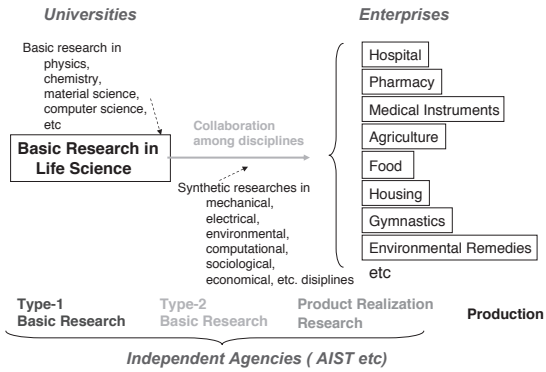
Thought process in "intersection" of many disciplines



Nightmare Research

13

Conceptual picture of full research in life science for health



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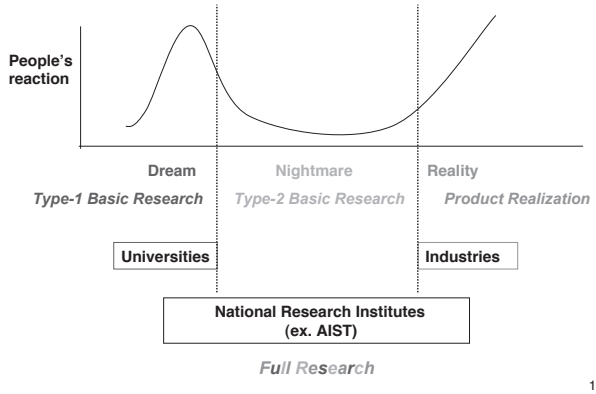
Full Research



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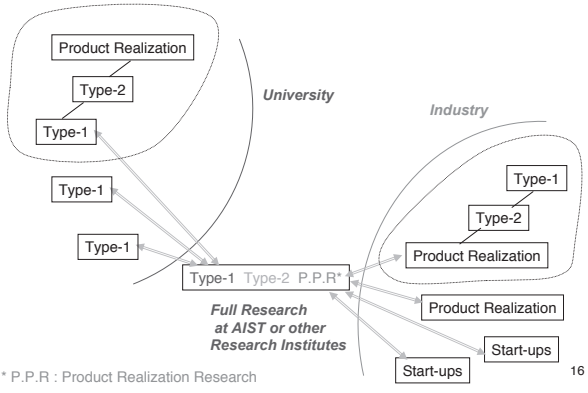
University-Industry Cooperation through *Full Research*

A Method to Implement the Network of Excellence



* P.P.R : Product Realization Research

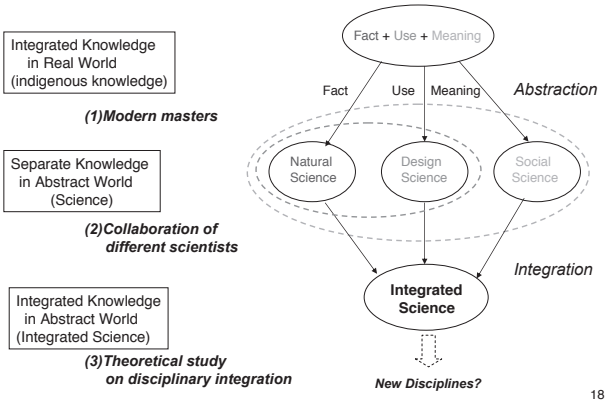
16

(3) New Disciplines in Science

In order to realize sustainability scientifically, we need new engineering knowledge based on new disciplines in science. Universities and research institutes must pioneer for them and professors of different disciplines should collaborate.

17

Knowledge Integration for Sustainable Science



18

(4) Synthesis-oriented Education in Engineering

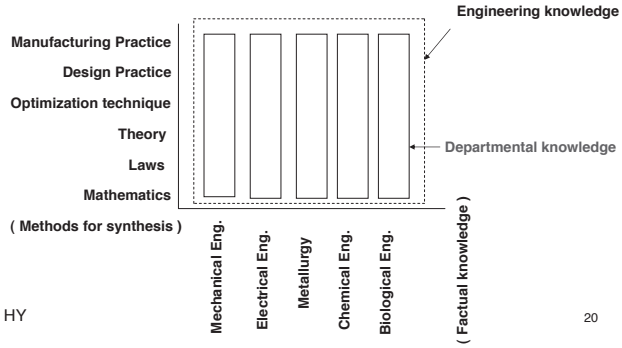
Two cases of education for innovation at University and Research Institutes will be shown. The case of the University of Tokyo is based on the general design theory, which is extracting the commonality from disciplines of diversified conventional engineering departments. The case of AIST is education for post doctoral fellows, which offers opportunities for type-2 research.

19

(4) Synthesis-oriented Education in Engineering

Traditional Departmental Curricula

which educate disciplinary specialists



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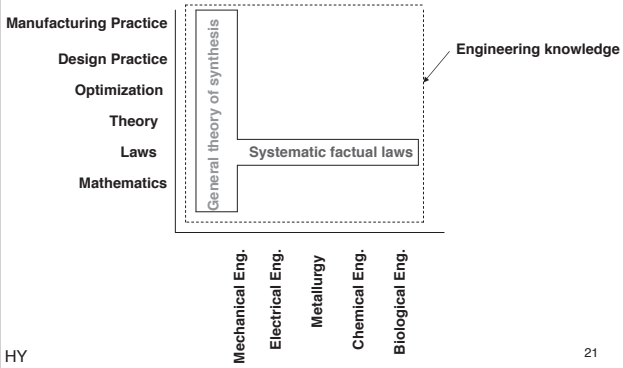
An Inverted Curriculum

education for sustainable development (ESD of UNESCO)



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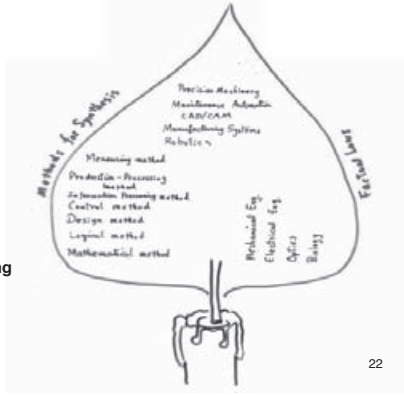
21

A curriculum named "Flames" 炎のカリキュラム

(Factual Laws and Methods of Synthesis)

Actually practiced at the Precision Engineering Department, University of Tokyo for 1975 -1994.

SUSTAINABLE SOCIETY



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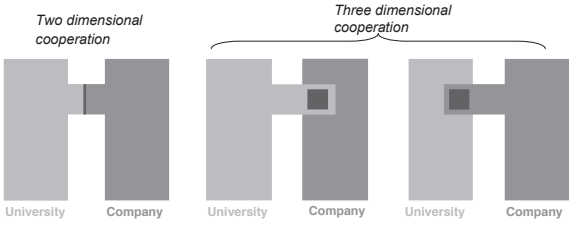
22

(5) Entrepreneurship

In Japan, there are social and economic challenges that make it difficult for young people to become entrepreneurs. We are now addressing this issue in the education system and through university-industry cooperation.

Development of Types of University-Industry Cooperation



Type-A Univ. in Company **Type-B Company in Univ.**

Researchers from universities and companies live and work together.

24

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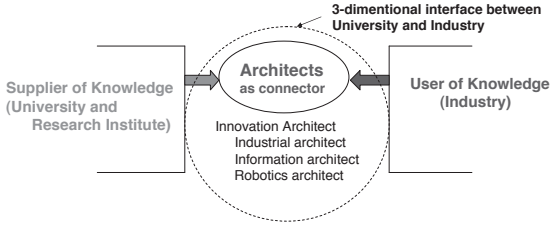
Architects in 3-dimensional Interface between University and Industry



Architects know both research frontiers and user's demands (like building architects).
Architects are either employed by research institutes, or are self employed.
Architects who are mature may run their own companies.
Architects are educated in the 3-dimensional interface.

25

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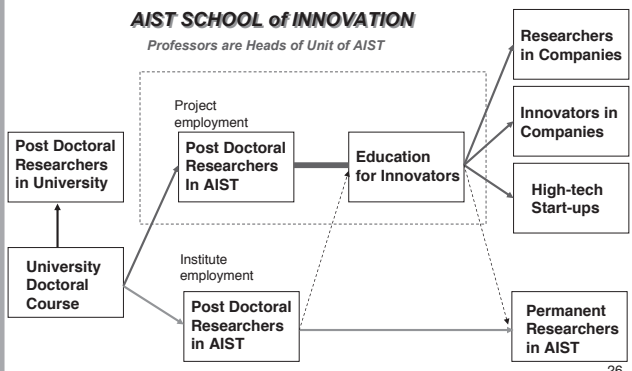
Education for Innovators in AIST



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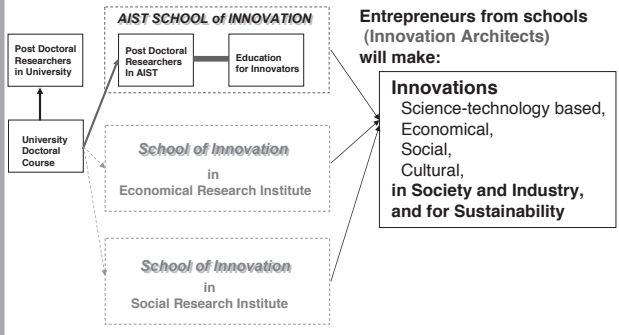
Schools for Innovative Entrepreneurs



27

Carl Lindberg

Special Advisor to the Swedish National Commission for UNESCO on Education for Sustainable Development

Carl Lindberg has been Special Advisor to the Swedish National Commission for UNESCO on Education for Sustainable Development since November 2005, prior to which he was a member of UNESCO's High Level Panel on Education for Sustainable Development. For 2003 and 2004, he was Chairman of the Swedish National Committee on ESD. In 1994, he assumed the position of Deputy State Secretary in the Ministry of Education and Science, a position he held for a decade. He was Political Advisor to members in the Standing Committee on Education and Science in the Swedish Parliament from 1989 to 1994, and Press Officer to the Minister of Education from 1985 to 1989. From 1984 to 1986, he was Vice President of the Swedish United Nations Association.

EDUCATION FOR SUSTAINABLE DEVELOPMENT – THE ROLE OF HIGHER EDUCATION INSTITUTIONS

All of us have long been aware of the challenges facing mankind. They have been well documented in a number of international conferences, including Johannesburg in 2002. But I do not feel that the calls from Johannesburg and other United Nations conferences have been taken seriously. One of the reasons is the lack of political leadership in the efforts to achieve sustainable development, as underlined by Kofi Annan in his speech in Nairobi last year.

The political will and responsible leadership for tackling many of the major challenges facing humanity in all our countries can only be created by well-informed and educated public opinion. The world needs public opinion which, in democratic elections, elects political leaders who are able to take responsible and long-term decisions. This is the whole point of education for sustainable development.

This conference gives us all the opportunity to exchange experience on how Higher Education Institutions (HEIs) are meeting the commitments we made at the summit in Johannesburg in 2002 and to encourage each other to take new initiatives to inspire our HEIs so they can vigorously contribute to a sustainable future.

HEIs have a special responsibility to work so that sustainable development becomes a guiding light in the education sector from pre-school to university. It is an imperative necessity. This is why the UN resolution on a special Decade for Education for Sustainable Development (2005-2014) is so extremely important for HEIs. It is a golden opportunity for all of us.

Three years ago, my home country, Sweden, had the privilege to host an international conference: "Learning to change our world" on Education for Sustainable Development. In his inaugural speech the Swedish Prime Minister announced:

> "I would like to state here and now that the time is ripe to include sustainable development in the Swedish Higher Education Act. The policy document for universities and university colleges must clarify this social commitment in the same way it already clarifies Swedish pre-school, compulsory school and upper secondary school. In this way, our engineers, economists, social workers and mathematicians will be able to adopt the holistic approach that is so necessary if we are to succeed in the transition to a more sustainable society. In this way, university managements will be stimulated into allocating resources and building up expertise around learning for sustainable development".

One year later, the Swedish Government proposed the Swedish Parliament to amend the Higher Education Act. The Parliament approved the amendment so that, with effect from 1 February 2006, Swedish universities and university colleges, (I quote), "in their activities have to promote a sustainable development, which means that current and generations to come are secured a healthy and good environment, economic and social welfare and justice"(End quote). The proposal to amend the Higher Education Act has generally been received positively by the university leaders.

University managements, and among them those who are responsible for the training of teachers, engineers, doctors, etc., are now going on to draw up action plans to ensure that education is indeed characterised by a sustainable development perspective. I would like to mention one example.

In December 2006, the Vice-Chancellor of Uppsala University – Sweden's oldest university –decided on a number of actions:

- to instruct the boards of the faculties to assume responsibility for the integration of sustainable development as a perspective and content in all educational programmes and relevant courses;
- to improve opportunities for students to supplement their education by taking additional courses in sustainable development;
- to prepare a central action plan on education for sustainable development;
- to instruct the board of the recently founded Uppsala Centre for Sustainable Development (CSDU) to follow up sustainable development activities, to earmark development funds, to offer didactic courses on sustainable development to university teachers, and to develop support material for teachers.

In the presence of this audience I would like to add that in May this year Uppsala University had the honour of being visited by the Japanese Emperor Akihito and Empress Michiko during the tercentenary of the birth of the Swedish Scientist Carl von Linné. On this occasion, the Emperor Akihito accepted to be appointed honourary member of Uppsala University.

As it is very important to also promote ESD within international development aid, the former Swedish Government decided last year to instruct the Swedish International Development Authority to initiate the work to develop a centre for learning for sustainable development. My hope is now, that the current Government, during the next few weeks will finalize this decision.

Education for sustainable development (ESD) is not indoctrination. It never should be, since we can never know for sure whether the application of certain knowledge or technology, or certain behaviour, can lead to the expected result. ESD should lead to the willingness and ability to freely and voluntarily take part in work to achieve a sustainable future.

Students and their own organizations are extremely important in the ESD processes since it is those who are in the higher education system today that will be the ones building the future. In Sweden, for example, student representatives have considerable influence on Swedish university governing boards and use it very constructively in a way that is greatly appreciated by university leaders.

As it is important to exchange views on how sustainable development will become a guiding light in higher education, I would like to present some of the experiences from the participants of an international follow-up conference to the Gothenburg Conference held two years ago called "Drivers and Barriers for Implementing Sustainable Development in Higher Education" (Technical Paper No 3 – 2006, ESD in Action, UNESCO Education Sector):

- It is clear that the concept of sustainable development cannot be exactly defined – and it should not! It can be compared with the concept of health as health cannot be defined in precise terms either, and yet, everyone has an idea about what health is and that health is important for everyone. When we meet each other we often ask: how are you? Sustainable Development can be seen as the health of societies and the planet. If we are concerned about present development and whether it is sustainable we should instead ask ourselves: how are we?

- Sustainable development brings many challenges to the university. This means looking at sustainability issues from a range of disciplinary angles, cultural perspectives and different time perspectives.

- It must be hard to find something as multi- and transdisciplinary as sustainable development. It is also quite clear that the traditional discipline-based structure of knowledge and research is here to stay. This combination constitutes a major challenge for universities when implementing learning for sustainable development in higher education. This several fold challenge must be dealt with from different angles: the university culture, in which depth is perceived as better than breadth; the merit system, the publication tradition, the award system, the peer review system, the evaluation of job applications, the funding system etc.

- A common experience from proactive universities is that some kind of organization with overview and responsibility outside and across the traditional disciplines is essential for making multi- and transdisciplinary ESD activities become a successful and lasting concept.

- Both separate courses and programmes and/or an integrated perspective are needed throughout the education system as a whole– but the most important thing is that all students should be included. A separate course is needed to give the basic understanding of the challenges associated with sustainable development; to deliver tools and conceptual models for dealing with dynamic and complex systems; and to attain a feeling of how things are interconnected. The separated basic courses on

sustainable development delivered at universities today often have an environmental focus. This needs to be balanced with more integration of the social and economic aspects of sustainability.

It is in fact possible to look upon sustainable development at the university level from many angels. I saw that in a programme for another international university conference in June in Sweden. Here are some of the issues that they discussed: Education as Sustainable Democratization, Corporate Social Responsibility, Moral Responsibility and Sustainable Development, Fossil Fuel Free Society- How Do We Get There?, Entrepreneurship- a key to Sustainable Development, Projects and Practical Actions for Sustainable Development, How Can Industrial Ecology Contribute to Regional Sustainability?, The Sustainability of New Product Development Projects, Health and Employability: Towards a Sustainable Working Life, Transport Sustainability and Cities: Planning for Alternatives to Car Travels, Environmental Justice and so on.

Dear friends, I would like to conclude by saying: It is up to all of us to put Sustainable Development at the centre of higher education throughout the world if we are to achieve our objectives and find pathways towards a shared future and towards sustainable development.

Antoni Giró i Roca

Rector of the Universitat Politècnica de Catalunya (Technical University of Catalonia)

Antoni Giró i Roca is Rector of the Universitat Politècnica de Catalunya (UPC). At UPC he has served as Head of the Department of Physics and Nuclear Engineering, Vice-Chairman of the Council of Heads of Department, Vice-Rector for Research, and Vice-Rector for Academic Staff. He has taught at several universities in Catalonia including the Faculty of Chemistry at Rovira i Virgili University and the Faculties of Physics and Chemistry at the University of Barcelona. At the UPC he has taught at the School of Industrial Engineering, the Barcelona School of Informatics (where he was Vice-Dean and Dean), and the Faculty of Mathematics and Statistics. He has been Director-General for Research and Vice-Chairman of the Committee for Research and Technological Innovation as well as Director-General of Universities at the Ministry of Universities, Research and the Information Society in the Generalitat (regional government) of Catalonia, and was Chairman of the Catalan Physics Society from 1992 to 2002. He holds a Ph.D. in physical sciences from the University of Barcelona.

HIGHER EDUCATION AND HUMAN AND SOCIAL DEVELOPMENT

The role of higher education in today's world is complex and vital. A wide range of challenges and possibilities are emerging, with political, economic and social implications. Perhaps most significant are the challenges associated with shifting **perspectives on knowledge** itself, which are influencing strongly the role and responsibility of universities in society.

The **role of higher education institutions** has changed over time from preservers of culturally revered forms of knowledge to producers of highly skilled labour and research to meet perceived economic needs and, more recently, to agents of social transformation and development.

Universities are facing a very interesting period. Globalization implies the possibility of taking advantage of important opportunities. However, it also presents challenges and poses serious problems for the future by calling into question the main value of universities: **serving the common good**.

CONTEXT

Globalization, which also affects higher education, is an irreversible phenomenon that is here to stay. But the way it progresses will depend on the global responses articulated in the present and near future, especially by higher education institutions, which are responsible for generating and spreading knowledge. We therefore have some collective responsibility for **how we help to build societies**.

As was said here, at the 2003 International UNU/UNESCO Conference 'Globalization with a Human Face':

> *A key goal... is to build international consensus on emerging norms and principles to respond to new challenges and dilemmas as a result of globalization. The trend towards homogenization of educational, cultural, scientific and communication activities is disquieting and risks bringing about uniformity of content and perspective at the expense of the world's creative diversity.*

Higher education institutions, as well as the societies in which they operate, are currently undergoing a global transformation process in all contexts, although with specific characteristics in various parts of the world. The circumstances are therefore ideal for a critical and constructive analysis of the role of higher education in the world.

Humanity as a whole is now facing major challenges and profound problems related to coexistence and relations with the natural environment. It faces unresolved problems of social injustice, marginalization, exclusion, poverty, human-rights violations, lack of democracy, corruption, fraud, armed conflicts, and a development system that leads to the exhaustion and over-exploitation of natural resources and contributes to climate change. As a result, it is clear that we must re-examine our development model with a view to adopting a new, sustainable model—one which encompasses not only environmental considerations and the optimization of natural resources, but also economic, human, social and cultural issues and everything they involve.

More resources are now spent on education and knowledge generation than ever before. Science and technology have seen spectacular advances and global education rates at all age levels have reached historic highs. The **knowledge society** is truly starting to take shape. We need, therefore, to question what role higher education should play in its mission to generate and spread knowledge in the service of human society. Based on the intrinsic definition of this mission, higher education has to contribute to sustainable human development in the broadest possible sense.

SOCIAL RESPONSIBILITY OF HIGHER EDUCATION

Higher education institutions are well positioned to link **the local and the global**. This gives them considerable access to and influence over change processes in many societies, and may enhance their potential to contribute to human and social development. They are therefore called upon to play a **fundamental role in building society**.

Higher education is responsible for training the professionals who, in the course of their careers, attain the **positions of greatest responsibility** in society and the labour market. The decisions of professionals throughout the world, trained in universities, can make a decisive contribution to the way life develops on this planet. This decision-making can take place through approaches that are either positive or negative for the global progress of humankind and societies, in both developed and developing countries. Higher education, therefore, plays a decisive and fundamental role in terms of the **teaching content, ethics, values and skills** it incorporates.

Higher education institutions are responsible for creating and spreading knowledge, and thus contributing to solutions to global problems. The **relationship between scientific research and social needs, mainly to support political decision-making with implications for the collective well-being**, needs to be explored and analysed. This is a neglected subject that higher education should address.

Education will play a vital role in the knowledge society. In some cases, higher education institutions may be perceived as disseminators of knowledge that fit within existing paradigms, these paradigms themselves having become unreliable and open to question. Universities,

whose existence is justified in terms of their contribution to learning, shouldn't become weighed down by inertia, unable to learn themselves or to support the learning of others.

The 20th century saw the massive expansion of science and technology into every aspect of human life. A pressing task for the 21st century is to foster human capacities to absorb, critically examine and reflect on those earlier developments. How to do this effectively, as well as rigorously, is a looming challenge and critical responsibility for the world's universities (Jasanoff, 2007).

TOWARDS A NEW IDEA OF DEVELOPMENT

Hotly debated over decades, and with origins in the field of biology, development has been equated by many with global economic growth, which would result in all peoples of the world achieving economic parity with those living in the developed nations. Over time, 'human development' has, however, acquired more complex meanings. The United Nations Development Programme states:

> People are the real wealth of nations. Development is thus about expanding the choices people have to lead lives that they value. And it is thus about much more than economic growth, which is only a means—if a very important one—of enlarging people's choices... Fundamental to enlarging these choices is building human capabilities... The most basic capabilities for human development are to lead long and healthy lives, to be educated, to have access to the resources needed for a decent standard of living and to be able to participate in the life of the community. Without these, many choices are simply not available, and many opportunities in life remain inaccessible (UNDP website, accessed 2006).

Voices are now being raised, some from within the universities themselves, warning that the models that have guided development over the last century are now **exhausted**. Concepts are appearing that appeal to the need to rethink the current development paradigm and our **collective social values**.

Such a **shift in paradigm**, reflected in polices, is a laudable goal, and a number of well-known global frameworks and initiatives aim to support its achievement, including the Millennium Development Goals, the Kyoto Protocol, Education for All, Food for All, the UNESCO Decade for Sustainable Development and the High-Level Group Report on the Alliance of Civilizations. These frameworks do not guarantee positive change, however, as evidenced by slow progress or an absence of it. Progress is complicated by a wide range of variables that influence the process of human development, regardless of the goals and targets that are set.

THE CHALLENGES FACING HIGHER EDUCATION

If universities are to support human and social development and actively participate in positive social building processes, then **we need to go beyond narrow conceptions of knowledge**.

We need to incorporate **new transversal curriculum contents** that can equip individuals with new tools more suited to the context in which they will carry out their professions. Individual and collective responsibility in professional decision-making within new global ethical paradigms will be a subject for the immediate future.

In this global era, being prepared as a citizen who will interact with society through the exercise of a profession implies a complex vision of reality that demands inter- and transdisciplinary education. It also implies abilities and values such as a deep understanding of sustainable development as a collective social process to be learned; a need for common recognition and respect for different cultures for intercultural relations and support of diversity; the ability to deal with an exponential expansion of technology, without losing the human capacity to put it to common human service; and the need to set aside fear in order to confidently cooperate on peace building. We therefore need to accept the **complexity of reality** and the interdependence of areas of knowledge in a real interdisciplinary approach to education.

There is a need for real **engagement** between universities and society. This engagement may well extend far beyond national boundaries. The nature of such engagement needs to be debated and deliberated intensively, drawing on real examples, practices and experiences. We also need to understand the role that universities will play in this engagement, particularly the ways in which they engage with citizens—both individuals and groups. This may be achieved in part by the forging of new relationships by universities and the emergence of social and civic networks.

Research is assumed to be a vital part of the role of higher education, but there is a growing need to question the **paradigms of knowledge** and innovation that inform the research carried out in different contexts; the relationship of research carried out by institutions to its application in wider society; and the way in which social and human-development needs shape the research agenda.

It is clear that there are great differences in the ability of institutions around the world to engage in research due to a range of constraints. We need to ask what should be the nature of the policy framework for research if we are to give attention to issues of interdisciplinary research, **participatory research, action research and collaborative research.**

Universities can play an active role in debate and public and private action by generating responses to social transformations from an innovative perspective. This is a crucial moment to revisit the role of higher education, starting with the present and the past, **to project new visions**

of its role for the future, and to rethink and propose ways for the **exchange of values between higher education institutions and society**.

Next year's **GUNI Report** will look into the role of higher education and higher education institutions and their contribution to human and social development in the context of globalization. This is a particularly important subject for GUNI, not only because it has a direct bearing on its commitment to its foundational mission, but also because it is the backdrop to a reappraisal of the role of higher education in the world and to an analysis of its impact on economies, politics, societies, cultures and human development. We wish to provide a space for debate with regard to **the role of knowledge in our society**, in which we consider **what knowledge for what kind of society** and how universities define their role in this regard.

PANEL DISCUSSION 1: HIGHER EDUCATION AND SOCIETAL NEEDS

Kazuo Takahashi

Visiting Professor, Division of International Studies, International Christian University

Kazuo Takahashi was a Professor at International Christian University, Division of International Studies and the Graduate School of Public Administration until March 2007. He holds B.A. and M.A. degrees from ICU and a Ph.D. from Columbia University. He is visiting Professor at UNU and at the Graduate Institute for Policy Studies (Tokyo), and President of the Society of Researchers of International Development, IDCJ. He is the Co-chair of the Club of Tokyo for the Global Water Resources Management. His current research topics include global public goods, peacebuilding, water resource management and social trust.

HIGHER EDUCATION: A CATALYST FOR DEVELOPMENT

I. STOCKTAKING OF DEVELOPMENT EXPERIENCES

Development studies have shifted from highly theoretical exercises with limited amount of practical experiences to a large body of rich experiences. Why do some countries succeed in clearly taking off from low levels of development to become major players in the world economy, whereas others do not? What are the major lessons we should learn from successful experiences which have been expanding over time? Can we apply these lessons to those developing countries that are yet to experience developmental take-offs? Would some of those experiences not be related to the roles that have been played by higher education? It is useful to ask these simple questions now.

A. FOUR WAVES OF DEVELOPMENTAL TAKE-OFFS

The world community has experienced four waves of developmental take-offs in the past three decades, now covering more than half of the developing world. Each time, unique features of these successes have been pointed out. The world community has tried to accommodate itself to the newly emerging countries to some extent, while basically asking them to adjust themselves to the various requirements of the world community. It appears that the world community has been obsessed with these adjustment efforts at each wave of successful take-off, with weak attempts at learning lessons of the success stories.

1) The first wave took place from the middle of the 1970s. The Republic of Korea, Taiwan, Hong Kong and Singapore began to take off against the background of the global turmoil and stagflation caused by the first oil shock of 1973. A number of developing countries, which had recorded respectable growth in the 1960s, experienced economic difficulties because of the fluctuation in oil prices. This lead to the creation of the concept of the Fourth World, and to the political decision by the UN General Assembly to establish the category of MSACs (Most Seriously Affected Countries for special treatment). The European Community had difficulty in adjusting to higher energy prices, which resulted in high unemployment rates, particularly among the youth. The US economy suffered from a combination of economic stagnation and high inflation. Japan was the only country in the industrialized world which succeeded in adjusting its industrial structure to higher energy prices in a short time period, resulting in a substantial export surplus. With higher oil prices, the Soviet economy, which had entered into severe stagnation due to structural deficiency by the late 1960s, was resuscitated for awhile.

Against this global economic background, the rapid expansion of exports from Korea, Taiwan, Hong Kong and Singapore was regarded as a detrimental factor for employment in Western Europe and North America. Giving these emerging economies an acronym, NICs (newly industrializing countries), and later NIEs (newly industrializing economies), the OECD focused its analysis on how to accommodate them to the rules of the OECD. Some attempts were made by World Bank economic experts, such as Bela Belessa, to learn about the economic policies of these economies, in particular to export led growth. However, these were subsumed by the OECD's work in the late 1970s.

2) The second wave of take-offs took place in the second half of the 1980s in Southeast Asian countries. Malaysia, Thailand and Indonesia began to record high levels of growth. Starting toward the end of the Cold War and continuing into the Post-Cold War period, the phenomenal growth of these economies was reviewed by the World Bank. This phenomenon was labelled as the "East Asian Miracle" by the World Bank. Some discussions on the lessons to be drawn from this second wave began in the 1990s. However, the outbreak of the East Asian Economic Crisis in July 1997 suddenly stopped this useful exercise. The focus of the analysis was shifted towards the causes of the crisis and the weaknesses of the Southeast Asian countries' bases of growth. These areas included the governance structure of the financial system.

3) The third wave of the take-offs took place in China, especially from the mid-1990s. The growth process of China began in the 1980s with the gradual liberalization of policies which began at the end of 1978. However, the isolation of China from the world community, which was caused by the Tiananmen Square incident of June 1989, brought about a considerable slow down of growth. Deng Xiaoping's push towards economic competition in 1992-3 encouraged the development of liberal economic policy, resulting in sustained high growth from the mid-1990s.

Since the latter half of the 1990s, China's high growth has become a major policy concern in the world community. This is due mainly to the sheer volume of the impact that high growth from a population of 1.3 billion brings about. There has been little priority given to learning the lessons from China's success.

4) The fourth wave has been taking place in India since the beginning of this century, starting with information and communication technology and spreading over to other economic activities. This wave has again incited global concern. At its ministerial meeting, OECD developed the acronym BRIC to describe the following countries that are part of this wave of take-offs: Brazil, Russia, South Africa, Indonesia, China and India. However, the economic sustainability of Brazil, Russia, South Africa and Indonesia are not as sure as that of India and China.

Thus, it is worth noting that attempts at learning the lessons of successful countries have been lacking, and this is regrettable. There have been some exceptions, such as the case of

the second wave take-offs in Southeast Asia, an exercise which, however, came to a sudden halt before much could be learned from it.

B. UPS AND DOWNS OF THE DEVELOPMENTAL PROCESSES

There have been a certain number of developing countries that have been experiencing ups and downs in their developmental processes. While the reasons for their unsustainable growth have been complicated (often the combination of political, economic and social factors characterize it), two types of developing countries tend to be susceptible to the ups and downs in developmental experiences. They are:

- economies with a high propensity of consumption, and
- countries that depend highly on exports of primary products.

1) High Propensity of Consumption

There are a certain number of countries which are characterized by a high propensity of consumption. At a time when political stability combined with a sound macro economic policy and a relatively large domestic market appeals to the appetite of international investors, a high growth rate – based mainly on foreign direct investments – tends to be achieved. This is also the time when governments borrow substantially from abroad to support the expanding economy. However, if these countries have a high propensity of consumption, the insufficiency of domestic investments due to low savings will usually become the major weakness of these economies. When an international environment becomes adverse, declining export opportunities lead to a situation where external debt becomes heavily burdensome. Capital exporting countries and the IMF are apt to put pressure on these types of countries to create economic structural adjustments. The policy mix for structural adjustment invariably undermines growth performance.

These economies tend to experience ups and downs in their developmental processes, characteristics which will become even more salient with the increasing globalization of their economies. A number of Latin American countries have these characteristics.

2) Primary Commodity Exporting Countries

The prices of raw materials have been characterized by an accelerated down turn at a time when the demand is declining. While globalization of the market-based economies has been pushing global growth upwards, thus increasing demands on raw materials, it is decreasing the use of raw materials per unit of products due to stronger competition among producers who have been forced to increase investment in R&D for smaller factor inputs, including raw materials. With the deepening of economic globalization, forces that cause both ups and downs of raw material exporting countries will be strengthened even more. Therefore, the characteristics of ups and downs of primary commodity producing countries will become more salient in the coming period. Are oil exporters exceptions to this trend? They may not be.

C. EMERGENCE OF VULNERABLE STATES

The turbulence of the world economy caused by the oil shocks of the 1970s had repercussions for many developing countries in the 1980s. The tectonic change in the world political structure caused by the end of the Cold War, coupled with mismanagement of macro-economic policies, made a number of developing countries highly vulnerable to civil strife in the 1990s. Many of them suffered from civil wars, with some of them developing into regional conflicts in the 1990s. Weakness in peacebuilding in these countries resulted in the resurgence of violent conflicts. Half of those countries that signed peace accords between warring parties were drawn into a resurgence of armed conflicts. The negative cycle of all of these factors has contributed to the emergence of a new category of countries, namely, vulnerable states, some of which are becoming failing states, or even failed states. The developmental experiences of the world community have been most problematic in these countries. These countries have largely been characterized by regression.

II. LONG GESTATION PERIODS

The experiences of the world community with development efforts have thus been diverse and highly mixed. It is essential for the global epistemic community to learn lessons from successful developing countries and to analyse ways which can be applied to other developing countries. In current development studies, the analysis of why developing countries fail to develop is most often emphasized. It is important to notice that a long gestation period has been required for each of the successful waves to take place. What have been prepared during the gestation period? What have been culture-bound? What can be generic? What have been the triggering factors of a take-off? These questions have to be answered as part of an important stock-taking exercise of the world community's experiences of developmental efforts in the last half century. This is an exercise which will bring to light some of the roles played by higher education. The following is just a selective and tentative attempt at these efforts.

A. PREPARATION OF HUMAN RESOURCES

One factor which is common among all of the four waves of successful developmental take-offs is the accumulation of human resources, in particular, a highly educated human capital. This applies even to China whose institutes of higher education suffered severely from the Cultural Revolution which started in 1966 and continued for close to a decade. Without a considerable accumulation of highly educated human resources, the spark of the developmental process would have been unlikely. It took a long time for each of the waves to increase the stock of human capital to a level that would be sufficient to trigger the take-off.

All of the countries that belong to the four waves invested in higher education mostly from their own national budgets at a time when their financial situations were very difficult. Individual families in these countries place high priorities on university education. Professors at universities have a high social standing in these countries. These factors have produced

considerable numbers of graduates from colleges and universities over a long period of time. While very difficult to maintain the combination of these factors for a considerable period of time under severe financial and economic conditions, these countries managed to do it.

B. EXPERIENCING BRAIN DRAIN

Some of the highly educated human capital moves to northern countries for employment opportunities, and for further studies. Globally, the number of people who move across national borders to increase their livelihoods increases by about 10 million people each year, and some of them are college graduates. All of the countries that belong to the successful four waves have also experienced a brain drain. After investing substantially in human capital, the governments of developing countries are naturally uneasy about the brain drain situation. After much soul searching, successful countries have been able to develop policies to deal more effectively with the brain drain situation so that it does not significantly constrain their development.

As a result, there are many Chinese, Indian, and to a lesser extent Korean communities living abroad. The significant income level of these national communities living abroad, which is often used to invest in their home countries, has contributed to the development take-offs of these countries.

C. INTRODUCTION OF LIBERALISM

Another factor which is common to all of the four waves is the introduction of liberal economic policies which put emphasis on market forces. In fact, reliance on markets has, invariably, been a trigger of a developmental take-off. Self-interest and often greed have been the promoters of this process. Ensuing economic dynamism has been characterized by insufficient social nets and a weak basis of economic rules, and is sometimes called "capitalisme sauvage".

Although the introduction of liberal economic policies into countries that have not had sufficient and competent human resources, among other needed conditions, has often proven to be counter-productive, it is however an essential requirement for a developmental take-off in countries that have meet certain conditions, including competent human resources. The world community has been gradually learning productive ways to strengthen market forces, which require constant fine-tuning. It is essential for liberal policies to be introduced by the countries themselves so that there is a strong sense of ownership.

II. INSTITUTES OF HIGHER EDUCATION

It is thus an essential requirement for a developmental take-off to accumulate highly educated people so that important human capital becomes available. Universities and colleges are the institutions where young people are trained to become qualified human capital. However, this requires a particular type of university education. There are two areas where education

is particularly important for the creation of qualified human capital for development. They are pragmatic programmes, in particular in engineering and economics, and broad based humanities.

A. ENGINEERING SCIENCES AND ECONOMICS

1) It is an essential requirement for development take-offs to start with light industries such as the textile industry. While this start-up process sometimes results in over supply of similar products to the world economy, which UNCTAD calls the fallacy of structure, it has also been proven that this has been an effective approach. Engineers, whose number may not have to be large at the outset, are important components who carry out this process out.

It is the transfer of technology that helps initial actions. Home-grown engineers are the ones who receive the technology. Without highly educated counterparts in a relevant field, the transfer of technology is not likely to take place.

The next step is to adapt the transferred technology to the local conditions. It is mainly the locally educated engineers who have to perform this task. Without this adjustment effort, transferred technology is not likely to be effective in real world situations.

Therefore, in order to be an effective counterpart of the transfer of technology, and also to be the primary agent who adjusts the transferred technology to the local conditions, home-grown engineers must be educated at the universities and colleges in their home countries.

2) Another area where universities and colleges should place a high priority is on economics. It is important to train a certain number of young people in the neo-classic school of economics. One important factor that helps start a developmental kick-off is the liberalization of economic systems. Therefore, economists trained in the neo-classic school play important roles in public policy and enterprise management. At the same time, since the world economy is largely based on market forces, the countries that start developmental kick-offs and expand economic transactions with foreign countries need a number of people who understand how the world economy works.

It is also important for the universities and colleges to educate students about the reality of local economies. Students are often taught from text books that have been written by Western economists, which do not always explain how local economies function.

B. BROAD-BASED HUMANITIES

Another lesson that can be learned from the experiences of the four successful waves is the contribution of universities and colleges to the training and education of young people in broad-based humanities. They include the classics, history and literature. It has often been pointed out that these subjects, while important as such, are not relevant to a country's

developmental process. However, the successful developing country cases have proven that broad-based humanities that have been conceptualized by native scholars are essential factors for developing critical thinking skills in the youth. Through these studies, they acquire abilities to think about the needs of their own societies. The social sciences can only be useful for developmental purposes when young people have acquired the critical thinking skills needed through the broad-based humanities.

In successful countries, the curricula that are used in the universities and colleges for humanity courses do not just replicate those of the "West", but instead reflect their own culture and history, as well as that of the broader world. This tendency is in contrast to some other developing countries where the humanities are largely influenced by colonial linkages. This is an important area where the scholarship of individual countries should be supported so that home-grown humanities' scholars can research their own culture and traditions. International support would help to strengthen a broader perspective in these efforts.

III. CHALLENGES OF SUCCESSFULL TAKE-OFFS

The successful take-off of a developmental process brings about a number of problems and challenges that need to be overcome for sustainable development to occur. The following three stand out as major challenges for universities and colleges:

- the widening gap between the rich and the poor,
- the short-term over-supply of college graduates and
- transforming population issues: from a burden to a bonus.

A. THE WIDENING GAP BETWEEN THE RICH AND THE POOR

While liberalist policies are an important requirement for a developmental take-off, this has created a widening gap between the rich and the poor. The successful four waves suggest a number of interesting points on this issue. One trend is for countries such as Singapore and China to adopt strong government policies in which resources are reallocated by the government. This is what is called developmental authoritarianism. This option does not automatically lead a take-off country to a democratic regime.

Another trend is for countries to give a voice to the poor through a democratic political process, in which government policies reflect the will of the majority of the population. Normally it takes time for this process to work out through elections, demonstrations and journalism. The poor may get impatient in the meantime, and may revolt. Alternatively, this political process may easily upset the traditional elite. The backlash of groups that have vested interests may take many forms, including military coup d'etats. It requires astute leadership, and self- discipline for a democratic system to properly function. This process is often full of socio-political dramas and indeed very difficult.

In the case of developmental authoritarianism, highly educated bureaucrats play key roles. These roles are somewhat akin to the critical roles that the mandarins played in state affairs in the traditional regime in East Asia. In the modern system, it is the universities and colleges which provide a similar education for the elite. The quality of this education is supposed to focus on ensuring that future government authorities serve the nation as a whole, particularly the poor. This will largely determine the success of developmental authoritarianism in dealing with the widening gap between the rich and the poor.

On the other hand, in democratic regimes universities and colleges must provide educational opportunities to a broad spectrum of people, including the poor. It is important for a democratic society to have high social mobility which is promoted most effectively by education in most of the countries. At the same time, offering higher education opportunities to a broad spectrum of people is a useful deterrent to both political corruption and military intervention in politics, although there are also other factors which are obviously needed to make this deterrence effective.

Another important aspect of a democratic regime is independent media. It is therefore important for universities and colleges to put an emphasis on journalism. As the quality of journalism has a decisive influence on the relationship between a democratic regime and the widening gap between the rich and the poor, the training of journalists is extremely important. Institutes of higher education can play a critical role in providing high quality training for journalists. However, this aspect has often been neglected in the successful waves, and has resulted in social unrest.

B. SHORT-TERM OVER SUPPLY OF COLLEGE GRADUATES

Another major challenge is over supply of college graduates in the short-term. One major requirement for a successful take-off of a developmental process is the supply of a sufficient number of high quality college graduates. However countries often over-shoot this target. In fact, it has been happening in all of the successful developing countries. A number of college graduates have opted for opportunities abroad. They may look for jobs in industrialized countries or for opportunities to continue their graduate studies, or both. The brain drain is almost an integral part of the drama of take-offs. Many others stay in the country without satisfactory employment. Some of them may be completely unemployed, and others may have part-time jobs. A few of them might constitute the counter-elite. This social structure indicates a strong potential for social instability. Rapid economic growth after a take-off is required so that the economy can absorb as many highly educated young people as possible. The experience of all of the four successful waves suggests that it is extremely difficult to absorb a significant number of people into a growing economy. While an over supply of college graduates was meant for a short-term period, it has in fact has become a structural phenomenon.

This situation is also an important issue in a number of industrialized countries. The over supply of college graduates is an issue that should be dealt with in a global context that includes both industrial and developing countries. The balance between the supply and the demand of

college graduates is an extremely difficult issue and has implications for the next potential waves of successful countries. Major research work is sorely needed on this issue.

C. TRANSFORMING POPULATION ISSUES: FROM A BURDEN TO A BONUS

Another major challenge is the need to transform population issues. The rapid population growth of developing countries was identified as a major issue in the 1960s. It has taken various forms such as over population, and has created various social issues for society. However, it has largely been considered as a burden for society. One major lesson of successful countries is to re-conceptualize it as a population bonus by developing people into human capital.

It is basically education that brings about this change. A high population growth phase does not continue beyond several decades. It is essential for developing countries to capitalize on this phase. However, as people are transformed into human capital through education, this phase tends to be shortened. Education also has a strong impact on decelerating population growth. It is essential for each country to make sure that it reaches a level of development in which the development process can be sustained before the benefits of a population bonus disappear.

It is, therefore, a set of double challenges that need to be met. The first challenge is to transform the issue of over population into rich human capital, and the second is to maximize the benefit of the population bonus phase. Concerted research activities on these issues are required. The lessons to be learned from the four waves of successful take-offs should be the starting point. The roles of institutes of higher education will be an integral part of this process.

IV. NEW ROLES OF UNU AND UNESCO

Higher education has been playing a critical role in all of the four successful waves of developmental take-offs in a number of ways, and will continue to play an important and changing role in the future. There are two useful areas where UNU and UNESCO could contribute significantly to the world community against the background of these experiences. They are catalytic roles in:

- promoting South-South cooperation and
- encouraging research universities to join in cutting-edge research activities.

A. NEW SOUTH-SOUTH COOPERATION

In addition to the long-standing relationships between universities and colleges in developing countries and those in industrialized countries, there is an important new dimension in international academic cooperation. It is the cooperation between some of the institutes of

higher education in successful four wave countries and those in other developing countries. This new South-South cooperation should be particularly important in relation to:

- making pragmatic subjects, such as engineering and economics, relevant to individual developing countries, and
- ensuring that humanities curricula have significant national components.

UNU and UNESCO should play useful roles in these two new areas of South-South cooperation.

1) A Model Cooperation

UNU and UNESCO can play a catalytic role in creating a useful model of this new South-South cooperation. An initial step might be to identify a few universities and colleges on that would be interested in this type of cooperation by a joint UNU/UNESCO team. A second step might be to invite representatives for meetings in Tokyo and Paris to jointly discuss the feasibility of cooperation activities. Participating universities, UNU and UNESCO may then wish to identify a number of concrete issues needed to launch this model of cooperation, including research activities that are required, training which is needed, and fund raising. Division of labour among participants will also have to be agreed upon. The third step would be to pursue each of these agreed tasks. A fourth step might be to organize a committee to coordinate and to review the implementation of the cooperation model. This committee would make sure that the international community learns from the on-going cooperation so that an effective model for the world community may emerge from it.

2) Indigenous Academism

UNU might establish a research project which looks into successful cases of universities in four wave countries in making curricula relevant to their own needs. There may be some elements that are sui generis, but there may be some others that can be applied to other countries. It is essential for the world community to share important lessons that can be learnt from this exercise. The major researchers will have to be those who are from the four wave countries.

3) a New Look at the Educational System

With the possibility of new South-South cooperation in mind, UNESCO might start a project to re-examine the education system, covering from primary education to higher education, and also informal education, technical education, and life-long education. A vast new horizon for action may emerge from this research.

PUTTING THE UNIVERSITIES BACK TO THE RESEARCH FRONT

The universities have been sliding down the slope in the research community for the past several decades. Cutting-edge research activities have increasingly been pursued by research institutes funded by governments or private firms. The quality of independent research activities, in particular those that require a long time to implement, are at stake.

Only a few research universities are keeping up with cutting-edge activities. Research communities in universities need support for their activities.

A new horizon has emerged for a certain number of major universities in four wave countries. It is essential that a new research frontier for the university community be supported. It is important for them to identify their comparative strength in relation to the research institutes of governments or of private firms so that the university research community can be broadened. A global perspective is an important requirement for this exercise so that the potential benefits of university research can be harnessed for the developing world as a whole.

UNU should be able to provide a useful neutral forum for these universities to take an initial step in this direction. It is likely that these universities will be able to develop their own cooperative activities beyond this initial step.

David Wiley

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David Wiley is Director of the Center for Open and Sustainable Learning and Associate Professor of Instructional Technology at Utah State University. He was formerly a Visiting Scholar at the Open University of the Netherlands and a Nonresident Fellow at the Center for Internet and Society at Stanford Law School. His research interests include open and sustainable education and intellectual property law. He holds a BFA in Music from Marshall University and a Ph.D. in Instructional Psychology and Technology from Brigham Young University.


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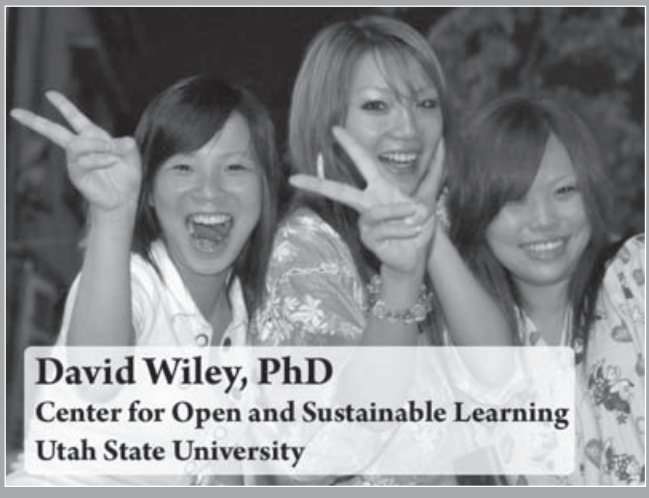
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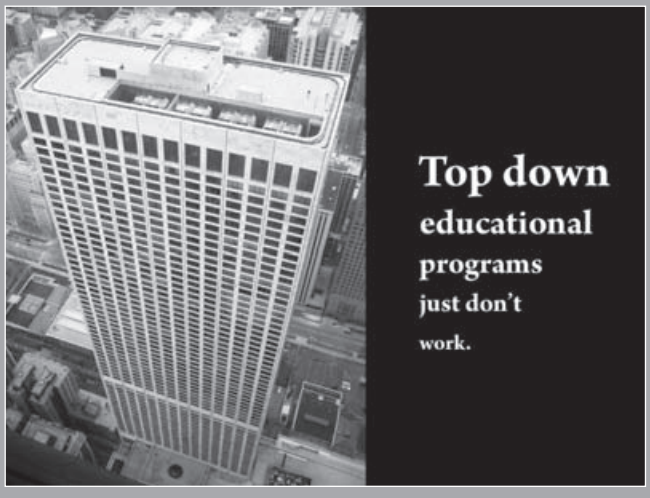
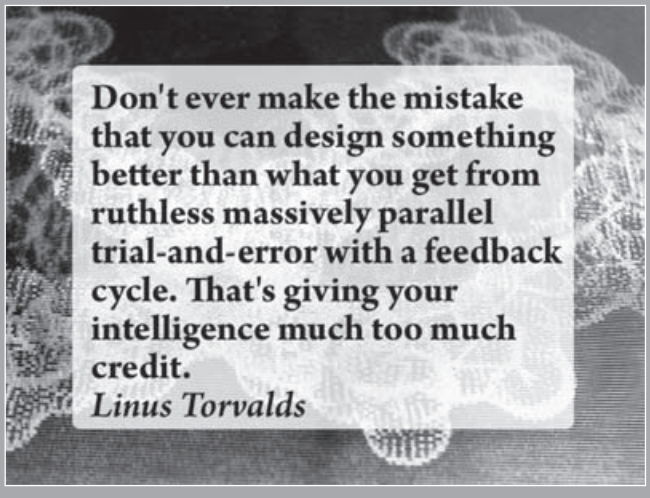
FREE
"Open Educational Resources"


But *why?*


Top down
educational
programs
just don't
work.

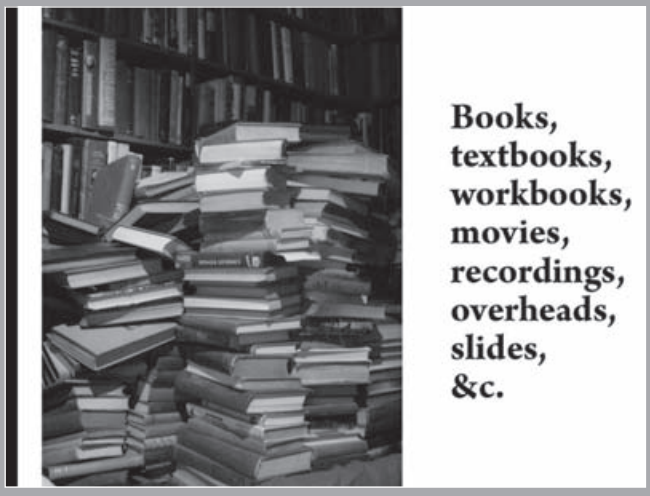

Don't ever make the mistake that you can design something better than what you get from ruthless massively parallel trial-and-error with a feedback cycle. That's giving your intelligence much too much credit.
Linus Torvalds

Infrastructure
enables
but doesn't
drive
development


People innovate on top of the infrastructure


Openness fuels innovation


What is educational infrastructure?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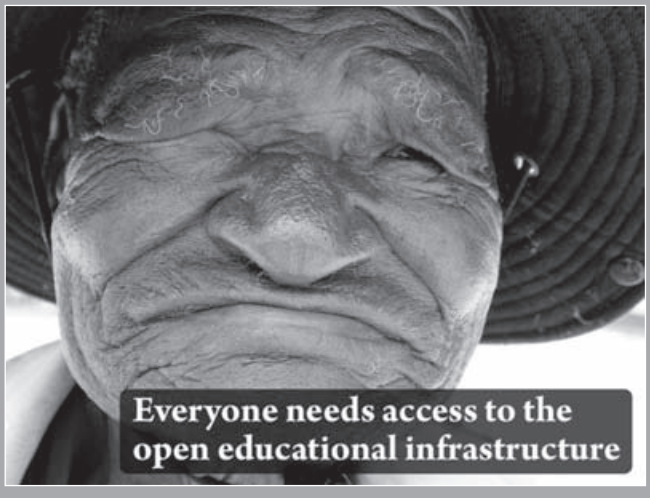
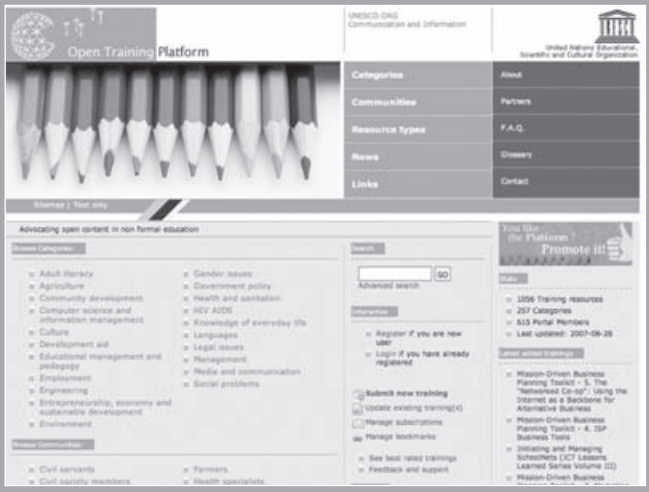
&c.


Digital content is magic


Everyone needs access to the
open educational infrastructure


Who knows what they'll do with it?


UNESCO and others are developing the open educational infrastructure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HIV AIDS
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Civil society members
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Health specialists
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Algebra
From Wikipedia, the free encyclopedia
This article is about the branch of mathematics. For other uses, see Algebra (disambiguation).
Algebra is a branch of mathematics concerning the study of structure, relation and quantity. The name is derived from the treatise written by the Persian Muslim mathematician Muhammad bin Mūsā al-Khwārizmī titled (in Arabic كتاب الجبر والمقابلة) Al-Kitab al-Jabr wa-l-Muqabala (meaning "The Compendious Book on Calculation by Completion and Balancing"), which provided symbolic operations for the systematic solution of linear and quadratic equations.
Together with geometry, analysis, combinatorics, and number theory, algebra is one of the main branches of mathematics. Elementary algebra is often part of the curriculum in secondary education and provides an introduction to the basic ideas of algebra, including effects of adding and multiplying numbers, the concept of variables, definition of polynomials, along with factorization and determining their roots.
Algebra is much broader than elementary algebra and can be generalized. In addition to working directly with numbers, algebra covers working with symbols, variables, and set elements. Addition and multiplication are viewed as general operations, and their precise definitions lead to structures such as groups, rings and fields.
Contents [show]
Classification
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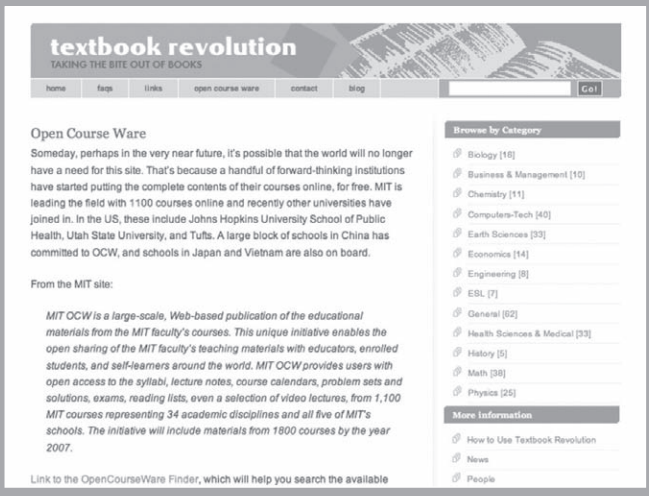
Algebra may be divided roughly into the following categories:
Elementary algebra, in which the properties of operations on the real number system are recorded using symbols as "place holders" to denote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Someday, perhaps in the very near future, it's possible that the world will no longer have a need for this site. That's because a handful of forward-thinking institutions have started putting the complete contents of their courses online, for free. MIT is leading the field with 1100 courses online and recently other universities have joined in. In the US, these include Johns Hopkins University School of Public Health, Utah State University, and Tufts. A large block of schools in China has committed to OCW, and schools in Japan and Vietnam are also on board.
From the MIT site:
MIT OCW is a large-scale, Web-based publication of the educational materials from the MIT faculty's courses. This unique initiative enables the open sharing of the MIT faculty's teaching materials with educators, enrolled students, and self-learners around the world. MIT OCW provides users with open access to the syllabi, lecture notes, course calendars, problem sets and solutions, exams, reading lists, even a selection of video lectures, from 1,100 MIT courses representing 34 academic disciplines and all five of MIT's schools. The initiative will include materials from 1800 courses by the year 2007.
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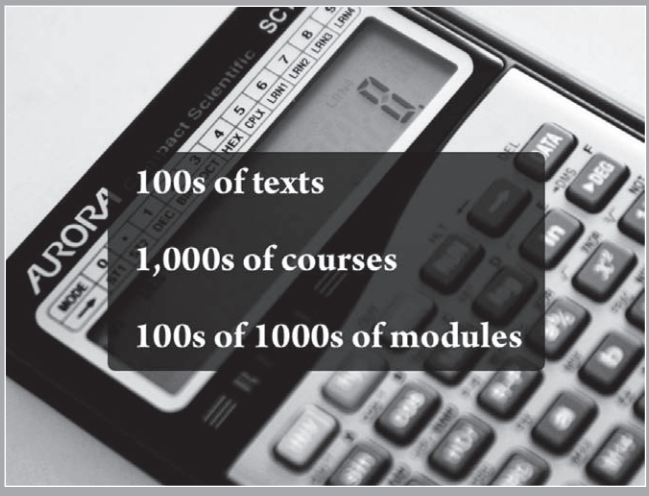
History [5]
Math [38]
Physics [25]
More information
How to Use Textbook Revolution
News
People


100s of texts
1,000s of courses
100s of 1000s of modules

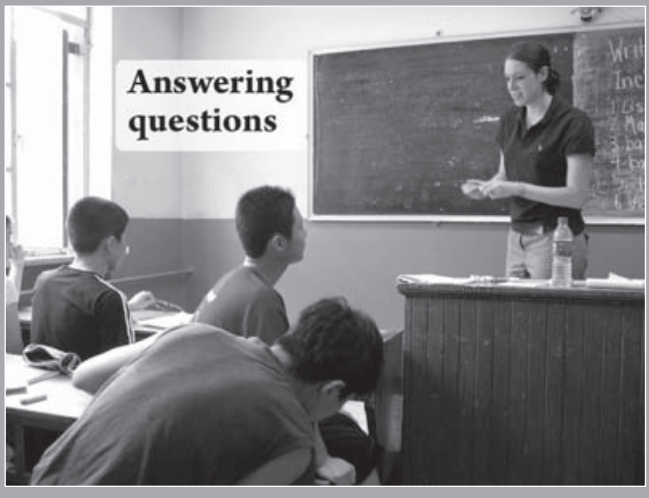

So we're done?!?

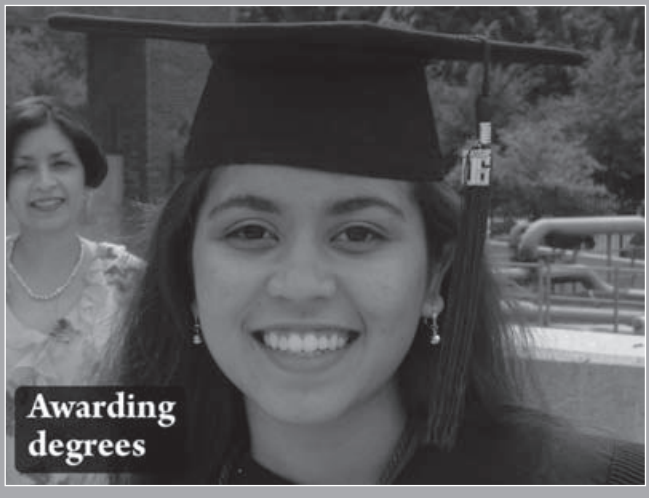

Infrastructure isn't the end,
it's just the first lap of the race.


Now we have to build capacity

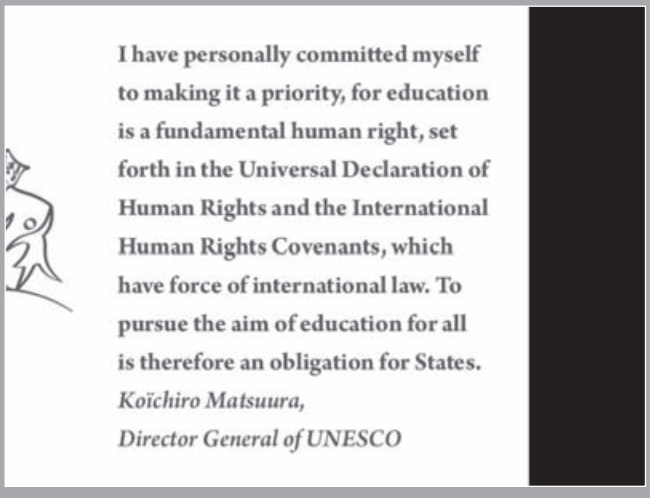

And support the experiments


Localizing the open
educational infrastructure


Answering
questions


Awarding
degrees


License incompatibilities


I have personally committed myself to making it a priority, for education is a fundamental human right, set forth in the Universal Declaration of Human Rights and the International Human Rights Covenants, which have force of international law. To pursue the aim of education for all is therefore an obligation for States.
Koïchiro Matsuura,
Director General of UNESCO


EDUCATION
FOR LIBERATION

Koichi Kabayama

Director, Printing Museum, Tokyo; Professor Emeritus, University of Tokyo

Koichi Kabayama is Director of the Printing Museum in Tokyo. From 2001 to 2005, he was Director-General of the National Museum of Western Art in Tokyo, and for the decade prior to that he was Professor at the Faculty of Letters at the University of Tokyo. He became Vice-Professor at the Faculty of Letters, University of Tokyo in 1976, and began his career as an Assistant at the Institute of Humanistic Studies at Kyoto University in 1969. He holds a Master's degree from the Graduate School of Humanistic Studies at the University of Tokyo.

HIGHER EDUCATION, SOCIETY AND THE MEDIA

The university education system in Japan and in other developed countries has changed much since the end of the 20th century. In the past, the elite, which were comprised of a limited number of youth with demonstrated academic abilities, attended higher education institutions (HEIs). The responsibility of HEIs was to further enhance their academic and professional skills. There is now a high level of student participation at universities, which brings with it a number of challenges. For example, many high school students do not have the sufficient educational aptitude required when entering university.

The channels for learning have also been transformed due to the process of globalization. Now HEIs must meet new expectations from students and parents, which have led to an educational evolution in HEIs. While the level of professional knowledge and skills that are being transmitted at HEIs has dramatically improved, new technologies are developing at an even faster pace making it difficult for HEIs to adapt to such a changing environment. Japanese HEIs, from researchers to engineers, must keep themselves abreast of new technologies.

In today's society, there is a negative view of liberal arts education, but as we begin to see the structural changes occurring in society, we realize how important it is. Students, educators and alumni need to exert cultural leadership because how we share and communicate knowledge, especially of newly developed technologies, will determine the well being of mankind.

Another challenge that HEIs are facing is that disciplines are often fragmented and isolated. HEIs must develop new ways to allow experts working in different disciplines to collaborate so that interdisciplinary thinking and problem solving can be fostered making HEIs more relevant in today's globalized world.

ICTs also pose challenges for HEIs and society at large. It is important to investigate how ICTs can be used to expand learning opportunities not only for higher education, but also for primary and secondary education.

We must consider how we can address these multifaceted challenges so that we can establish more cooperation among HEIs beyond national borders and promote a sustainable future that benefits all of humankind.

Jan Sadlak

Director, UNESCO – European Centre for Higher Education
(UNESCO- CEPES)

Jan Sadlak is Director of the UNESCO-European Centre for Higher Education (UNESCO-CEPES) in Bucharest, Romania. He holds an M.A. degree in economics from the Oskar Lange Academy of Economics in Wrocław, Poland, and a Ph.D. in educational administration from the University of Buffalo/ SUNY, USA. He is a member of the governing boards and scientific councils of various organizations, including the European Centre for Strategic Management of Universities – ESMU, and on the editorial boards of the leading journals in the field of higher education and science policy. He is a member of the European Academy of Arts, Sciences and Humanities – Academia Europensis, France, and a Fellow of the World Academy of Art and Science, USA. He received high rank academic and national distinctions, including four honorary doctorates from universities in Romania, the Russian Federation, and Ukraine. He is the author of books and articles on higher education and science policy on topics such as reform and transformation in higher education and research in Central and Eastern Europe, organization of doctoral studies and qualifications, private higher education, "world-class university", quality assurance and university ranking, ethical dimension of higher education and academic values.

THE BOLOGNA PROCESS: A REGIONAL RESPONSE TO GLOBAL CHALLENGES

Let me start with an observation that even though it is not easy to provide a neat definition of the term "globalization", and without making a value judgment about its impact, it is hard to deny that it is a major force in setting up a theoretical as well as policy framework for a growing number of domains of human activity. It has also become a more complex one as it no longer limits its impact to a specific domain or economic sector.

Probably the most telling aspect is the globalization of telecommunications, which has made the Internet the "fifth power", and as one journalist recently observed, "the laptop is now more powerful than the sword". Telecommunications have also given rise to an important characteristic of present-day-globalization, which is that of the compression of both distance and time. Actually, I believe that we are fast approaching an era of what I would call, "applied globalization", when we consider the speed and depth of the impact of global developments on our collective and individual lives.

In particular, this new stage of globalization is characterized by the emergence of "knowledge societies", in which industry and higher education are uniting to convert the intellectual resources of a region, country or city into factors that contribute to achieving economic growth and social gain. This is the reason why one of the leading figures in modern management is so familiar to Japan – that of the recently deceased Peter Drucker, who advocated the central importance of "knowledge workers" as important actors in a modern economy.

The key arguments for current policies towards higher education and science is that economic, social and health systems [and security] are organically dependent on knowledge and derived from technological innovations, and that higher education institutions are the **largest** and **unique** contributors to the development of human capital and innovative products based on cutting-edge technologies for which academic research is essential. In other words, the university is seen as both a **powerhouse** and a **nursery**.

Evidently, in order to have a successful policy, the argument I describe needs to be supplemented by the existence of legal frameworks, organizational arrangements and programmes to facilitate the smooth exchange of not only capital and goods, but even more so of **students** and **academics** between **countries** and **institutions**, as well as between **academia** and **industry**. This general framework has been an important contributing force to the emergence of an initiative which is now known as the Bologna Process, which aims to create a European Higher Education Area by the year 2010.

THE BOLOGNA PROCESS – THE SMALLER THE WORLD GETS, THE BIGGER YOU HAVE TO THINK

A brief and simplified explanation for the emergence of the Bologna Process is that in Europe, despite a list of tangible and intangible contemporary examples of successful economic, social and cultural achievements, there is a growing awareness that it needs to change in many ways if it is to realize its potential and be able to respond to the unrelenting impact of the challenges and opportunities created by globalization. Higher education and research were identified as the missing links in a set of ambitious goals and development strategies – known as the Lisbon Agenda – which would make Europe [more specifically that of the European Union] the most competitive knowledge-based economy in the world. These goals, although they were later somewhat modified, still retain the essence of the the Lisbon Agenda – of Europe becoming a regional world-leader among "knowledge societies".

However, the Bologna Process is more than a response to the Lisbon Agenda, which, being a policy of the European Union, covers only 27 countries in the region. It is the prevailing view that continuous economic growth, improved competitiveness and higher, stable employment in the region depend on the successful adoption and application of new technologies, as well as a steady supply of skilled labour. Enabling Europe to cope with the world's evolution towards globalization, and with the rapid changes in the scientific fields, demands researchers who have the experience of working in multi-cultural, cross-disciplinary research environments. The traditional "one life – one workplace" approach can – today in a globalized world – be considered obsolete, as it no longer meets the requirements of a fast-growing, knowledge-based industry. Only by consistent actions in the area of higher education and science, can Europe successfully hope to respond to globalization.

In a certain way, it was fortunate for the future of the Bologna Process that it was originally launched with unusual modesty by four ministers from France, Germany, Italy and the United Kingdom when they met in Paris and adopted the Sorbonne Declaration in May 1998. Yet, it seems that it "struck gold", when only a few months later in June 1999, 29 ministers had already committed their respective countries to embark on new strategies for higher education by adopting the Bologna Declaration on the European Higher Education Area. The overall objective laid down in the declaration was the need for "increasing the international competitiveness of the European system of higher education". It should be mentioned that the intention was never to establish a single "European system of higher education", but rather to enable a harmonization of systems by setting up Europe-wide standards to facilitate interaction at the study programme, institution and system levels.

The accession growth continued as new countries committed themselves to the requirements adopted by consecutive ministerial meetings [so-called Action Lines]. The number increased to 33 countries in Prague (June 2001), to 39 countries in Berlin (September 2003), to 45 countries in Bergen (May 2005) and most recently to 46 countries at the latest ministerial meeting held in June 2007 in London. At present, it is a truly pan-European initiative and the only European country which is not a member of the Bologna Process is Belarus, as this country

is not party to the European Cultural Convention of the Council of Europe, a prerequisite for accession to the Bologna Process.

The **main objectives** of the Bologna Process are:

- to increase the attractiveness, transparency and mobility within higher education;
- to facilitate the recognition of studies and qualifications;
- to adapt higher education better to the needs and fluctuations of the labour market;
- to enhance the role of higher education in democratic societies.

The **principle instruments** which were adopted for achieving the creation of a European Higher Education Area include the following:

- a three-tier degree structure articulating higher education in terms of undergraduate and graduate studies – namely as Bachelor's, Master's and Doctoral degrees [a creation of *a common degree structure]*;
- the European Credit Transfer System (ECTS) [creation of *a common recording measurement* of acquired knowledge and skills];
- a so-called *Diploma Supplement*, which should facilitate transferability of the period of study and awarded academic qualifications, foremost in order to improve the international mobility of students as well as the attractiveness of "studies in Europe" for those coming from other regions [creation of *a common informational tool*];
- across-the-board recognition of the importance of quality assurance mechanisms, foremost through accreditation as well as benchmarking and other instruments.

I think that many people are actually rather surprised that something like the Bologna Process has seen the light of the day. It can be described both as a "necessity" and a "wonder" of higher education policy. A necessity because Europe, in addition to the already presented arguments, has to respond to the need to increase participation rates in higher education since only a few countries have a level that can assure an active role in a knowledge society. This is somewhere around 50 percent of the traditional college age group, which would not be possible to achieve with traditionally structured and longer study programmes; the imperatives of lifelong learning and professional development, which are determining a capacity to react to rapid changes in the labour market; the necessity for greater international as well as inter-institutional mobility; and the need to deal with a deficit of researchers – particularly those at the doctoral level.

On the other hand, it is also a wonder of policy-making taking into consideration:

- that it is a fully voluntary process; that contrary to many other areas, it is foremost a governmental process [the decision-making body being the ministerial meetings held each second year], and that it is a fairly conflict-free interaction of principal stakeholders – governments, higher education institutions – academics and students, and employers. All are represented in the Bologna Follow-Up Group (BFUG) which is in charge of the implementation of the decisions of the ministerial meetings;

- that the funding of reform required by the introduction of consecutive objectives of the Bologna Process are entirely dependent on national and institutional budgets;

- the hurdles of "harmonization" within historically heterogeneous systems, e.g.; French, Anglo-Saxon, Germanic, Scandinavian, Soviet and post-Soviet, and the characteristics of their individual structures, organization of studies, institutional models, etc. with strong attachments to national/state systems;

- the absence of a top-down international legal framework and the almost total dependence on national legislation (with the exception of the Council of Europe/ UNESCO Lisbon Recognition Convention which was adopted in 1997 – prior to the Bologna Process);

- the flexible and relatively small organizational and secretarial arrangement for governance of the Bologna Process – the ministerial meetings, the Bologna Follow-Up Group and its thematic working groups;

- the absence of rigid implementation mechanisms and procedures, but accompanied with a stock-taking reporting system demonstrating the progress achieved in the essential areas for the implementation of the set objectives. In this regard it should be pointed out that the level of expectations with regard to implementation is clearly moving upwards – the Bologna Process having now moved from a "stage of emphasis on structures" to a "quality stage" for which the main measure is the establishment of Register of European Higher Education Quality Assurance Agencies.

WHY THE BOLOGNA PROCESS WORKS

There is no doubt that the current European scene of policy debate on higher education and science is delineated by two pan-European initiatives – the European Higher Education Area (EHEA) due to become a reality by the year 2010, and the European Research Area (ERA). To a great extent the two "Areas" are viewed as convergent in certain respects, and the issues related to the education, training, and development of "human resources"- doctoral studies and qualifications included – are rightly viewed as bridges between the European Higher Education Area and the European Research Area. Increasingly, these issues are going to be part of the debate on the future development of higher education and research in Europe.

One of the most important effects of the Bologna Process on European higher education has been the reorientation from "in-puts" to "out-puts" when it comes to the organization and educational effectiveness of study programmes, especially from the perspective of acquired competencies and skills. This reorientation reflects a growing public interest in the economic and social usability of education. Education, in particular higher education, is seen as an important supply of human resources, and as such, must contribute to the optimization of the regional and national "location" in a global competition, as well as to the smooth functioning of social systems. In this context, emphasis is accorded to the acquisition of "competences" relevant from the point of view of employability, and "effectiveness of education processes" from the point of view of established, national and international, standards of quality and benchmarks.

Even if not directly affected, it is nevertheless hard to disregard the importance of the Bologna Process to make European higher education more attractive and competitive at the institutional, national and regional levels which are important features in the context of on-going negotiations under the GATS conducted by the World Trade Organization (WTO). This is why higher education, while largely regarded as a public good, is also perceived by some as just another component of the international "service sector." There is increasing a call to treat education much as we treat other areas of international trade. Obviously, this is a hotly disputed issue outside and inside the educational community, and in the context of the external dimensions of the Bologna Process.

THE BOLOGNA PROCESS AND HUMANIZING GLOBALIZATION THROUGH THE DEVELOPMENT OF HIGHER EDUCATION

The range of developments and the pace of change allow for cautious optimism that the European Higher Education Area is going to be in place by the year 2010. Taking into account the degree of diversification of the national systems of higher education in Europe, it is an ambitious and complex political and academic scenario, which in the course of time will substantially transform many aspects of higher education at institutional, national, and international levels within and outside Europe.

This initiative represents the most significant event in European higher education since the days of expansion and reforms of the late 1960s. It is going to bring about profound changes of a sort that will alter the so-called Humboldtian model of the university that has been the dominating conceptual and organizational framework for higher education in Europe for almost two centuries. While the encroaching changes may in the end not be quite so momentous, it is nevertheless quite remarkable that despite all their historical and institutional differences, important decisions have been made which should lead to the harmonization of higher education systems across a prevailing number of European countries. Such a system should be highly attractive to international students within and outside of Europe, and should also democratize international student mobility. The Bologna Process has the potential to offer such a vision of higher education.

There is a growing concern with regard to the issue of the fair distribution of the economic benefits of globalization. While in the past the central axes of divergence between the highly industrialized and developing countries was in the area of economy, it is now a growing concern that an adverse affect of globalization might also be observed in the area of "knowledge and skill" capacity to meet the challenges of globalization. The role of higher education in this context is more important than ever. Therefore, there is a growing understanding of the need to humanize globalization in order to reduce the risk of it being a more divisive than uniting factor for our world today, which is marked more clearly than ever by the global nature of the problems we face in such areas as the environment, migration, water resources, the use of space and the seas, equitable access to knowledge and new technologies, the secure use of nuclear energy, terrorism, organized crime, and the epidemic spread of diseases, etc. These realities call for global action, even if the actual solutions lie at the regional, national and local levels.

While fully understanding the interconnections between many of these issues and the need for comprehensive policy and joint actions, it is important to ensure that globalization does not result in a simplistic uniformization of our economic, social, and cultural landscapes. There must still remain ample room for "divergences" that must be respected – from the way we run companies to the way we organize schools and universities. Institutions of higher education can help educate citizens to understand and promote these differences. Globalization implicitly requires that we learn to adapt to a new kind of world, one of the characteristics of which is what I would call the prevalence of "multiple identities" and "multiple accountabilities."

In a constantly changing global economy, regions and countries need to formulate policies which can exploit existing and emerging markets, while at the same time searching for an identity which can differentiate them from their rivals – since the ultimate 'trick' [or wining formula] is to maintain exclusivity while being global. In this regard, the vision promoted within the Bologna Process is clearly a confirmation of an understanding that the European Higher Education Area is part of a global context.

It is quite telling that the title of the last meeting of ministers responsible for higher education in the countries participating in the Bologna Process (London, 17-18 May 2007) was "*Towards the European Higher Education Area: responding to challenges in a globalized world*". By adopting a strategy document entitled "*The European Higher Education Area in a Global Setting*", the ministers committed their respective countries to move ahead in such policy areas as: improving information, and promoting the attractiveness and competitiveness of the EHEA, strengthening cooperation based on partnership, intensifying policy dialogue, and improving recognition."

Further evidence that the Bologna Process approach is indeed responding to the challenges of our time is demonstrated by the fact that not only do the 46 European countries now see it as meeting their needs and expectations, but in addition, certain Mediterranean and Central Asian countries are now also attempting to follow the same path of reforms.

In conclusion, it can be considered, with some anticipatory credit, that the Bologna Process is not simply an ambitious-sounding political declaration, but has proven to be a real collective commitment by politicians, the academic community and other principal stakeholders, for changing the future economic and cultural development of Europe. It also demonstrates how the challenges of globalization can be met by developing higher education.

PANEL DISCUSSION 2: STRENGTHENING AFRICAN HIGHER EDUCATION

Mohamed H.A. Hassan

Executive Director, the Academy of Sciences for the Developing World

Mohamed H.A. Hassan is Executive Director of the Academy of Sciences for the Developing World (TWAS), President of the African Academy of Sciences (AAS), and Secretary-General of the Third World Network of Scientific Organizations (TWNSO). He also serves on a number of committees in other organizations worldwide. He was formely Professor and Dean of the School of Mathematical Sciences at the University of Khartoum, and has received the Order of Scientific Merit of Brazil and the Order of Merit of Italy. He is a fellow of TWAS, AAS, and the Islamic Academy of Science; an honorary member of the Colombian Academy of Exact, Physical and Natural Sciences and the Palestine Academy of Science and Technology; a corresponding member of the Belgian Royal Overseas Academy of Sciences; and foreign fellow of the Pakistan Academy of Sciences. He holds a Ph.D. in Plasma Physics from the University of Oxford, UK.

Strengthening African Universities for Science-Based Sustainable Development

Prof. Mohamed H.A. Hassan
Executive Director, TWAS, Trieste, Italy
President, African Academy of Sciences, Nairobi, Kenya

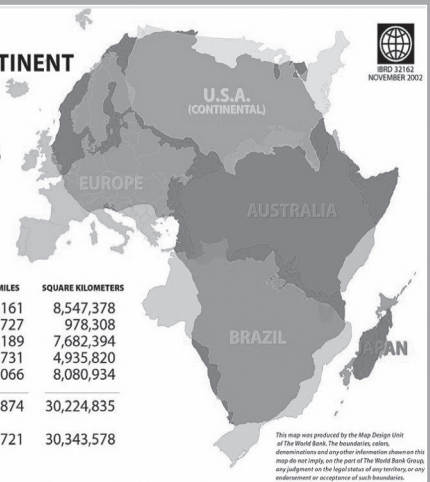
Changing Roles of Higher Education in the Globalized World
UNU/UNESCO International Conference, Tokyo, Japan, 29-30 August 2007

Strengthening African Universities for Science-Based Sustainable Development

- Challenges
- Opportunities
- Strengthening African Universities
- Conclusions

2

SIZE OF THE AFRICAN CONTINENT COMPARED TO OTHER LAND MASSES



IBRD 32162
NOVEMBER 2002

	SQUARE MILES	SQUARE KILOMETERS
BRAZIL	3,300,161	8,547,378
JAPAN	377,727	978,308
AUSTRALIA	2,966,189	7,682,394
EUROPE	1,905,731	4,935,820
U.S.A. (Continental)	3,120,066	8,080,934
TOTAL	11,669,874	30,224,835
AFRICA (including MADAGASCAR)	11,715,721	30,343,578

This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

3

Challenges

1. Addressing sustainability problems
2. Improving quality and quantity of research output
3. Reducing brain drain

4

Sustainability problems

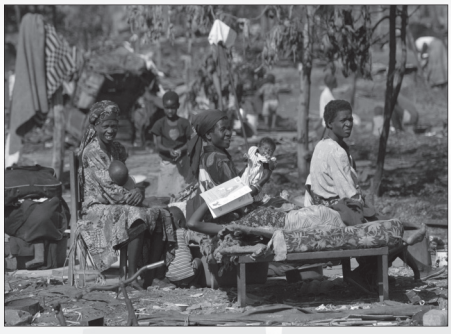
- Africa is the poorest region in the world.
- Half of the population live on less than one dollar a day.
- Around a sixth of the entire population of sub-Saharan Africa – more than 100 million people – are chronically poor.

Source: *Our Common Interest: Report of the Commission for Africa*

5

166 million Africans live in slums

Source: *Our Common Interest: Report of the Commission for Africa*



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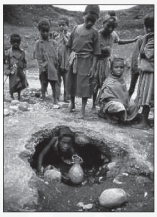
42% of Africans have no access to safe drinking water

Source: *Our Common Interest: Report of the Commission for Africa*



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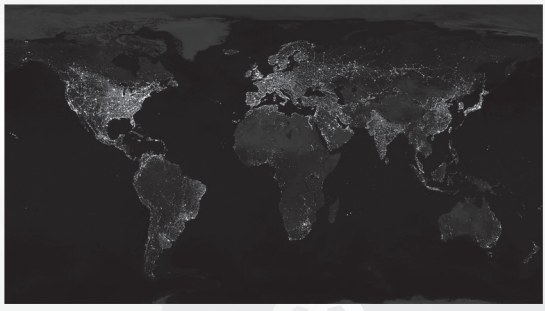
73% of Africans have no access to electricity

"In countries for which data are available around 27 percent of the population has access to electricity."
Source: *African Development Indicators 2006*. World Bank



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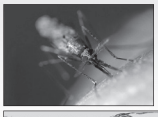
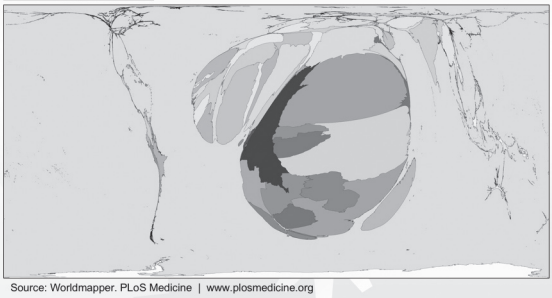
Malaria kills 900,000 Africans each year



"Each year, it kills more than 1 million people around the world — 90 percent of them in Africa."
Source: *African Development Indicators 2006*. World Bank

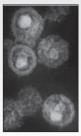


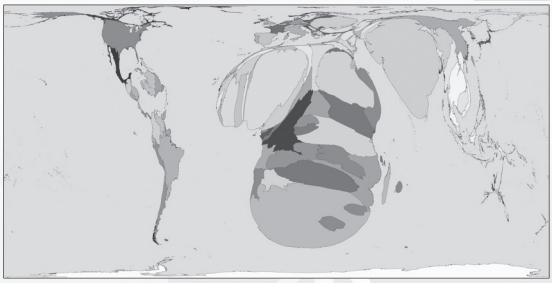
Source: Worldmapper. PLoS Medicine | www.plosmedicine.org

9

25 million Africans carry HIV

Source: *African Development Indicators 2006.* World Bank



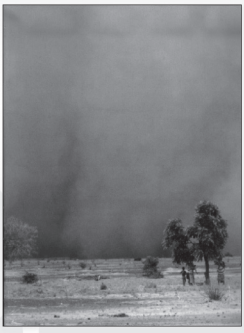


Source: Worldmapper. PLoS Medicine | www.plosmedicine.org

10

Africa and climate change

- Africa is most vulnerable to climate change because of its fragile ecosystems
- Weak resilience and adaptation capacity



11

African ‘exports’

50 million tons of dust transported every year — including top soil rich in nutrients

12

Challenge 1

- How can STI capacity be built and sustained in Africa to assist in solving critical sustainability problems and in achieving the Millennium Development Goals?

13

Challenges

1. Addressing sustainability problems
2. Improving quality and quantity of research output
3. Reducing brain drain

14

North-South Disparities

World's top 25 countries, ranked by their share of world's papers in science, medicine and engineering

Average 2005-2006

Country/Territory	Share of papers %
USA	28.32%
China	6.60%
Japan	6.23%
Germany	6.15%
United Kingdom	5.80%
France	4.45%
Italy	3.38%
Canada	3.38%
Spain	2.59%
South Korea	2.36%
India	2.23%
Australia	2.11%
Russia	1.98%
Netherlands	1.86%
Brazil	1.50%
Taiwan, China	1.44%
Sweden	1.39%
Switzerland	1.39%
Turkey	1.24%
Poland	1.22%
Belgium	1.05%
Israel	0.84%
Denmark	0.74%
Austria	0.72%
Finland	0.70%

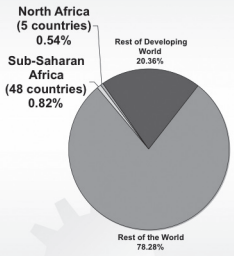
Source: SCI, January 2007

15

Share of Publications

Africa's world share of ISI-listed SME papers

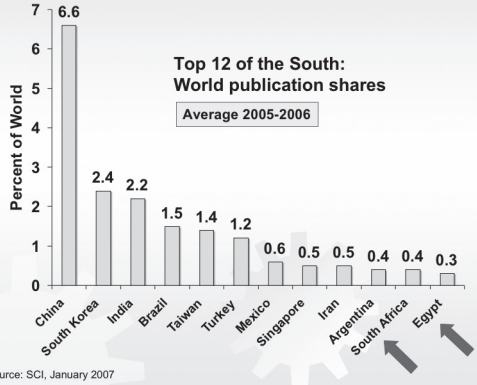
Average 2005-2006



Source: SCI, January 2007

16

South-South Disparities



Source: SCI, January 2007

17

Disparities in STI

	AFRICA	Share of World
1	South Africa	0.37%
2	Egypt	0.26%
3	Tunisia	0.11%
4	Morocco	0.09%
5	Nigeria	0.08%
6	Algeria	0.08%
7	Kenya	0.05%
8	Cameroon	0.03%
9	Tanzania	0.03%
10	Ethiopia	0.03%
11	Uganda	0.02%
12	Ghana	0.02%
13	Senegal	0.02%
14	Zimbabwe	0.02%
	Rest of Africa (39 c.)	0.16%
	Total Africa	**1.37%**

African countries contributing ≥ 0.02% of world share of ISI-listed S&E papers

Average 2005-2006

Source: SCI, January 2007

18

Challenge 2

- How to improve quality of scientific research and education and create a culture of scientific excellence to reduce disparities between Africa and the rest of the world?

19

Challenges

1. Addressing sustainability problems
2. Improving quality and quantity of research output
3. Reducing brain drain

20

Brain Drain

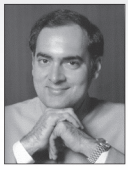
- Serious problem for African countries
- International market for scientific talent becoming more competitive
- Globalization of higher education growing competition among best universities for best and brightest students

21

Brain Drain

- USA and EU still greatest market place for talent from Africa
- Providing adequate research facilities and attractive work conditions to talented African scientists is the only way to reduce brain drain

22



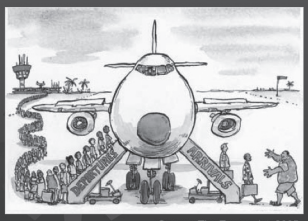
Rajiv Gandhi:

"Better brain drain than brain in the drain"

23

Challenge 3

- How to convert brain drain into brain gain and brain circulation?



Source: The Economist, 2005

24

Strengthening African Universities for Science-Based Sustainable Development

- Challenges
- **Opportunities**
- Strengthening African Universities
- Conclusions

25

Opportunities for STI Development in Africa

1. Cutting-edge technologies
2. Natural resources
3. Renewed political commitment in Africa
4. Greater commitment by G8 countries
5. Renewed South-South cooperation
6. New commitment by African academies

26

Opportunity 1: Cutting-edge Technologies

- Opportunities to contribute to sustainable well-being
  - Wireless information and communication technologies (ICTs)
    - Instant access to scientific and technical information from anywhere in the world
  - Biotechnologies
    - Substantial improvement in agriculture and health
  - Space science and technology
    - Monitoring environmental change and natural resources
  - Nanotechnologies
    - New generation of nanomaterials with broad-ranging applications to critical problems (*e.g.*, water purification, clean energy)

27

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28

Opportunity 2: Natural Resources

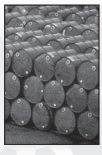
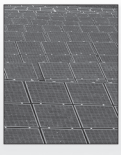
- Africa is rich in biodiversity and natural resources
- Centuries-long traditional knowledge
- Conservation and rational utilization of these resources require regional and international cooperation



29

Opportunity 2: Clean energy from African deserts

- Solar power plants in the Sahara desert can supply Europe with vast quantities of energy
- Each square kilometre of African desert every year receives solar energy equivalent to 1.5 million barrels of oil
- Solar energy received by deserts worldwide is nearly 1,000 times the world's entire annual energy consumption

30

Opportunities for STI Development in Africa

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31

Opportunity 3: Renewed Political Commitment by African Leaders

- Decisions of African Union Summit
  - Regional strategies to promote S&T in Africa: NEPAD Networks of Excellence
  - 2007: Year of Science and Innovation
  - S&T Expenditure at least 1% of GDP

African Union Summit, Addis Ababa, Ethiopia, Jan. 2007

32

Opportunity 3: Renewed Political Commitment by African Leaders

- Several **Sub-Saharan African** countries have substantially increased investment in S&T
  - Ghana
  - Kenya
  - Mozambique
  - Nigeria
  - Rwanda
  - Senegal
  - South Africa
  - Tanzania
  - Uganda
  - Zambia

33

Opportunity 3:
Renewed Political Commitment in Africa

- Africa is beginning to witness the emergence of new champions of S&T in several countries
- These countries deserve more support by international and regional financial institutions

34

Opportunities
for STI Development in Africa

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35

Opportunity 4:
Greater commitment by G8 countries

- Commission for Africa Report (2005)
  - US$ 5 billion to rebuild universities
  - US$ 3 billion to establish centres of excellence in Africa

36

Opportunity 4:
Greater commitment by G8 countries

- Support to NEPAD Action Plan
  - US$ 160 million support for networks of centres of excellence (water, biotech, lasers, mathematics)

37

Opportunities
for STI Development in Africa

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38

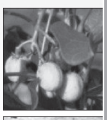
Opportunity 5:
Renewed South-South Cooperation

- China
  - Development Fund for Africa
  - US$ 5 billion over the next 3 years for infrastructure, institution building and technical training

39

Opportunity 5:
Renewed South-South Cooperation

- Brazil's pro-Africa programmes
  - Support S&T capacity building in Sub-Saharan Africa
- Brazil, India and Senegal
  - Biofuels project in Senegal
- India, Brazil and South Africa
  - Support for joint problem-solving projects



40

Opportunity 5:
Renewed South-South Cooperation

- TWAS agreement with Brazil, China, India, Mexico and Pakistan
  - Postgraduate/postdoctoral fellowships to researchers from other developing countries

Dr. H.M.I. Ahmed from Egypt at the Universidade Federal de Viçosa in Brazil *(TWAS-CNPq Fellowship for Postdoctoral Research)*

41

Opportunity 5:
Renewed South-South Cooperation

- Consortium on Science, Technology and Innovation for the South (COSTIS)
  - Ministries of S&T
  - National research councils
  - Science academies

  in the developing world

COSTIS

42

Opportunity 5:
Renewed South-South Cooperation

- COSTIS
  - Established by the Ministers of S&T and endorsed by the Foreign Ministers of the Group of 77 (2006)

43

Opportunity 5:
Renewed South-South Cooperation

- UNESCO and Malaysia
  - Establishment of an International Centre for South-South Cooperation in Science, Technology and Innovation in Kuala Lumpur, Malaysia

44

Opportunities
for STI Development in Africa

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45

Opportunity 6:
New commitment by African academies

- With IAP support, science academies in Africa are transforming themselves into dynamic boundary organizations able to provide critical services to governments, scientific communities and general public

46

African countries with merit-based science academies

Green: Existing academies	
Cameroon	Senegal
Egypt	Sudan
Ghana	South Africa
Kenya	Tanzania
Madagascar	Uganda
Morocco	Zambia
Nigeria	Zimbabwe
AAS *(regional academy)*	
Red: Being founded	
Botswana	Rwanda
Mauritius	Tunisia
Mozambique	

47

Network of African Science Academies (NASAC)

Founded in Nairobi in 2001 as independent forum for African science academies to:

- provide (individually or jointly) independent evidence-based advice to African governments on scientific issues of critical importance to development
- prepare and issue common statements on major issues relevant to Africa

48

Network of African Science Academies (NASAC)

Statements

- Joint statement by academies of G8 countries and NASAC to G8 summit in Scotland in June 2005
- NASAC statement to AU summit in Addis Ababa, Ethiopia, in January 2007
- NASAC statement to G8 summit in Germany in June 2007

49

Strengthening African Universities for Science-Based Sustainable Development

- Challenges
- Opportunities
- **Strengthening African Universities**
- Conclusions

50

Strengthening African Universities

- Quality education and research
  - Revitalize and reform key universities and upgrade to world-class research universities
    - Promote culture of excellence in education
    - Provide fast track training to best students
    - Reduce brain drain
  - Establish research units and centres of excellence within university departments and faculties to reinforce links between education and research

51

Strengthening African Universities

- Training new generations of scientists
  - Curriculum reforms and ICT-based innovative teaching methods to produce problem-solving scientists, technologists and innovators
  - South-South postgraduate fellowships (TWAS/TWOWS)

52

Strengthening African Universities

- Funds for research and innovation
  - Secure adequate and sustained funding mechanism to support quality education, research and innovation and to attract, train and retain best and brightest young researchers
  - Establish autonomous, self-governing national and regional research foundations (South Africa, Nigeria)

53

Strengthening African Universities

- Problem-solving research
  - Collaboration between competent research teams within universities to address critical regional problems
  - Links between universities and research institutions / para-statals within government ministries
  - Partnership between faculties of agriculture and national and international agricultural research centres (CGIAR)
  - Links between university research units and NEPAD's networks of excellence

54

Strengthening African Universities

- Partnership with academies of science
  - 15 merit-based academies of science in Africa (NASAC). Majority of members are professors at African universities
  - Academies can provide universities with scientific leadership and advice on curriculum development and quality education and research
  - Universities can help accelerate reforms of academies, transforming them into more dynamic organizations by linking them to young researchers

55

Strengthening African Universities for Science-Based Sustainable Development

- Challenges
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- **Conclusions**

56

Conclusions

1. Africa needs a new generation of home-grown, problem-solving, world-class scientists to lead science-based development in the continent. This can only be achieved through establishing an effective STI system of world-class research universities.

57

Conclusions

2. Success stories highlighting achievements of universities in contributing to economic growth need to be identified, published and widely distributed.

58

Conclusions

3. Increased financial allocations for higher education and STI development in Africa should first and foremost come from African governments. External support from G8 countries, large developing countries (Brazil, China, India) and foundations is critical in developing excellence and relevance in STI.

59

Conclusions

4. African leaders are increasingly recognizing that science, technology and innovation are essential to lead and implement strategies to achieve the UN Millennium Development Goals. The world's richest nations (G8) expressed strong support for strengthening universities and for building STI capacities in Africa.

60

Conclusions

5. 2007 has been a year of high hopes and political will to save Africa through increased investment in quality education and STI.
   Let 2008 be the year of explicit commitment, implementation and action.

61

Conclusions

6. World-class research universities alone will not accelerate economic growth in Africa, but without a sustainable system of world-class research universities Africa's economic growth cannot be accelerated.

62

Mohamed Séghir Babès

President, National Economic and Social Council of Algeria

Mohamed Séghir Babès has extensive experience as a Public Administrator, having held various high-level positions in the economic and social sphere. He was an Advisor to the President of the Republic until 2005, and was elected Chairman of the National Economic and Social Council in June 2005. He was also appointed Chairman of the Association of African Economic and Social Councils in 2005. Early in his career he was appointed to various posts in Algeria, including Director-General of Social Security, Secretary-General to the Minister of Social Protection, Chairman of the Board of Management of the "Services" Participation Fund, Representative of the Head of the Government in the field of Economic Reform, and finally Minister of Health and Population. He has worked for the National Institute of Public Health of Quebec, the International Health Unit of the Faculty of Medicine of the University of Montreal and the Francophone Energy and Environment Institute of Quebec. He is a Research Associate at the Quebec Institute for Advanced International Studies (Laval University of Quebec). He conducted several sessions of the "Africa" seminar within the framework of the Masters Degree Programme in International Relations, while co-chairing the Chair of Maghreb Studies. In addition, he has played a defining role, with the collaboration of Pr Albert Legault and Pr Pierre Lemieux, in setting up the Algeria-Canada University Partnership dedicated to doctoral and post-doctoral research. Finally, and in linkage with the NEPAD initiative, he is a member of the Panel of Eminent Persons of the African Peer Review Mechanism.

HOW TO INVOLVE ORGANIZED CIVIL SOCIETY IN BUILDING AFRICA'S CAPACITIES TO ACHIEVE BETTER EDUCATION?

SOME KEY ISSUES BASED ON THE MANDATE OF THE ECONOMIC AND SOCIAL COUNCILS (ESCS) TO ATTAIN THE MILLENNIUM DEVELOPMENT GOALS

May I begin by expressing my immense gratitude to Professor Hans van Ginkel, Rector of the United Nations University (UNU), for affording me the great privilege of being with you today, and thus, giving me the opportunity to address this august and prestigious gathering. The fact that Mr van Ginkel is presiding over this panel is not the result of mere chance, it is, on the contrary, an indication of his faith in the future of our continent and of his unswerving commitment to seeing Africa freed for good from its sad state of isolation and recurring despair. His faith is in fact that of a man who has devoted the greater part of his life and energy to fighting for the dignity of humanity, of all humanity. It has led him to become one of the most influential promoters of the Millennium Declaration and of its chief correlate, the global strategy for the achievement of the Millennium Development Goals (MDGs). I ask all those who under his leadership comprise the network of the UNU to kindly share this tribute with him.

It is only natural that I should convey to you the expression of friendship from President Abdelaziz Bouteflika, and his best wishes for the success of our work. President Bouteflika still has a vivid memory of the great moment that saw the birth of the United Nations University under the auspices of the 27th General Assembly of the United Nations, over which he had the honour of presiding, as he was at the time head of the Algerian Ministry for Foreign Affairs. Nor should it be surprising if I point out that Algeria was one of the most resolute proponents of the Millennium Declaration during the discussions which marked its adoption in the year 2000.

I would also like to convey to you the sincere gratitude of our Government for the mark of esteem shown to Algeria in choosing it to host, in the near future, the Institut de recherche d'Alger pour le développement durable (Algiers Research Institute for Sustainable Development (IRADDA)) and the Observatory, which is entrusted with the monitoring and evaluation of progress towards achieving the MDGs. Both the Institute and the Observatory are dedicated to Africa and attached to the United Nations University in this capacity. My country is actively preparing for this event.

Africa's academic community and research networks see this as an important opportunity to become part of the international academic community's leading network. The forum/labouratory will be conducive to the creation of a special climate of "endogenization". It will provide an opportunity for these groups to discuss the priorities relevant to the sustainable development of Africa.

In any case, our Council sees in the exemplary cooperation initiated with UNU a unique opportunity to transcend its own mandate by considerably enlarging its scope. It will embrace an entire continent, through both the Union of Economic and Social Councils of Africa (UCESA), of which Algeria's National Economic and Social Council (CNES) currently presides, and other institutions that form part of the African Union, such as NEPAD, APRM and ECOSOCC.

The privilege I have been accorded of addressing you in this temple of knowledge is certainly increased tenfold by the exceptional circumstance of delivering my message at a conference that is jointly organized with UNESCO, which has become an unrivalled champion of the universality of humanist ideals, successfully joining the inexhaustible synaptic interconnections between education, the sciences, culture and communication and information. It is therefore with particular enthusiasm that I welcome Koïchiro Matsuura, Director-General of UNESCO, who is jointly presiding over our meetings.

When one considers the vast domains which include the loftiest pinnacles of human creativity and the most admirable achievements of the spirit and the intellect so characteristic of the human species, one cannot fail to be persuaded of the Promethean nature of the international community's mission, all stakeholders included. This mission is meant to lead us to the building of a future based on fellowship and founded on the values of equity and sharing. Hence the extreme importance which it attaches to a consensual and united acceptance of the concept of inalienable, global public goods, requiring all stakeholders to join together to ensure both their preservation and their development and consolidation. A commitment of this kind, which is the cornerstone and the ultimate guarantee of any major strategy aimed at achieving sustainable development, has become absolutely decisive and essential in the context of the exponentially accelerated globalization that we are experiencing today. Therefore, the combat for the values of peace, stability and security, as well as the combat against poverty, sickness and ignorance and against all forms of exclusion and discrimination, must be our combat, in which we are all inextricably bound together. The immensity of this task, and its complexity, demand it. This is what is fundamentally at stake.

Convinced that you all share this deep conviction with me, I am particularly pleased to have the privilege of speaking to you today about the involvement of organized African civil society in the vast process of strengthening educational and training capacities with a view to achieving the Millennium Development Goals (MDGs) and, at the same time, taking account of the considerable challenges presented by globalization.

I shall therefore endeavour to take advantage of what I believe to be a case of exemplary practice, which offers us a "model under construction" for analysis. The model, endorsed by the

economic and social councils of Africa, is a joint initiative of Algeria's National Economic and Social Council, which holds the presidency of the UCESA, and the United Nations University, which is both an academic and knowledge centre and a forum/network relaying the commitments of the international community as a whole through the Millennium Declaration.

More concretely and specifically, I should like to examine this "model under construction" with a view to revealing the model's matrix of prerequisites, in order to assess their viability and operability in the medium and long term. This matrix appears to us to have three significant levels of prerequisites.

The first level concerns the degree of congruence of the overall aim and the strategies used to achieve it. To identify the starting point of the idea behind the Institute project, we would refer to the proceedings of the African Round Table on the Millennium Development Goals, held in Algiers on 26 November 2005, and organized by Algeria's National Economic & Social Council in partnership with the International Association of Economic and Social Councils and Similar Institutions (IAESCSI) under the auspices of the Economic and Social Council of the United Nations.

In fact, the great interest elicited at the continental, intercontinental and international level by this African Round Table on the MDGs led a number of key stakeholders, and Mr Hans van Ginkel in particular, to suggest that a lasting cooperation between UNU and Algeria's National Economic and Social Council should be established on the basis of centres of common interest in relation to the Round Table. Furthermore, as the Council, in its capacity as a consultative body and as a cornerstone of organized civil society, was at the helm of the Union of African Economic and Social Councils (UCESA).

Various other events and concordant circumstances, including the holding in Algiers in September 2006 of the first Africa/Europe Conference of Organized Civil Societies[1] under the joint aegis of the UCESA and the European Economic and Social Committee (EESC), have helped to legitimize African civil society organizations in the form of economic and social councils (ESCs) and empower them to play a key role in this partnership.

Indeed, as institutions for the representation, consultation, information, and expression of organized civil society, the African ESCs demonstrate their capacity for openness vis-à-vis all stakeholders in a way that goes far beyond their structural and statutory form stricto sensu, thereby giving real meaning to the concept of participatory democracy.

For this reason, and particularly following the example of the fruitful practice of Algeria's National Economic and Social Council, civil dialogue is beginning to emerge not only as an important requirement of democracy, but also as an operational mode/capability, offering a critical, analytic and evaluative objectivity at every stage of the process of conception/framing/preparation/implementation of public policies. Moreover, these forums manage to energize organized civil society sufficiently to make it a significant agent of institutional change.

It is therefore with these considerations that the strategy of the future institute must be interpreted, particularly in regard to the achievement of the MDGs, which underlie the more holistic issues of sustainable development and sustainable human development. It is to all this that the future UNU-IRADDA institute must devote itself. Its mission will include testing the capacity for efficient mobilization at every level of intervention required for the implementation of these economic and social development policies. Strategies adopted to this end are devoted to strengthening the potential of education to bring about change. Together with the institute, an observatory will be established, which will focus more specifically on questions relating to human development and to the achievement of the Millennium Development Goals in Africa.

The second level of prerequisites is linked to the capacity of all the stakeholders to work together through a circular tree structure and tripolar connectivity mechanism, which also lays emphasis on bottom-up processes. The success of this project depends on the precise identification of its objective and on the participation of the stakeholders in various ways. This will be underpinned by political commitment at the highest levels of the institutional hierarchy, at the national level, as well as at the regional and continental level.

The question of the strategic character of the institute depends on several essential elements relating to its credibility and its efficiency. Thus, the institute will come to be considered as one of the important centres of intra-African and international cooperation in the sphere of observation/evaluation, ready to serve all the stakeholders, and policy makers in particular, and meriting, thanks to these various qualities, recognition of its public utility in the context of NEPAD.

It will be necessary, moreover, to develop systems for the gathering of facts, documents and statistics and to create, to this end, a first focal point for the facility and a first information node. Likewise, major themes should be identified around which the activities and the organization of the institute could be built. At the same time, the relational protocols and strategies for cooperation with the interfaces that have been identified (referrals, identification of national and international partners, and so forth) should also be put in place. It will also be necessary to identify human resources that can contribute to the achievement of the institute's objectives, especially in relation to building networks, to defining the activities according to different timetables and to ensuring that the necessary financial resources are mobilized. From the point of view of its validation, the project will need to garner consensus for its chosen objectives by means of a comprehensive validation process involving the three basic poles, namely policy makers, the academic community and organized civil society, in order to confirm its support within Africa.

The involvement of Algeria's National Economic and Social Council will take a certain number of different forms in line with its mission, notably as a bridgehead for the establishment of the institute and its observatory, as a focal point for providing information to stakeholders and raising their awareness by holding meetings in Africa at the level of the three poles mentioned above. The means of achieving this will have to come from all the groups supporting its mission, at both the national and international level, and must be anchored in the tripolar formation referred to above.

The third level of prerequisites concerns the need to characterize/codify the terms of reference defining the mandate of all the stakeholders. In this respect, it will be necessary to involve universities and research centres in the various fields targeted, to create lines of force and convergences through the African ESCs, to organize regional events based on central or closely related themes and to enlarge the frameworks for concerted action in order to create the conditions for synergistic participation by the stakeholders acting in partnership.

As to the evaluation methodologies and systems, the plan is to establish intra- and extra-community partnership networks, to develop and set up databases and data banks and to define the evaluation protocols and the mechanisms for taking into account their connections with the evaluation systems applied to human development.

What we have to do, moreover, is to fully involve the whole network of African economic and social councils in the work of exploiting and endogenizing the process on both the practical and the participatory level, in line with their mandates. Already, at the recent meeting of the bureau of the UCESA in Algiers, and at an informal general assembly of the UCESA, I had the opportunity to make all my counterparts strongly aware of this most imminent prospect.

Beyond the three levels of prerequisites, the central issue for Africa is to be prepared to respond to the explicit and/or implicit needs of its people, notably through participatory approaches. The most meaningful approaches to sustainable development deal with these key questions:

- How can we support United Nations efforts to attain the objectives set, both in the matter of protecting the environment and in the matter of fighting poverty with reference to international conventions and agreements?

- How can we ensure that the international community honours its commitments with regard to development?

- How can we overcome the contradictions affecting sustainable development and offset the absence of a global vision that would make it possible to preserve the interests of societies and generations?

- How can we give organized civil society the means of playing a real part in and becoming a driving force for sustainable development?

One of the priorities that the UNU-IRADDA institute has set for itself is sustainable human development in Africa. Human beings are at the heart of all issues relating to development. In Africa, these issues are particularly acute, partly because the shortcomings observed in addressing the problems of education and training are so great, and partly because sub-Saharan Africa suffers more than any other region of the world from the negative impact that health-related problems, such as infectious diseases have on education, human resources and the training and quality of its human capital. Finally, although the importance of promoting the education of girls and women is recognised as an essential factor for development, in many African countries girls remain extremely poorly represented at all levels of education and in

professional training programmes. The active participation of women in all spheres of life, from primary education to higher education, from the public sector to the private sector, and from entrepreneurship and innovation to health and education, remains a fundamental challenge for Africa.

A project on sustainable human development in Africa has moreover been proposed which defines the objectives set and the results expected in this domain, it being understood that ties will be established with the principal agencies of the United Nations system (WHO, UNEP, ILO, UNCTAD, FAO) and with multilateral institutions. In identifying its priorities, the institute will not be working in a vacuum but will take full advantage of being part of the UNU structure and belonging to the United Nations family. I think this fact is worth restating.

As to the arrangements for their implementation, the institute and its observatory will need to take a normative and coordinated approach. A matrix which begins with stakeholders and centres of interest and ends with products (for knowledge, training, programming, and so forth) will reveal the interfaces corresponding to the activities and to the interactions between the means available and the modalities of organization. This approach will make it possible to fill in the matrix, gradually, starting with the identification and involvement of the levels identified. Protocols will be established to codify the levels of participation of the groups in the research themes and in the dissemination of the research results in training courses.

The support of international institutions is necessary for the establishment of a framework favourable to the programming of the institute's activities. Establishing the institute and its observatory in Algiers, as provided for in the cooperation agreement, is in no way an obstacle to the participation of universities and research institutions in other African countries, on the contrary. As pointed out earlier, the Algerian National Economic and Social Council will effectively serve as a bridgehead for the establishment of the institute and the observatory.

However, to overcome the difficulties presented by language barriers and geographical distance, especially as regards the MDGs observatory, it is proposed that a form of decentralization should be adopted involving a certain number of agencies. These agencies would then be characterized as associates. These agencies could be identified by means of an invitation to tender, which would be designed to take into account the requirements of regional equilibrium and representation. Terms of reference could be drawn up to this effect to ensure that the activities of these agencies are fully integrated into the matrix of the institute's chosen activities. At the operational level, active consultation with civil society will be organized with a view to its active participation in the definition and implementation of activities relating to sustainable development.

What will be remembered from the African Round Table on the MDGs of November 2005, held under the auspices of the Economic and Social Council of the United Nations and in partnership with the International Association of Economic and Social Councils and Similar Institutions (IAESCSI), is that it succeeded in introducing the subject of the MDGs into the curriculum of universities and *grandes écoles*. Pedagogic tools and didactic platforms have been

developed with the help of a number of prestigious institutions such as Science Po in Paris. Likewise, teaching modules have been introduced in many African universities.

A round table on the MDGs was also held in Brasilia for Latin America and in Beijing for Asia. This project has given rise to several reviews, in the context of the IAESCSI meetings, in which ECOSOC took part. This is no doubt a fine example of the dissemination of the MDGs culture in a sphere as sensitive as that of education, and the raising of stakeholders' consciousness, taking into consideration the concerns of the international community as a whole.

The institute and the observatory attached to it represent a turning point in the cooperation between United Nations bodies and the economic and social councils, since it is the African ESCs that will be the principal actors in the implementation of the project. The advantage of a decentralized approach is that it will mean greater involvement in the MDGs campaign of the ESCs, which will be operating at the grass roots level, mobilizing and raising the awareness of the major networks of organized civil society.

This being said, the links between the economic and social councils and the institute project are perceived in various ways: as a junction between civil society and knowledge networks; as a sign marking the emergence of a centre of excellence for sustainable development in Africa; as a mechanism for stimulating nerve centres until now disconnected; and, finally, as a means of involving different social circles and sectors of civil society whose activities are in some way connected with the pursuit of the MDGs.

The objective and mission of this institute dedicated to sustainable development in Africa will be to examine key questions relating to sustainable economic growth, spatial and social distribution of revenue, and environmental protection. The institute will pay particular attention to the role of education as a means of enabling Africa to meet the requirements of development and become a vector of social justice and democracy. The project will have to get more African universities and research centres involved with the help of UNU's networks and through the ESCs.

The various executive organs of the United Nations and the ESCs have a strategic advantage in working together. There is already a mechanism for cooperation between the International Labour Organization, the International Labour Office and the IAESCSI, which is included because it is an observer member of ECOSOC.

Cooperation in the field of education is one of the activities destined for strategic expansion, since strategic issues relating to the formulation of targeted public policies will be able to be referred to the ESCs at the national level. The international involvement of the ESCs, including at the continental level, can contribute to the harmonization of approaches and the formulation of unified and convergent strategies. The general idea is to recognize the ESCs as essential partners and respondents of international organizations, since they share the same ideals, the same objectives and, often, the same approaches.

The action we have been undertaking in our Council has been shaped by this idea. From the outset, our Council has tried to adopt these principles, both in terms of greater involvement of the economic and social stakeholders, and in terms of greater openness to the world in general. This is done by enlarging cooperation with centres of excellence and major networks that can accompany us, as jointly responsible partners, on the new roads to achievement.

The advantage of approaching the weighty issues of development and poverty eradication through organized civil society is that it breaks the vicious circle that results from dualism and corporatism. We should welcome this new form of intervention in international economic and social relations, until now an affair of state, as it can only help to bring about synthesis and clarification.

Achieving multipolar, inclusive, humane, and equitable globalization will mean replacing the present architecture by a united approach to the constraints faced by the most vulnerable countries and populations on the planet, in the North and South alike. It will also mean a set of international regulations that go beyond the mere facilitation of exchanges to optimize a globalized production function in which the needs of deprived populations and the various constraints linked to environmental degradation are taken into account. The threats to ecosystems and biodiversity present a risk of irreversible loss due to entropic pressures, pollution and excessive exploitation of natural resources.

In conclusion, let me say that I am fully convinced that your august assembly will offer its moral and intellectual support to our future institute in Algiers, just as, when the time comes, it will provide the resources needed to promote this original initiative for the fertilization and dissemination of expertise and knowledge. I should like to end on this optimistic note and I thank you sincerely for your kind attention.

Notes

1 This conference was preceded by a resolution of UCESA's General Assembly that stated that UCESA would be established in Algiers.

B.S. Ngubane

Ambassador Extraordinary and Plenipotentiary, Republic of South Africa

Baldwin Sipho Ngubane is Ambassador to Japan. He was Minister of Arts, Culture, Science and Technology from 1999 to 2004, before which he was Premier of KwaZulu-Natal Province. From 1994 to 1996, he was Minister of Arts, Culture, Science and Technology in the Government of National Unity, and in 1993, he led the KwaZulu Government delegation to the constitutional negotiations. He is active in the South African Red Cross Society and has been Regional Councilor since 1978. He is a board member of the National Committee for the Rights of Children, the Community Based Development Programme, the Grassroots Early Childhood Education Project, and the Community Peace Foundation. He holds an M Prax Med from Natal Medical School and a Doctorate Technologiae (Honoris Causa) from the Faculty of Agriculture, Health and Natural Sciences.

THE CHANGING ROLE OF HIGHER EDUCATION IN A GLOBALIZING WORLD

PRESENTATION BY
DR BEN NGUBANE
AT UNU, TOKYO,
ON 29 AUGUST 2007

CHANGING ROLE OF HE

INTRODUCTION

- The context is dictated by the demands of globalization and the needs to devise a comprehensive response to new competition determining the wealth and prosperity of nations. For South Africa the response is embedded in the twin programmes:

– the Accelerated and Shared Growth Initiative of South Africa (AsgiSA) and the Joint Initiative for Priority Skills Acquisition (JIPSA)

– the aim is to overcome the single greatest impediment, namely, shortage of suitable skilled labour, in order to realise an annual growth rate of at least 6% of GDP between 2010 and 2014 and

– to create a favourable business, private investment and foreign direct investment environment and accordingly South Africa is continuing reform of higher education institutions.

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The TICAD IV Priorities (Tokyo International Conference for Africa's Development) 28 May to 30 May 2008 in Yokohama are:

- boosting economic growth in Africa: strengthening support in on order to make the currently strong economic growth in Africa to be self sustained (in areas including trade and investment, infrastructure development, and agriculture);
- ensuring "Human Security": assistance to help achieve MDGs and Consolidation of Peace as well as enhanced support to Democratization
- addressing Environmental Issues/ Climate Change: support efforts to address environmental issues and assist adaptation efforts, knowing that Africa is the most vulnerable continent to climate change.

CHANGING ROLE OF HE

– Mobilising knowledge and resources of the international community as well as endogenous knowledge institutions in Africa;

All of the above point to the role higher education has to play in pursuit of Africa's sustainable development:

by developing professional skills such as those provided by engineers and scientists, financial personnel and project managers and skilled technical employees such as artisans and information technology technicians.

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Higher Education in Africa: (the issues)

- Africa, in common with the rest of the world, has universities modelled in the Western pattern of universities that emerged in the 15th and 16th century Europe.
- As a result Africa's universities also reflect western organisation and curriculum.

In today's borderless world of knowledge, brought forth by globalisation, African universities have to strive for international credibility by ensuring that:

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(a) Structures for quality assurance within higher education and training, such as the Higher Education Quality Committees, are in place and functioning.

In the case of South Africa the HEQC does national reviews of MBAs, university quality management audits and programme accreditation.

(b) Africa's higher education delivers skills appropriate to the 21st century in terms of employability, in partnership with government and industry stakeholders

CHANGING ROLE OF HE

(c) African higher education correctly interprets world trends and creates flexibility, openness and cost efficiencies which enable them to:

- educate and train the youth of Africa to manage the integration of world markets;
- participate in multidisciplinary research teams that are now the feature of advanced universities;
- create effectively managed cross- border distance learning networks, especially for rural populations without access to contact universities;

CHANGING ROLE OF HE

The reform of Africa's higher education must be seen by NEPAD as Africa's comprehensive response to key strategic challenges posed by globalisation.

Globalization is about globalizing knowledge societies and in this context all kinds of themes assume a higher profile

-higher education has therefore the task of addressing broader scientific, value-laden as well as ethical issues arising out of technological change and social transformation

-the university of the 21st century, or better still, the university of 2050 will have it's focus on creativity and innovation as apart from the mass teaching of today, which will be handled through distributed learning

CHANGING ROLE OF H.E.

In Africa, research and development will both have to produce answers to major policy questions:

- we need new directions in science and technology, social and economic development; this means
- we need to go beyond universal access to primary education, and deal with value at all levels of the education pyramid.
- we need to find ways to induce entrepreneurship which makes practical use of people coming out of the three levels of education (primary, secondary and tertiary levels).

CHANGING ROLE OF H.E.

The constraints on higher education for Africa are most severe: less than 1% of GDP gets allocated for research and the equipment at most of Africa's universities is pathetically inadequate:

- within this context questions need to be asked: "what is appropriate education in a village, education that will lift the life of the people";
- should we keep the basis of it in the country where we are, because if you create something that gets loose from its base it will never succeed?

CHANGING ROLE OF H.E.

Internationally, inter university as well as inter school cooperation is a critical success factor in Africa's education and training programmes:

- teacher and learner mobility, in both directions, helps knowledge, technology and skills transfer and Japan's JICA has been improving mathematics and science teaching for South Africa through exchange programmes,
- the South Africa – Japan University Forum held it's first meeting at Hiroshima University in May this year. It's second meeting will be in Cape Town in May 2008.

CHANGING ROLE OF H.E.

- The agreed principles that will guide the cooperation are a shared vision; complementarities; mutual benefit and uniqueness of opportunity.
- The mechanisms for cooperation and collaboration, include post graduate student exchanges; post doctoral fellowships tenable in each country; joint research projects; internships and joint workshops for training in advanced research techniques; exchanges on best practice in curriculum development

CHANGING ROLE OF H.E.

Conclusion

-in order to fully appraise the changing role of higher education in Africa, in the globalizing world, donor countries will need to support collaborative university research in education (developed country universities and Africa's universities)

- Japan's educational cooperation with Africa has been largely at the level of basic education, because Africa is a priority region for poverty reduction as designated in the Millennium Development Goals

CHANGING ROLE OF H.E.

- Traditionally, Japan's educational cooperation in Asia has been offered primarily in the form of technical and vocational training aimed at developing skills
- However there were many cooperation projects to build or expand facilities for agriculture, engineering and medicine in higher education institutions and Thailand is a prominent example of this higher education type of assistance.

CHANGING ROLE OF H.E.

- In Kenya, the Jomo Kenyatta University of Agriculture and Technology, a Japanese Government higher education cooperation project, is linking agriculture and technology.

  The project is producing new leaders to promote Kenya's development and this type of cooperation is supporting the contribution of higher education to meeting the challenges which accompany the processes of globalisation.

  In this way the Japanese Government is investing directly into sustainable development in Africa.

Masafumi Nagao

Professor, Center for the Study of International Cooperation in Education, Hiroshima University

Masafumi Nagao is a Research Professor at the Center for the Study of International Cooperation in Education at Hiroshima University (Japan) where his primary work is to conduct research relating to the evaluation of aid programmes and projects in the field of education. From 1999 to 2006, he served as the leader of a JICA team to support a secondary mathematics and science teacher retraining project in South Africa. He is a member of the Advisory Committee of JICA on evaluation and also serves on the School Evaluation Committee of Japan's Ministry of Education. Prior to joining this center, from 1987 to 1998, Mr. Nagao worked for the Sasakawa Peace Foundation, one of the largest grant-making foundations in Japan, as a Chief Programme Officer and Programme Director. From 1975 to 1987, he served as Economic Affairs Officer in the Technology Transfer Division of the United Nations Conference on Trade and Development (UNCTAD) in Geneva. He received a B.A. in economics from Carleton College in Minnesota and an M.A. in economic policy from Hitotsubashi University in Tokyo. He has published many papers on educational cooperation, school evaluation and evaluation of aid projects. He has just co-edited a book on "Mathematics and Science Education in Developing Countries: Issues, Experiences and Cooperation Prospects" (Quezon City: University of the Philippines Press, 2007).

THE AFRICA-ASIA UNIVERSITY DIALOGUE FOR BASIC EDUCATION DEVELOPMENT PROJECT: A JOINT INITIATIVE OF UNESCO, JICA, UNU AND HIROSHIMA UNIVERSITY

INTRODUCTION

The Africa-Asia University Dialogue for Basic Education Development Project ('A-A Dialogue Project' for short) is a project to promote an integrated perspective for educational development in sub-Saharan African countries with a particular focus on basic education development through self-reliant efforts by creating opportunities for research and reflection through dialogue and collaboration between universities in Africa and Asia. It may be visualized as an effort to form a network of like-minded African universities and research institutes to foster policy research on critical issues for basic education development in the respective African countries, which is peer-supported by Asian universities with inputs of their respective experiences and ideas. Seventeen (17) universities from 12 African countries and 13 universities from 6 Asian countries are now participating in the project (Please see Appendix 1). This project was initially conceived in 2003 by the Center for the Study of International Cooperation in Education (CICE) of Hiroshima University based on a series of consultations held with African education experts.[2] Since 2005, it has been implemented with the joint support of UNESCO, the Japan International Cooperation Agency (JICA), the United Nations University and Hiroshima University.

The primary motive behind this project was the realization that, in spite of the global commitment to achieve Education for All (EFA) and to search for new ways of ensuring that the efforts and improvements made in basic education are sustained, the actual pursuit of EFA is not being organized in an integrated fashion in all the countries concerned.[3] In many developing countries various levels of education were operating independently of each other. In particular, universities were making only a limited contribution to the development of the education sector, although they were the prime producers of the managers and teachers in the education system and the primary intellectual assets for exploring effective and efficient ways for basic education development. On the donor side also, the supporting role of universities was not visible, since their contribution often consisted of individual efforts which were not accompanied by institutional commitment and which were never internationally coordinated.[4] However, as universities are the apex of research and knowledge, they can undoubtedly play a crucial role in influencing change that is sustainable through identifying and releasing untapped resources for EFA, particularly in regions that are lagging behind.

The EFA Global Monitoring Report 2002 called for concerted efforts to enable sub-Saharan Africa to make substantial progress towards EFA goals. Five years later, the EFA Global Monitoring Report 2007 reports that some significant progress has indeed been made in this region in raising the net primary enrolment and reducing the number of out-of-school children. However, much more still remains to be done. According to the 2007 report, although the number of sub-Saharan African children entering grade 1 increased by more than 30% over the 1999-2004 period, the net enrolment rate for sub-Saharan Africa, which is 65%, is still the lowest of all regions. Moreover, less than two-thirds of enrolled children reach the last primary grade in a majority of these countries. The number of out-of-school children in sub-Saharan Africa also decreased from 43 million in 1999 to 38 million in 2004, but the latter still accounts for half of the world's corresponding total. As the access to basic education improves, serious questions are being raised about the adequacy of the quality of education provided. As mirrored by the prominent treatment given in the G8's Africa Action Plan, there is clearly an international consensus for continuing to focus the EFA campaign on the Sub-Saharan African region.

Higher education institutions in sub-Saharan Africa, however, are themselves faced with immense challenges. On top of the long-standing problems of quality and access and almost chronic deficiencies in financial, human and material resources, they are confronted with the possibility of being bypassed by the global wave of university reforms. They must now cope with the new demands of knowledge societies and global competition brought about by the rapid development of information and communication technologies (ICT).[5] However, there also seems to be a new wind blowing in support of African universities. Some studies carried out for international organizations indicate a shift in the international donor community to value the potential contribution of universities to development and to create an enabling environment for their role.[6] The new wave of ownership-partnership debate surrounding the New Partnership for Africa's Development (NEPAD), with its emphasis on a more self-reliant development approach by and for African countries, is suggesting a new role for African universities for intellectual leadership. As a manifestation of this new trend, a seminar held between NEPAD and UNESCO in 2003 recommended that UNESCO "should redouble its efforts in this [higher education] area, particularly advocating the role of this level of education in the strengthening of EFA and other levels of education (teacher training, management training)."[7] Most important of all, African higher education experts have themselves started raising 'African voices' and initiated dialogues among themselves concerning their experiences and views.[8]

Against this background, then, the present project may be said to represent an international initiative for encouraging the engagement of African university-based experts in collaborative research and dialogue in support of basic education development. It is a proposal based on a partnership approach. The international partnership approach has been argued before as a means of educational cooperation by various governments, such as the Swedish Government, [9]and international university-to-university partnerships have also been tried before.[10] What may be unique about the present project is that this partnership approach aims at covering more than 10 African countries and is peer-supported by Asian universities.

WHY AN AFRICA-ASIA UNIVERSITY DIALOGUE?

Why should this partnership project be designed as a peer dialogue between African and Asian universities instead of a more usual 'donor-recipient' partnership promoted by many Western donor countries involving their own universities? This may be explained by three key considerations that went into the design of this project. The first concerned how to make this a genuinely 'African-owned' project backed by 'autonomy-respecting' assistance. The second related to the possible benefit of experience-sharing in educational development. The third had to do with a practical question of elaborating a convincing technical cooperation framework for supporting the formation of an African university network for education policy research.

The starting point for understanding what is meant by project ownership and 'autonomy-respecting' assistance is to be cognizant of the way that African scholars perceive North-South cooperation in higher education. Their perception is that "African scholars become not partners or counterparts, but research assistants for the 'principal' researchers' from the North Atlantic universities... genuine cooperation between universities in the North Atlantic and those of tropical Africa will be possible only if the well endowed universities of the North are ready and willing to promote research and publication within and between African universities themselves".[11] There are two demands here – one explicit and the other implicit. The explicit demand is that the promotion of research and publication within and between African universities is desirable and desired. The implicit demand is that the African universities should have relative autonomy when they conduct research. The idea of 'autonomy-respecting' assistance may go a long way in accommodating both these requirements.[12] The former is really a question of how to define the project objective and outcome and is in line with the thinking of the initiators of the A-A Dialogue Project. The latter is a bit problematic since it involves the question of how to ensure that a promised output is delivered for the resources (i.e., tax-payer's money) mobilized. The solution proposed in the project has been to make the project process open and participatory to Asian universities, including Japanese universities, as 'peers'. Above all, this should help avoid the usual North-South mental fix of the African scholars.

The second consideration: the possible benefit of experience-sharing is derived from the global acclaim the East and Southeast Asian Countries received in the 1990s for the development of basic education[13] and the possible learning that may be drawn by African countries from this experience. The obvious experience to be shared should concern, among other things, what kind of role the Asian universities played in relation to the development of basic education in their respective countries. This question is of particular importance because it is generally known that the governments of these countries did not necessarily emphasize higher education in the early phases of development.[14] The scope of experience-sharing may extend to other comparative higher education concerns, such as access, relevance, influence of colonial and Western higher education, impact of globalization and ICTs. In designing the process of Africa-Asia university dialogue, much thought was given to the modality of experience-sharing.[15] As explained later, the project process involves bringing African university-based researchers to Asia for exposure to and learning about the Asian educational development experience, and for formulation of a

policy research scheme to be implemented upon return to their respective African countries. The impact of this exposure to a similar, but different, higher education development context should not be minimized since it would enable some of the researchers to think about educational development in their countries in a more self-reliant way.

The third consideration of how to elaborate a convincing technical cooperation framework is in reality a funding question. One of the instrumentalities for Japan's assistance to Africa is the Tokyo International Conference on African Development (TICAD) that is organized once every five years. One important strategic theme of TICAD since its inaugural meeting in 1993 has been the promotion of South-South cooperation between Asian and African countries. As the timing of the project formulation for the A-A Dialogue Project coincided with the convening of TICAD III (2003) support from the Japanese Government for the project could be obtained relatively easily by framing it as a South-South undertaking. The South-South Cooperation framework was also instrumental in negotiating the support of UNESCO, JICA and the UNU. The adoption of the South-South Cooperation approach also helped highlight the centrality of self-reliance as a guiding principle of the project.

THE PURPOSE, SCOPE AND MANAGEMENT OF THE PROJECT

A. PURPOSE AND OBJECTIVES

The principal purpose of the A-A Dialogue Project, as mentioned earlier, is to promote a self-reliant approach to basic education development in Africa by providing opportunities for research and reflection through dialogue and collaboration between universities and research institutions in Africa and Asia. The immediate objectives are the following:

1) To enable African universities, in cooperation with national education authorities, to plan and conduct research conducive to the development of basic education in their respective countries;
2) To network universities in selected African countries for the purpose of sharing experiences and strengthening each other in undertaking policy research for sustainable basic education development;
3) To further extend the network to include universities and research institutions in Asian countries in order to exchange experiences and views.

B. TIME FRAME AND PRINCIPAL ACTIVITIES

The Project is being implemented with an initial term of three years, ending in March 2008. The participating countries, especially from Africa, will then decide on whether or not to extend the project to a 2nd phase.

The principal activities of the project are: (i) undertaking a study mission to Asia by African university-based education experts with officials from national education ministries,

(ii) conducting policy research in participating African countries, and (iii) convening an African regional meeting for reflection and dialogue based on research results with the participation of Asian education experts. These activities, explained in the following paragraphs, are carried out on an annual cycle with four new African countries joining the project each year.

1) Study Mission to Asia by African University-based Education Experts with Officials of National Education Ministries

Each year, the project starts with a month-long study mission by 12 African education experts (4 national teams, each consisting of 2 university-based experts and 1 educational ministry official concerned with policy research). This mission is organized within the framework of JICA's technical training programme conducted in Japan. The mission's general objective is for each participant to develop a self-reliant perspective for basic education development. In addition, each national team is given a collective assignment to elaborate a policy research scheme of relevance to the national education ministry which the members should implement upon return to their respective counties.

The study mission starts with a programme of 3-day visit to an Asian country, other than Japan, organized by a higher education institution in that country. The African participants observe basic education practice and exchange experiences and views with their Asian university and ministry counterparts on education policy and research. After that, the group will travel to Japan for a 4-week programme with the support of Hiroshima University CICE, during which time they will observe and learn about Japanese education development practices, and engage in concentrated research work to develop policy oriented research in basic education and to prepare a work plan for implementing it once back in their countries. Asian university-based experts, especially from Japan, will interact with them in various ways. For example, they will be asked to contribute comments on the drafts of research schemes developed by the African participants. Towards the end of the programme, the group spends a week at the United Nations University Tokyo for final refinement of the research scheme.

The selection of participating African countries is a result of consultations and negotiations between different African countries and JICA. As shown in Appendix 1, 9 Anglophone and 3 Francophone African countries are participating in the project. The composition of each national team is left up to each participating country and is decided in different ways reflecting the varied relationship between the national education ministry and the university sector.

2) National-level Policy Research in Participating African Countries

Upon return to their respective countries, the participants in the study mission organize seminars to share the results of the mission with their colleagues, policy-makers, educational administrators and teachers. This seminar is used as an opportunity to establish a team of university- and ministry-based experts to re-examine and finalize the research plan and to launch the actual research work. Each national research team is engaged in the subsequent

months in conducting the research using the financial resources which were put at its disposal by JICA, UNESCO and Hiroshima University. The national teams are encouraged to mobilize additional domestic resources, for example, from the ministries' of education sources. Some teams have indeed managed to obtain such resources.

The national teams are free to choose the final topics of their studies as well as their research methods. The only requirements are that their studies should concern basic education development and that their research should be policy relevant. It is also highly recommended that they have the education ministries' clear endorsement for their studies. Once the research starts, the national teams are encouraged to keep the university colleagues, policy-makers, educational administrators and other stakeholders informed of the progress of their work. Hiroshima University CICE staff will make occasional visits to the national teams to keep track of the work being done by the national teams.

3) Regional Reflective Dialogue Meeting at Year's End

A reflective dialogue meeting is organized at the end of each year in order to share the results of the research work done among the participating countries and with the experts from Asian countries and supporting organizations. For Year 1 of the project, this meeting was held in Hiroshima, Japan, in November 2005. For Year 2 it was held in Kampala, Uganda, in November 2006. In Year 3, the terminal year of the initial 3-year phase, this meeting is tentatively scheduled to take place at UNESCO in Paris in December 2007.

C. ANTICIPATED OUTPUTS

The anticipated outputs of the project are as follows:

a) Research reports will be produced by national research teams on key policy issues in basic education development in selected African countries;

b) African education researchers and national education ministry officials participating in the Project will enhance their skills and knowledge in basic education through planning and through relevant policy research ; and

c) A space will be created for African education experts to dialogue among themselves and with Asian experts on the fundamental issues in basic education development and to explore more self-reliant and integrated approaches to the development of the education sector in their countries.

D. PROJECT MANAGEMENT AND FINANCE

This project is a joint initiative of UNESCO, JICA, UNU and Hiroshima University in support of research and dialogue on basic education development for African and Asian education experts in the universities and national education ministries. Hiroshima University CICE is functioning

as the secretariat for the project, assisting the participating universities to plan and conduct the national-level research, monitoring the development of research activities in the participating countries and organizing the reflective dialogue meetings.

The project activities are carried out with financial resources contributed by all the supporting organizations, complemented by the national education authorities in a few of the participating African countries. Given the relatively large funds needed to promote the exchange and dialogue among the participating African and Asian universities, and in order to allocate as much financial resources as possible to cover national-level research activities, the project is run in an compact and simple manner. The national teams are encouraged to combine their research efforts with related research activities being carried out by the universities and the national education authorities, in order to avoid duplication and to generate maximum impact on the research and policy process.

ACCOMPLISHMENTS SO FAR

The project is in the middle of its third and terminal year of its initial phase. Because of the project's 'not-so-conventional' features, such as Africa-Asia partnership, university-ministry combination in research team composition, supporting structure consisting of both bilateral and multilateral aid organizations, and autonomous conduct of national-level research, the project process tends to move slowly. Yet, certain positive outcomes are already beginning to emerge, which may be summarized as follows:

(i) Beginning of an Africa-Asia university network for policy research on basic education development

As shown in Appendix 1, 17 universities from 12 African countries and 13 universities from 6 Asian countries are now participating in the project. Although they are yet to meet together as a whole group, they form a community of research partners by electronic communication. The participating African university-based experts seem to value greatly the 'new' opportunity to interact with their Asian counterparts. To quote from the replies by a few African university researchers to a recent monitoring inquiry of the project:[16]

> "The participation of the critical friends from Asia was very good as it afforded the African researchers the opportunity to get their work critiqued by 'outsiders'." (Ghana)
>
> "The peer review suggestions made by the Asian researchers during the training we received at CICE were very relevant and contributed greatly to improving our research proposals and our approaches to doing research." (Burkina Faso)

> "The experiences were an eye opener on how basic education is implemented in the Asian countries. Also the critique of the research plans is worthwhile and valuable as they helped to give clear focus to the research plans." (Nigeria)

However, regarding the establishment of the African university network, more concentrated efforts seem to be needed, as indicated by the following comments:

> "There is a need to promote deeper and more sustained dialogue among the African scholars within the partnership. To promote inter-university collabouration within Africa through the research work of the partnership..." (South Africa)

> "It will be good to have comparative studies across Africa which can send signals to our governments and policy makers as to situations in other African countries so that good practices can be adopted and bad practices avoided." (Ghana)

(ii) Elaboration of 'African' policy research agenda for basic education development

The African research teams have had much liberty in pursuing different issues for policy research, including selection of topics. The only requirement they have is that the issue or topic to be selected is relevant to policy-making by the national education authorities so that the research done may have an impact on the government's education policy. To ensure this, each country has been asked to include an official from the education ministry who deals with education policy research in the group sent to Asia for the initial study mission and also to appoint ministry officials to take part in the work of the national research team.

The research topics actually selected by the national teams are quite diverse, as shown in Appendix 2. All twelve of them are concerned with the quality of education delivered. Five of them focus on issues relating to school or classroom practices, such as school's capacity for instruction, student-teacher interaction in a classroom setting, and 'good' classroom practices. Four tackle questions relating to teacher training and its impact on quality of education. Two of them deal with the question of quality linked to access issues, such as the extent and impact of HIV/AIDS education, especially for orphaned and vulnerable children, and the incidence of the urban-rural divide. One of the research topics attempts to investigate the relationship between various educational inputs and outcome through a quantitative analysis.

Together these topics may be said to represent African researchers' or Africa's concerns with the quality of basic education. Perhaps two of the 12 studies may be singled out to illustrate the uniqueness or originality of the underlying perspectives. One is the research that is being carried out by the Ugandan team on instructional strategies for large-sized classes.[17] In most developing countries over-sized classes, which affect the instructional quality of basic education, are a fact of life. While technical cooperation in basic education by donors tend to address the

quality problem by introducing teacher training for student-centred instruction, group work, or other instructional techniques such as the constructivist approach, which have been developed under more favourable student-teacher ratios in donor countries, the sheer large size of the classes in developing country schools may not permit such practices. The Ugandan team's empirical study has indicated that the teachers in oversized classes in Ugandan schools devise strategies to cope with these problems, but that there is still much room for improvement. Based on this realization, the team decided to direct their study on identifying ways to bring to bring about such improvement on the basis of literature study, empirical investigation and reflection of the study's findings in teacher professional development.

The other is the study on the impact of HIV/AIDS education sector policy in Kenya.[18]Although the Kenyan Government has made much progress in meeting EFA goals of universal primary completion, there are still areas with major shortfalls, one of which is the provision of education for the orphaned and vulnerable children (OVC). The Kenyan team's study takes the government's 2004 HIV/AIDS Education sector policy as its starting point and tries to identify gaps existing in teacher training for meeting the quality requirements of education for these children. The study uses a case study approach and investigates how teachers are coping with the needs of OVCs at the school level in areas with varying level of OVC incidence. The expected end product of the research should consist of guidelines for improving the implementation of the above-mentioned sector policy, including on how to empower teachers of HIV/AIDS education.

The intermediate research outputs generated by the various African national teams and the substantive contributions made by the Asian experts have been published as meeting reports.[19] The final or near final reports from the national teams which started their research in Year 1 and Year 2, as well as the reports on the results of field work form the Year 3 teams, will be presented during the third reflective dialogue meeting to be convened at UNESCO in Paris in December 2007.

(iii) Development of the experience-sharing model of technical cooperation for promoting a self-reliant development of the education sector in developing countries

The A-A Dialogue Project has not only provided an opportunity to the participating African and Asian universities to jointly develop a policy research network, but also engaged the supporting organizations in jointly implementing the experience-sharing model of technical cooperation. This model of cooperation rests on both the spirit and practice of autonomy-respecting support whose basic premise is that not only is the entire project conducted in a participatory way but the principal beneficiary of the project, the researchers and institutions participating in the network especially from the African countries, increasingly embody and actively promote self-reliant orientations for education sector development in their respective countries. Although such a demand may be a tall order for individual researchers or even for individual countries participating in the project, the multi-country networking character of the project may permit the development in the long run of collective self-reliance based on inter-university collaboration across borders.

DIFFICULTIES ENCOUNTERED

The 'non-conventional' features of the project mentioned earlier made initiating and further developing the project difficult. One difficulty that had been anticipated even before the initiation of the project, and which indeed became reality, was the administrative complication of effecting research fund disbursement from multiple sources to different types of bureaucratic machineries in different countries. Delays in research fund disbursement have occurred for many teams, which slowed down the progress of work. The fact that the amount of research funds provided to each team was limited (i.e., US$15,000~20,000 per team) also created some obvious difficulties for the teams, who elabourated a much larger scope for their studies. The subsequent adjustment required extra time.

Another 'anticipated' difficulty had to do with the distances involved in promoting networking activities – that is, distances in terms not only of geographical and economic distances but also cultural and linguistic ones. This, however, may become less of a constraint as time goes on.

A more serious difficulty, one that touches the key operating principles of the project, involved the inability in some countries to establish a solid working relationship between the university-based experts and the national education ministry officials in the form of a joint research team. In those countries where the national-level research undertaking coincided with the basic education reform by the government, there was no difficulty. However, in a few countries, where there is no established tradition of a working relationship between the ministry and the university, the project has become a test case and is subjected to various coordination problems and maladjustments in working modalities. Some African university-based experts expressed hesitation in moving 'too close' to the national education ministry because they were concerned about the autonomy of the university. In some other cases, the absence of a strong research tradition in education faculties or teacher training colleges hindered the establishment of a viable and credible research team. All these difficulties need to be tackled and solved in a practical way; the African participants in the project could perhaps learn how their Asian partners deal with such challenges.

Finally, the ultimate difficulty for the project participants, especially from the African countries, is to accept and practice a self-reliant approach as the central aim or guiding principle of the project. In reviewing the World Bank's policy shift to place greater emphasis on the support of higher education in developing countries in Africa, Samoff and Carrol warn: "additional funding may be available...with those funds, however, come both direct conditions and indirect influences on the evolution of higher education and on African society more broadly." Ironically, Africa's universities energetically seek those funds and thus become responsible for the internalization of their accompanying values, assumptions, and precepts, entrenching their own and national dependence. Foreign aid in that form can be enabling but not liberating.[20] Thus, the question concerns not only the financial autonomy of the researchers and institutions concerned, but also their general disposition. Difficulties in changing the latter can be detected in the way some African research teams operate. Regarding, for example, the ministry's not very

favourable attitude to the project, one African university-based researcher wrote in response to the monitoring inquiry from the project secretariat: "The A-A Dialogue Project presented a unique forum for Africans to meet and discuss on common problems, goals and aspirations. However, the programme seems not to enjoy the full commitment of participating African countries' governments. Please work on this aspect". The quote reflects the spirit of self-reliance.

THE WAY FORWARD

The A-A Dialogue Project is organizing a third reflective dialogue meeting tentatively from 10-12 December 2007 at UNESCO in Paris. This will be a forum at which the final or near final outputs of the national research teams in Year 1 Group (Ghana, Kenya, Malawi and South Africa) and Year 2 Group (Ethiopia, Niger, Tanzania and Uganda) shall be presented. In addition, the teams in Year 3 Group (Burkina Faso, Madagascar, Nigeria and Zambia) may present the intermediate results of the research or a progress report. Following this meeting, and after taking into account of all the discussions, comments and reflections, the research outputs will be compiled as a volume for publication by UNESCO sometime in the first part of next year.

The December Conference will also serve as a forum for the African and Asian participants and the representatives of the supporting organizations to discuss more broadly the way forward for the Project, including, in particular, how to organize its next phase. The replies to the monitoring surveys conducted with the project participants seem to indicate that there is a definite consensus for continuing the project with the same purpose and the scope of research and dialogue. Since the primary beneficiaries of the project are the African universities and their education researchers, their voices will determine the directions in which the project moves.

Notes

2 These experts included Dr. Juma Shabani (Director, Harare Office, UNESCO, Dr. N'Dri Assie-Lumumba (Professor, Cornell University) and Dr. Jonathan Jansen (Professor, University of Pretoria).

3 See, for example, N'Dri Assie-Lumumba, "The Role and Mission of African Higher Education: Preparing for the 21st Century and Beyond", *South African Journal of Higher Education*, Vol. 10. No. 2, 1996, pp. 5-12.

4 In October 2004, Hiroshima University CICE organized, jointly with the Association Liaison Office for University Cooperation in Development (USA), a dialogue of Japanese and American universities to discuss issues relating to the role of universities in educational cooperation for development. For details, please see its report entitled *Japan-United States Dialogue Seminar: Exploring the Role of Universities in Japan and the United States in Educational Cooperation for Development* (Washington, D.C., 2004).

5 World Bank, *Constructing Knowledge Societies: New Challenges for Tertiary Education*, Washington, D. C.: World Bank, 2002.

6 See, for example, J. Samoff and B. Carrol, *From Manpower Planning to the Knowledge Era: World Bank Policies on Higher Education in Africa*, UNESCO Forum Occasional Paper Series, Paper No. 2, Paris: UNESCO, 2003; and D.

Bloom, D. Canning and K. Chan, *Higher Education and Economic Development in Africa*, Washington, D. C., World Bank, 2006.

7 See UNESCO Africa Department, *Seminar -UNESCO and NEPAD: From Vision to Action*, Final Report, Paris: UNESCO, 2003.

8 C. A. Odora Hoppers, "African Voices in Education: Retrieving the Past, Engaging the Present, and Shaping the Future", in P. Higgs et al., *African Vices in Education*, Lansdowne, South Africa: Juta & Co., 2000, pp. 1-11.

9 L. Wohlgemuth, "Education and geopolitical change in Africa: a case for partnership" in K. King and L. Buchert, eds., *Changing International Aid to Education: Global Patterns and National Contexts*, Paris: UNESCO, 1999, pp. 153-165.

10 B. J. Tedrow and R. O. Mabokela, "An Analysis of International Partnership Programmes: The Case of an Historically Disadvantaged Institution in South Africa," *The International Journal of Higher Education*, Vol. 54, No. 2, pp. 159-179.

11 J.N.K. Mugambi, "Constraints of African Scholars in African Universities", in K. King (ed.), Knowledge Generation in Higher Education: New Challenges for North-South International Cooperation, Norrag News, No. 23, 1998, p. 41.

12 For a discussion of 'autonomy-respecting' assistance in education and of the underlying concept of self-help, see D. Ellerman, "Autonomy in Education and Development", *Journal of International Cooperation in Education*, Vol. 7, No. 1, pp. 3-14.

13 The 1993 publication by the World Bank of *The East Asian Miracle: Economic Growth and Policy* (New York: Oxford University Press) highlighted the contribution made by the early and sound development of basic education to high economic performance in these countries. A book edited by two prominent comparative education scholars, W. K. Cummings and P. G. Altbach, followed – *The Challenge of Eastern Asian Education: Implications for America* (Albany, NY: State University of New York, Press, 1997). Prof. J. Tilak, an authority on Asian education development, even called it 'Asian education miracle' ("Investment in Education in East Asia", *ASEAN Economic Bulletin*, Vol 9, Number 3, March 1993, pp.301-322).

14 See, for example, P. G. Altbach, "The Past and Future of Asian Universities: Twenty-First Century Challenges", in P. G. Altbach and T. Umakoshi, eds., *Asian Universiteis: Historical Perspectives and Contemporary Challenges*, Baltimore: The Johns Hopkins university Press, 2004; and H. Yee, *East Asian Higher Education: Traditions and Transformations*, Oxford, UK: Pergamon, 1995.

15 For a discussion of an experience-sharing model of technical cooperation, see M. Nagao, "Can Japan Be a Successful Mathematics and Science Education Teacher for Africa?" in M. Nagao et al. eds. *Mathematics and Science Education in Developing Countries : Issues, Experiences and Cooperation Prospects*, Chapter 13, Quezon City: University of the Philippines Press, 2007.

16 These quotes are from replies to a monitoring survey made by Hiroshima University CICE in July 2007 regarding the progress of work by the African research teams.

17 M. G. Goretti et al., "Instructional strategies for large classes: baseline literature and empirical study of primary school teachers in Uganda", in Centre for the Study of International Cooperation in Education, Hiroshima University, *Africa-Asia University Dialogue for Basic Education Development: The Second Reflective Dialogue Meeting Report* (November 15-17, 2006, Kampala, Uganda), Hiroshima, Japan, 2007, pp. 191-206.

18 S. J. Ruto, "Achieving EFA goals through quality basic education for OVCs: A study of the implementation of the HIV/AIDS education sector policy in Kenya – A presentation of the research findings: Bondo District", in Centre for the Study of International Cooperation in Education, Hiroshima University, *Africa-Asia University Dialogue for Basic Education Development: The Second Reflective Dialogue Meeting Report* (November 15-17, 2006, Kampala, Uganda), Hiroshima, Japan, 2007, pp. 33- 63.

19 Please see Centre for the Study of International Cooperation in Education, Hiroshima University, *Africa-Asia University Dialogue for Basic Education Development: The Second Reflective Dialogue Meeting Report* (November 15-17, 2006, Kampala, Uganda), Hiroshima, Japan, 2007; and Centre for the Study of International Cooperation in Education, Hiroshima University, *Africa-Asia University Dialogue Seminar Report: Experiences and Issues on Basic Education Development,* (February 27 – March 1, 2007, Hiroshima), Hiroshima, Japan, 2007.

20 Samoff and Carrol, op. cit., pp. 56-57.

APPENDIX 1: COUNTRIES/UNIVERSITIES PARTICIPATING IN THE A-A DIALOGUE PROJECT

AFRICA

Ghana	University of Cape Coast University of Education, Winneba
Kenya	Kenyatta University
Malawi	University of Malawi
South Africa	University of Pretoria
Ethiopia	Addis Ababa University Bahir Dar University
Niger	University of Abdou Moumouni University
Tanzania	Mzumbe University University of Dar es Salaam
Uganda	Makerere University Kyambogo University
Burkina Faso	University of Ouagadougou
Madagascar	University of Antananarivo
Nigeria	University of Lagos Bayero University, Kano
Zambia	University of Zambia

ASIA

India	National University of Educational Planning and Administration
Indonesia	Indonesia University of Education
Malaysia	Universiti Sains Malaysia
Thailand	Chiang Mai University
Vietnam	Vietnam National University, Hanoi
Japan	National Institute for Educational Policy Research of Japan National Graduate Institute for Policy Studies (GRIPS) Tokyo Gakugei University Osaka University Waseda University Naruto University of Education Kobe University Hiroshima University
Project Secretariat	Center for the Study of International Cooperation in Education, Hiroshima University, Japan

APPENDIX 2: RESEARCH TOPICS SELECTED BY THE AFRICAN NATIONAL TEAMS*

Ghana	An investigation of **provision of quality basic education** in Ghana: a case study of selected schools in the Central Region
Kenya	Achieving EFA through quality basic education for OVCs (orphaned and vulnerable children); a study of the **implementation of the HIV/AIDS education sector policy** in Kenya
Malawi	An investigation into the **relationship between educational inputs and rates of achievement** at the basic education level in the South Western Educational Division in Malawi
South Africa	(De)Constructing the **capacity for quality instruction in science, mathematics and language teaching and learning** in primary school
Ethiopia	Enhancing active **learning through teachers' peer and self reflections** in selected primary schools in Ethiopia
Niger	Achieving quality in basic education through **improvement of the training of trainers in teacher training schools** in Niger
Tanzania	**Capacity of school management for teacher professional development** in selected primary schools in Tanzania
Uganda	**Instructional strategies for large classes**: empirical study of primary school teachers in Uganda
Burkina Faso	Identifying and analyzing **good classroom practices in primary schools** in Burkina Faso
Madagascar	Analysis of factors that explain the **non-completion of the curriculum**
Nigeria	**Teacher training quality and effectiveness** in the context of basic education: a case study of the Federal College of Education, Kano State of Nigeria
Zambia	**Quality of basic education provided by rural community schools** in the Northern Province of Zambia

Notes

* Underlining is by the author of this paper.

Narciso Matos

Executive Director, Foundation for Community Development, Mozambique

Narciso Matos is the Executive Director of the Foundation for Community Development in Mozambique. He studied at Eduardo Mondlane University (UEM) in Mozambique and Humboldt University in Germany, and has worked at several academic and administrative levels at the former institution. He was Dean of the Faculty of Science, and from 1990 to 1995 was Vice Chancellor. He served as a member of Mozambique's Parliament from 1986 to 1995, five of those years in the Parliament's Committee for International Relations. From 1995 to 2000, he was Secretary-General of the Association of African Universities and was also member of the Advisory Group on Higher Education for the Director-General of UNESCO. From 2000 to 2007, Matos was Programme Director of the International Development Programme at Carnegie Corporation of New York where he oversaw the foundation's work in sub-Saharan Africa with a focus on strengthening higher education in select African universities, enhancing women's opportunities in higher education, and revitalizing public and university libraries.

Supporting Selected African Universities - The Experience of the Partnership for Higher Education in Africa

Narciso Matos, Executive Director, Foundation for Community Development, Mozambique. Panel Discussion at the Conference Pathways Towards a Shared Future, UNU-UNESCO, Tokyo, 29-30 July 2007

1

UN Millennium Development Goals By 2015…

- Goal 1: Eradicate poverty & hunger - halve proportion of people living on less than $1 a day
- Goal 2: Achieve primary education - children everywhere…will…complete primary schooling.
- Goal 3: Promote gender equity – eliminate gender disparity in ...all levels of education

2

UN Millennium Development Goals By 2015…

- Goal 4: Reduce child mortality - reduce by 2/3 under-five mortality rate.
- Goal 5: Improve maternal health - reduce by ¾ maternal mortality ratio.
- Goal 6: Combat disease – halt and begin to reverse spread of HIV/AIDS.

3

UN Millennium Development Goals By 2015…

- Goal 7: Ensure environmental sustainability – integrate…sustainable development into country policies … halve proportion of people without …access to safe drinking water and basic sanitation.
- Goal 8: Develop global partnership – …. make debt sustainable in the long term.
- http://devdata.worldbank.org/atlas-mdg/

4

Higher Ed in Mozambique

- Population: 21 million
- HE Institutions: 12
  - » Universities: 3 Public + 2 Private
  - » Polytechnics: 3 Public + 4 Private
- HE Students: 30,000
- Primary Education (1-7): 4 million students
- Enrolment rate: 29%

5

Moz's Efforts To Meet the MDGs

- Expansion of school system
  - – Need school teachers, review educational content and improve quality
- Expansion of health system
  - – Need doctors, nurses, lab technicians, other HR
- Decentralization of public administration to rural areas
  - – Need civil servants, governors, district administrators, police officers, etc.
- Building roads, schools, hospitals
  - – Need architects, engineers, environmental experts

6

Moz's Efforts To Meet the MDGs

- Building 2 new universities and 3 Polytechnics
- The Polytechnics: 120 fresh students per year each
- Their annual budget (2007): $1,280,000
  - Recurrent costs: $280,000
  - Salaries and benefits: $440,000
  - Capital investments $560,000
- Goodwill & Commitment – Few Resources:
  - Lack of skilled people, opportunity for peer learning and networking
  - Lack of facilities, equipment, books, journals
  - Lack of money

7

Challenges Facing Africa's Higher Ed

- Cope high demand for HE, rapid expansion
  - Demand for HE has weak correlation with economic growth
  - Brazil: 1 additional year of schooling in average leads to 11% increase in salary
- Balance expansion with quality and relevance
  - Too little if any research carried out
  - Predominant rote-learning and memorization
  - Little context-relevant and indigenous content
- Balance demand for university to be instrument of development – preserve core characteristics of university
  - Research and knowledge production
  - Academic freedom: unconstrained creation and probing of ideas

8

Globalization Opportunities and Threats

- Market forces are opportunity and threat
  - Fee-paying and evening students – generate income without neglecting quality, research and outreach
  - Introduce responsive programs: informatics, law, business, etc. – without neglecting natural sciences, humanities,social sciences
- ICT revolution is opportunity and threat
  - Give access to information and networks
  - Due to cost it widens the digital divide
- Mobility of workforce is opportunity and threat
  - Brain drain and lost of skilled professionals
  - Collaboration with experts from better endowed places

9

Alternative Strategies for HE Training

- Network Model: networks of scholars, research groups, innovative centers (AERC, USHEPIA, RISE, etc)
- The "Indian Model": Create advanced S&T centers (e.g. Nelson Mandela Institutes of Technology)
- National versus Regional: Decide training that can and must be offered within national borders
- Training "overseas": costs, relevance, brain drain

10

Support to HE in Africa
Data Base 2000-05 ($Millions)

Organisation	Funding	Projects
World Bank	259.2	28
Netherlands PPET	140	14
PHEA	135	638
Swedish IDA	124.9	7
European Union	110.8	7
Japanese International Cooperation Agency	85	7
Canadian IDA	72	32
Norwegian OFA	70	42
US Aid	17.2	84 (1.3Billion)
UK DfID	10	5
Germany (DAAD)	10	12

11

Patterns of Support to HE

1. Lack of Support for Developing HE
   - **Particularly Institution Building/ Research**
2. Projectization
   - **Lack of Focus/Coherence/Continuity/Learning**
3. Strong Convictions, Weak Evidence
   - **HE is not object of study to inform development**

12

Partnership For Higher Education in Africa
Foundations & Countries

- Goal: Strengthen higher institutions and their contribution to national development
- Member Foundations: Ford, MacArthur, Rockefeller, Mellon, Hewlett, Kresge, Carnegie

13

Activities of Individual Foundations

- ICT equipment & applications & training
- Fellowships for Masters and PhD training
- Library automation, books, journals, training
- Fund-raising, alumni relations, research administration
- Curriculum (re)design
- Research, community service, incubation of SMEs
- Staff mobility, participation in conferences and networks
- Women in HE: in governance of HEI, gender in curriculum and university regulations

15

Joint Partnership Initiatives

- Forum of Leaders of African Universities
- Higher Education Research and Studies
- Regional collaboration for research and training
- Access to electronic information: bandwidth and e-learning

16

Partnership Grant-Making $Millions

Type of Grants	2000 –2005 (5 year goal $150 million)	%	2006 – 2007 (5 year goal $200 million)	%	
Joint Partnership	2	12	9	15	
Individual Foundations	152	88	53	85	
Total	173		62		

17

WORKSHOP SESSION 1 RESEARCH FOR INNOVATION AND HUMAN AND SOCIAL DEVELOPMENT

204-209
WORKSHOP 1 REPORT

Presenters:

Hebe Vessuri, Senior Researcher and Head, Department of Science Studies, IVIC, Venezuela and Vice-Chair, Council of UNU

Luc Soete, Director, UNU Maastricht Economic and Social Research and Training Centre on Innovation and Technology

Shinichi Yamamoto, Director and Professor, Research Institute for Higher Education, Hiroshima University

Hiroyuki Yoshikawa, President, National Institute of Advanced Industrial Science and Technology

Mohamed H.A. Hassan, Executive Director, the Academy of Sciences for the Developing World

Mary-Louise Kearney, Director of the Secretariat of the UNESCO Forum on Higher Education, Research and Knowledge

Chair:

A.H. Zakri, Director, UNU Institute of Advanced Studies

Coordinator:

Balakrishna Pisupati, Research Fellow and Team Leader of the Biodiplomacy Programme, UNU-IAS

Rapporteurs:

Wendy Elliot, Junior Professional, UNU-IAS

WORKSHOP 1 REPORT: RESEARCH FOR INNOVATION AND HUMAN AND SOCIAL DEVELOPMENT

In response to the topic "*Research for Innovation and Human and Social Development*", the workshop participants identified a vision, several available options and recommendations for achieving the vision.

Vision: To achieve sustainability through: a) access to knowledge, which is viewed as a global common good; increased investment in research and development and maintaining high research standards; and a focus on global problem solving, looking at issues such as climate change, millennium development goals (MDGs) achievement, and intercultural and cross discipline dialogue.

This vision can be achieved through several 'pathways'. These include:

- Enhanced and synergistic collaboration;
- Research diversification and promotion of multidisciplinary approaches;
- Locally relevant research with local scientists and international expertise;
- Prudent policy guidance for scientific research.

To achieve 'a shared sustainable future', several options for policy makers, educators and scientists are available. These include:

- Rethinking research with a move towards strategic research;
- Conducting new evaluations of quality research and redefining disciplines where necessary;
- Applying innovations across disciplines and reviewing their application in different contexts;
- Linking knowledge to action – identify where and how science and technology has solved practical human and social problems;
- Understanding the importance of cutting edge technologies and their role in achieving the MDGs;
- Identifying and disseminating best practices (this could be done by multilateral agencies);

- Providing incentives to retain national and local expertise and engaging them in solving real-life problems;
- Creating global recognition for 'practical scientists';
- Promoting South-South cooperation where different research groups work together on specific problems;
- Establishing a global approach to sharing scientific information that ensures equitable access;
- Increasing the participation and diversity of stakeholders in policy decisions regarding research and its applications;
- Providing clear government policies which supports research and development (R&D) especially in developing countries; and
- Systematically or programmatically addressing the challenges of R&D versus implementing only project based short-term approaches.

In light of current global and local challenges for human and social sustainable development, it is imperative that research and training consider the benefits of inter-disciplinarity. Thus, several recommendations include:

Recommendation 1: Develop new types of training methodologies and capacities for research applications

- Conduct assessments of what is required for development of research applications;
- Redefine research disciplines to support multi-disciplinary approaches;
- Consider re-orienting educational systems.

Recommendation 2: Link high quality science to relevant local level applications (e.g. how can nanotechnology and biotechnology be applied to local problem solving).

Recommendation 3: Emphasize socially relevant research and national evaluation systems

- Socially relevant research should be prioritized and scientists encouraged to engage in problem solving;
- National systems of evaluating research and its application should be attuned to social needs.

Recommendation 4: Encourage collaboration between (i) industry and research institutions, (ii) South-South and North-South institutions, and (iii) multilateral institutions

- Industry, research and higher education institutions should look at how their collaboration, research and products can 'service the poor' in a manner that internalizes costs;
- Research institutions should look at different approaches to common problems and share in the lessons, best practices and replicable solutions;
- Multilateral institutions should collaborate when addressing local or national issues, and at the national level multi-stakeholder problem solving should be encouraged.

Recommendation 5: Academies of science and scientific communities should provide evidence-based advice to governments to inform policy making.

WORKSHOP SESSION 2: EDUCATION FOR DEMOCRACY, DIALOGUE AND PEACE

210-216
WORKSHOP 2 REPORT

Presenters:

Emile Rwamasirabo, Ambassador Extraordinary and Plenipotentiary, Republic of Rwanda

Kazuo Takahashi, Visiting Professor, UNU

Deepika Udagama, Head, Faculty of Law, University of Colombo, Sri Lanka

Gabriela Warkentin de la Mora, Director of the Department of Communication and UNESCO Chair in Communication, Universidad Iberoamericana, Mexico

Chair:

Yozo Yokota, Special Adviser to the Rector, UNU

Coordinator:

Vesselin Popovski, Senior Academic Programme Officer, Director of Studies on International Order and Justice

Rapporteur:

Morten B. Pedersen, JSPS-UNU Postdoctoral Fellow

WORKSHOP 2 REPORT: HIGHER EDUCATION AND PEACE, DEMOCRACY & DIALOGUE

Workshop 2 focused on the role of Institutions of Higher Education (IHEs) in furthering peace, democracy and dialogue. The main part of the discussion centred on the responsibility of IHEs to foster a culture of peace, democracy and dialogue among students and the wider society. Additional comments explored the importance of research in helping identify and elucidate the conditions for peace and democratic governance, including the relationship between them. In order to shed light on these general questions, the four speakers each provided a case study from his or her own country (Rwanda, Japan, Sri Lanka, Mexico), all of which have their own unique features when it comes to the topics in question.

SUMMARY

Ms. Warkentin began the proceedings by outlining a general model of education for peace, democracy and dialogue drawn from her own experience in Mexico, and Latin America more broadly. In exploring how IHEs can help foster a culture of peace, democracy and dialogue, she identified two key elements, those of "experiencing otherness" and "communicating differences." The experience of otherness is crucial since "knowing that there are others around us, who think differently, live differently, and hold different perspectives in life, and being able not just to cohabitate with them, but actually live with them, is a condition *sin qua non* for talking about peace, dialogue and democracy." Just the recognition of otherness is not enough, we also need to find ways of challenging the established communication patterns that compound differences and exacerbate conflict. A discourse oriented towards peace, Warkentin argued, "explores conflict formation, gives voice to all parties, makes conflict transparent, focuses on the invisible effects of violence, exposes untruths on all sides, and highlights the aftermath: resolution, reconstruction, reconciliation." In sum, it presents a more holistic and complex narrative, devoid of sheer antagonism of those in direct confrontation. This is not simply a matter of adding new subjects to the curriculum, but as Warkentin highlighted, "what we are talking about is not a content someone can learn; it is a way of living, of understanding society; it is an experience."

Each of the other speakers reflected and expanded on these and related themes from his or her own perspective and experience. Ambassador Rwamasirabo shared a hopeful experience from Rwanda where in the aftermath of the 1994 genocide the National University of Rwanda undertook a major new programme on peace education. In line with Ms. Warkentin's thinking, this programme combined new, targeted course work with wider experiences. Initiatives thus included a revision of admission policy to recruit a diverse student population based on merit alone; introduction of a new foundation course for all first year students aimed at developing

critical thinking, including initiation to philosophy, psychology, history of Rwanda, ethics and Rwandan culture, with a focus on tolerance, human rights and reconciliation; involvement in national reconstruction through research on such issues as justice and constitutionalism; and the active involvement of the student population in university governance based on democratic practices. Students were also encouraged to engage with the wider community outside the campus through outreach activities focusing, for example, on HIV/AIDS. The Ambassador described a student population which enthusiastically embraced these activities (although he also observed that the staff felt less compelled to participate as existent incentive structures did not reward it).

Professor Udagama's dissection of the Sri Lankan higher education system, by contrast, painted a much more sobering picture of the ability of IHEs to promote peace, democracy and dialogue. Sri Lanka is a long-standing democracy with a well-developed education system and high literacy rates, yet the country has suffered debilitating internal violent conflicts for more than three decades. According to Udagama, Sri Lanka IHEs have done little to overcome this paradox and may indeed have contributed to it. Our education system, she argued, is too much oriented towards the job market – "the creation of good citizens who are socially sensitive and posses requisite skills of upholding democracy and pluralism is almost thought of as a post-script." There is too much emphasis on "hard" subjects such as natural sciences, English and information technology, at the expense of the humanities and social sciences; teaching methodologies fail to encourage free thinking and active participation by the student; and the promotion of schools with mono-ethnic identities only deepen existing cultural divides, reinforcing mutual suspicions and stereotypes. Clearly, these traits contrast sharply with the models of education for peace, democracy and dialogue proposed by Wakintin and Rwamasirabo. "The education system", Udagama thus concluded, "which should be a bridge-builder, promoting mutual understanding and respect has, on the contrary, become a dividing factor. [It] has failed in fostering a democratic and pluralistic ethos among the recipients of education. This failure is due to the lack of emphasis put on both values and concomitant skills. The system therefore has failed to produce a citizenry that could contribute to the resolution of serious political and socio-economic problems."

Speaking last, Professor Takahashi provided an important counter-perspective. While sharing the belief of his three colleagues that IHEs *can* and should contribute to a culture of peace, democracy and dialogue, he pointed out that there are inherent tensions, too, between higher education and these values. Higher education, for example, will tend to sharpen differences over such issues as national history and social justice – the more education, the more seeds of conflicts. Furthermore, exposure to differences may simply enhance group identity and reinforce us-them attitudes. These observations pointed to a key conclusion, supported also by the case studies, that promoting a culture of peace, democracy and dialogue, while crucial, is an immensely difficult challenge where effects can be difficult to trace, few activities are unambiguously positive, and resistance among key stakeholders can be strong.

The role of research for peace, democracy and dialogue received less attention in the workshop than that of the education and socialization of students, reflecting the personal background and interests of the speakers. However, some salient observations were made regarding the need for further exploration of the conditions for, and associations between, peace, democracy and dialogue: Takahashi pointed out that liberalist assumptions of a close link between peace, democracy, and dialogue are problematic and needs to be much further discussed and explored. Warkentin and Ugadama both confirmed this, providing practical examples of how democracy in neither Latin America, nor Sri Lanka has led to peace. Indeed, in Latin America, workshop participants were told, recent surveys have shown that a majority of people today say they would give up democracy if it would bring better governance and socio-economic prospects.

Related to the first point, several speakers commented on the complexity of the concept and reality of peace, which embraces a wide variety of situations and processes. It is very difficult, Warkentin emphasized, to talk about peace in Latin America in general terms. Some countries have experienced open wars; some have political conflicts; some are experiencing ravaging insecurity that encompasses street and organized crime. Peace is therefore not easily defined – historical circumstances have to be considered, ideological frameworks have to be reviewed, social horizons have to be outlined. Rwamasirabo made a similar point, highlighting the many forms of violence facing societies – war, ethnic hatred, sexual abuse, political persecution, racism. "The understanding of the concept of peace," he concluded, "let alone the way to educate people about peace, is so diverse that is impossible to have a one-size-fits-all model of peace education."

Finally, while none of the speakers provided solutions as such to any of these "riddles", Rwamasirabo offered at least an entry point, by pointing to the value of the concept of human security as an organizing principle for thinking about and constructing peace. This is not a novel idea, of course, but one that clashes with liberalist assumptions of the primacy of politics. Importantly, it resonates with the experience in many countries where peace and democracy have broken down or are being eroded in the face of continuing poverty and human rights abuses.

RECOMMENDATIONS

Participants in the workshop strongly advocated for a serious dialogue among policymakers, academics and students regarding the role of IHEs in promoting peace, democracy and dialogue, especially in conflicted societies. For this purpose, they offered a number of general propositions:

- Universities need to be more socially engaged. They should not be ivory tower institutions, but be actively involved, through teaching as well as research, with the broader society in exposing and debating the problems of the day and finding workable solutions.

- Universities need to actively promote a culture of peace, democracy and dialogue among its students. Such a culture cannot simply be taught; it must be experienced. This requires attention not only to the content of courses, but also to the methods of teaching and the broader experience of university life. More students should be offered a broad liberal arts education, with greater focus on the humanities and social sciences and space to follow their curiosity. The classroom should offer an experience in diversity, dialogue and democracy. Students need to be encouraged to participate and to relate critically to their teachers, the media and other "authoritative" sources of information and analysis. There is a need also for more interaction with the wider community, through outreach, internships, etc. Students should be exposed to how people live, and learn to respond to real life problems and situations. In sum, the overall experience of university must be one of diversity, equality, and democracy.

- More field research is needed on the notions of peace and democracy in concrete cases, the processes that lead to and sustain these values (or the opposite), and the relationship between them. Priority areas for inquiry include the validity of dominant liberal assumptions about the association between peace, democracy, dialogue and indeed education; the role of the state, the media and other powerful groups in manipulating social discourse; and how to deal with the problematic nature of "reality" and "truth", which, as beauty, is in the eye of the beholder.

- In order to ensure that both students and staff actively engage in these areas, admission criteria and incentive structures should be revised accordingly to attract and encourage those who exhibit the required qualities. In addition, since international financial institutions and other donors, through the funding of particular programmes and scholarships (and not others), play a crucial role in shaping the content and structure of higher education in developing countries, they should be urged to support education and research for democracy, peace and dialogue.

WORKSHOP SESSION 3: INTERCULTURAL LEADERSHIP AND CHANGE

218-223
WORKSHOP 3 REPORT

Presenters:

Ingrid Moses, Chancellor, University of Canberra and former Chair, Council of UNU

Pornchai Mongkhonvanit, President, International Association of University Presidents and President of Siam University

Mona Taji, Higher Education Specialist, Higher Education Reform for the Knowledge Economy Project

Andrei Marga, Professor of Contemporary Philosophy and Logic, Babes-Bolyai University, Romania, Member, Council of UNU

Salah Hannachi, Ambassador Extraordinary and Plenipotentiary, Republic of Tunisia, Dean of the African Diplomatic Corps

Chair:

Jairam Reddy, Director, United Nations University International Leadership Institute

Rapporteur:

Nicholas Turner, Research Assistant, Peace and Governance Programme, UNU

WORKSHOP 3 REPORT: INTERCULTURAL LEADERSHIP AND CHANGE

- There are many benefits, and challenges associated with intercultural leadership and globalization, but we cannot escape it.
- There are divisions between those who can access the Internet and those who cannot.
- We must balance the economic and socio-cultural aspects of globalization.

UNIVERSITIES IN THE MODERN WORLD

- New pressures for universities include the following: funding which used to be provided by the state must now be found through private sources, which is excluding many of the poorer students.

- Universities are now primarily concerned with making money/attracting international students. Organizations are now seen as "organisms" rather than "machines" – acknowledging networks, communities, knowledge and learning systems.

LEADERSHIP

- There is leadership at every level of society – family, friends, groups, student unions, faculty, etc.
- Leadership is difficult, both within and between cultures – and has been greatly complicated by globalization.
- There are over 800 definitions of leadership.
- There are many bosses and managers, but very few "leaders".
- "We are over-managed, and under-led."
- Positions do not create leaders – leaders are the result of a learning process.
- Leadership is inseparable from values (much more so than management).
- Leaders must drive change (is this an obligation?) and if this change is to be intercultural, the leaders must have intercultural understanding and the needed competencies.
- Institutions provide leadership and training opportunities for leaders.

CULTURE

- The concept of culture is complex (multiple levels, identity, religion, etc).
- Culture not only refers to individuals, but to the total experience of groups.

- We must learn about cultures, we must understand cultures, and co-exist with and embrace different cultures. In this context, communication does not just mean information, but it means understanding of the other. There must be interaction with the other – we become partners in solutions of problems.
- Identity is flexible and situational.
- We must go beyond a superficial understanding of culture.
- When properly managed, cultural diversity becomes an asset rather than a liability.

PATHWAYS TO A SHARED FUTURE

- We must not only accept cultural differences, we must know and understand them.
- Encouraging intercultural fluency – just as we encourage fluency in languages.
- Higher Education Institutions (HEIs) must benefit from under-utilized pools of human talent and experience.
- Development and change must benefit all – but especially the most disadvantaged.
- Where is the starting point for reform? – Organizations are naturally resistant to change.
- Intercultural competencies must be part of university programmes.
- HEIs must be profitable and sustainable.
- Universities must set an example and educate future leaders.
- Perhaps there should be mandatory courses for intercultural competence (for leaders and for students).
- Curricula for intercultural leadership courses must include ethics.

POLICY RECOMMENDATIONS

- We must emphasize the centrality of culture in debate, acknowledging "taboo" subjects such as religion and philosophy.
- Intercultural training for leaders, including practical training and ethics, to promote intercultural leadership.
- Integrate the values of intercultural involvement into the mission statements, policies and curricula of universities, as instruments to achieve change.

ATTRIBUTES

- Teamwork
- Communication skills
- Problem solving
- Critical thinking
- Intercultural literacy

VALUES (CURRICULUM IS THE INSTRUMENT FOR PROMOTING THE VALUES NEEDED)

- Recognizing and Using Diversity
- Languages
- Ethical values
- Dignity of Human Beings

WORKSHOP SESSION 4: EDUCATION FOR SUSTAINABLE DEVELOPMENT

224-230
WORKSHOP 4 REPORT

Presenters:

Carl Lindberg, Special Advisor to the Swedish National Commission for UNESCO on Education for Sustainable Development, Sweden

Dzulkifli Bin Abdul Razak, Vice Chancellor, Universiti Sains Malaysia

Ryokichi Hirono, Professor Emeritus, Seikei University

Eun-kyung Park, Director, RCE of Yonsei University

Antoni Giró i Roca, Rector, Technical University of Catalonia and President, Global University Network for Innovation

Antonio Augusto Dos Santos Soares, Manager, Distance Education Programme for Sustainable Development, Banco do Brasil

Charles Hopkins, UNU-Chair; UNESCO Chair; Professor, York University

Chair:

Maria C.E. (Rietje) van Dam-Mieras, Chair, Natural Sciences, Open University of the Netherlands; Visiting Professor at UNU on Education for Sustainable Development

Coordinators:

Katsunori Suzuki, Senior Visiting Fellow, UNU-IAS and Yoshihiro Natori, Senior Fellow, UNU-IAS

Rapporteur:

Yoko Mochizuki, ESD Specialist, UNU-IAS and David Mutekanga, JSPS-UNU Postdoctoral Fellow

WORKSHOP 4 REPORT: EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

INTRODUCTION

Sustainable development can be described as development that results when people can live together in peace, dignity and mutual respect on one planet without causing irreversible damage to it by their production and consumption patterns. In order to make sustainable development a societal core objective we have to enter a joint process of change at a global scale. What sustainable development should look like and what has to be learned is determined by the problems on the one hand and by national and regional ecological, socio-economic and cultural conditions on the other hand. In other words: sustainable development has many faces and there is not one single recipe.

PRESENTATIONS AND DISCUSSIONS

Workshop 4 focused on the role of higher education institutions (HEIs) in promoting ESD and how it can be understood as a process taking place in formal, non-formal and informal learning environments and continuing life long learning. Carl Lindberg discussed the background and process of the United Nations Decade of Education for Sustainable Development (UNDESD), the European response to UNDESD and ESD in Sweden. The policy recommendations of this presentation were that parties that endorsed the UNDESD in Johannesburg in 2002 should take responsibility. For governments, this means using appropriate instruments to stimulate the implementation of UNDESD. For universities, taking responsibility implies making action plans, organizing activities across different disciplines, and appointing a group of people to take responsibility for these activities.

Antonio Gino I Roca discussed how UPC, the Technical University of Catalonia, is taking responsibility for sustainable development in society. He also stated that an interdisciplinary approach and interaction between universities and socities is needed to promote sustainable development. UPC is taking advantage of the Bologna process to design and implement new curricula in which sustainable development is a compulsory element in all programmes.

Dzulkifli Bin Abdul Razak described the important role ESD plays in the strategies and operational plans of Universiti Sains Malaysia (USM) in Penang. Both the interaction with regional stakeholders and international networking are important aspects. The involvement in the global RCE network is considered important as it can constitute a driving force for

transforming educational policies and education through transdisciplinary cooperation with regional stakeholders. The policy recommendations emerging from these two presentations are that explorative co-operation at inter- and trans-disciplinary levels can contribute to creating a new world view that sustainable development is a 'must', and that this in turn will constitute a driving force for innovation of education.

Ryokichi Hirono described experiences with ESD in Japan. He also touched upon the important role the RCE initiative of UNU can play in that context and on the importance of inter-university networking in the Asia Pacific Region. ESD can be seen as a catalyst for changing not only the educational vision, goals and infrastructure via a participatory process with local stakeholders, but also the role of HEIs in community, local and national development in favour of sustainability. The policy recommendation is that parties involved, especially HEI, should eliminate institutional barriers and generate ressources in order to continue the process of change.

Eun-Kyung Park discussed ESD in Korea and she also stressed the diverse approaches needed to promote ESD in different educational sectors in Korea. University level activities (in which both students and professors are involved) and RCEs can play an important role in awareness-raising. The policy recommendation was that less top-down regulation by the government and more bottom-up activities through regional participatory process should be encouraged.

Antonio Augusto Dos Santos Soares discussed how the Banco do Brasil is committing itself to the new agenda of sustainable development working from a "triple-bottom-line" perspective. In its Regional Sustainable Development (DRS) Programme, the Banco do Brasil evaluates social and environmental impacts of small businesses it supports via micro-credit and other capacity development activities. The Bank also evaluates the performance of the businesses it supports in order to ensure that the DRS Programme contributes to income generation, capacity development and improvement of quality of life in rural areas. The policy recommendation is that investments in ESD in all programmes by all parties, not just the state, should be stimulated.

SUMMARY OF POLICY RECOMMENDATIONS

It is recommended that:

1. All parties including higher education institutions that endorsed ESD in Johannesburg in 2002 should take responsibility for implementing it via appropriate instruments at their disposal.

2. To deal with societal complexity, inter– and trans-disciplinary approaches are needed in education and such ESD focused approaches should be compulsory in all curricula.

RECOMMENDATIONS FOR HIGHER EDUCATION INSTITUTIONS (HEIS):

- University authorities should draw up action plans to ensure that education is indeed characterized by a sustainable development (SD) perspective.

- The boards of the faculties should assume responsibility for mainstreaming SD/ESD into all educational programmes. This should be done through a participatory process involving students and student organizations.

- The boards of the faculties should improve opportunities for all members of the university community, including students, to become competent in SD and to engage with the (local) civil society.

- The university managements should create an organization/organization structures with a cross-disciplinary mandate to promote ESD activities.

- The universities should engage in joint learning experiences/create strong partnerships with companies, governments, NGOs etc. on SD/ESD.

- HEIs should become models of SD, not only in what is taught, but also in how all university activities are carried out, i.e., purchasing policy, campus greening, employment policy, and other issues involving environmental and equity concerns.

- The boards of the faculties should earmark development funds in order to achieve the above objectives.

- RCEs should be promoted as they can function as incubators for the innovation of HE to better meet the demands of a globalized, complex society.

- Governments should create frameworks so that the creativity and flexibility of HEIs to meet the needs of civil society to progress towards SD can flourish.

- Cultural and ecological diversity and wisdom should be considered and respected as a rich source of inspiration that should not be suppressed.
- UNESCO and UNU should lobby for national support of ESD and RCEs as an effective instrument to promote ESD, via National UNESCO Commissions, UNU research and training centres and their bi- and multilateral relations with governments and HEIs.

WORKSHOP SESSION 5: ACCESS AND SUCCESS

232-243
WORKSHOP 5 REPORT

Presenters:

Goolam Mohamedbhai, President, International Association of Universities

Mala Singh, Executive Director, Higher Education Quality Committee of the Council on Higher Education, Pretoria, South Africa and Vice Chair of the Regional Scientific Committee for Africa, UNESCO

Paulo Speller, Political Scientist; Rector, Federal University of Mato Grosso, Cuiabá

Masafumi Nagao, Professor, Center for the Study of International Cooperation in Education, Hiroshima University

Chair:

Eva Egron-Polak, Secretary-General, International Association of Universities

Coordinator and Rapporteur:

Christina Lloyd, Head of Teaching and Learner Support, Student Services, the Open University, UK

WORKSHOP 5 REPORT: ACCESS AND SUCCESS

INTRODUCTION

After welcoming the participants to the workshop on Access and Success, the Chair indicated that first she would invite all four presenters to make their presentations and to devote all of the afternoon to discussion. The workshop had before it, the difficult task of focusing most particularly on answering the *'How'* question. How, with what measures, policies and actions do we meet the challenges and imperatives of both access and success in higher education? It should be noted that the title of the workshop was adjusted to Access *with* Success in Higher Education later in the day in recognition of the inextricable link between the two concepts.

Participants were urged to look at the multiple dimensions of the Access and Success topic within the context of: an emerging knowledge society, as key to individual empowerment, but also as a requirement for social cohesion and for economic development. In drawing up recommendations, participants were reminded to focus on the overall theme of the conference – searching for 'paths towards a shared future'. Finally, it was all agreed that when drafting recommendations, it would be useful to consider to whom these recommendations are being made: to higher education institutions? to policy makers? to multilateral organizations and associations (UNESCO, UNU, IAU, others)?

Improving Access and Success is an imperative in all countries but as these operate within tremendously different contexts – the specific focus that is most essential can be different too, with, for example greater emphasis on increasing access rather than broadening participation. Given these different conditions and contexts, learner retention and the provision of quality education and support for success can be much more difficult.

FOUR PRESENTATIONS – KEY POINTS

The presentation offered both a geographically diversified view, with presenters focusing on Africa, Brazil, and Japan respectively, as well as covering different aspects of the twin issues of success and access in higher education. Below, are the most salient points from each of the presentations as well as the key questions that speakers were asked to identify to help structure the discussion which would follow.

I. THE USE OF ICT FOR INCREASING ACCESS & SUCCESS IN HIGHER EDUCATION IN AFRICA

- In Africa, despite recent increases in enrolment, participation rates remain very low especially in Sub-Saharan Africa (5%), and gender inequity persists.
- Expansion, including with cross border and new providers poses huge quality challenges. Success is hindered by overcrowding, poor library resources, language issues, poor learning infrastructure and graduate unemployment.
- ICTs on offer are varied – from radio to internet to telephones and television.
- All ICTs can and should be used in many ways, not only for distance or virtual learning but also to improve and expand face to face learning.
- ICTs can also improve management, especially with regard to students' admission, credit accumulation and information. 1.6 million teachers are needed to meet the goal of universal primary education by 2015 – judicious use of ICTs may offer the only means to achieving this objective.
- Numerous obstacles stand in the way – especially the poor national information and communication infrastructure but also the lack of enabling ICT policies at national and institutional levels.
- There are initiatives and support programmes underway; African HE needs to make the most of these to spread the use of ICTs for the benefit of Access and Success in HE.

II. ACCESS AND SUCCESS: CONNECTING THE DOTS

- Enhancing access is a post World War II phenomenon; focus on success is more recent and linked to the move to stress 'learning outcomes'.
- A contribution towards the larger agenda on global development – requires that HE is viewed as part of a whole – getting early education right is imperative.
- Framing issues for addressing access and success include the following: changes in mode of provision, differentiated missions of institutions, diverse student body, decline in public funding, external pressure on quality of provision and outputs and increased stakeholder power, including involvement of employers.
- Expanding access with quality is a major issue for HEIs (and governments) as it is valuable for their reputations and impacts on public perceptions.
- But quality (and approaches to quality assurance) needs to be thought of within the context of regional/national agendas.

- Fitness *for* purpose is the frequent consideration in Quality Assurance (QA) in developed countries
- Fitness *of* purpose may be a more suitable approach given the variety of contexts as it takes into account whether the mission is what is actually needed, and the expected outcomes are relevant, etc.
- Poor primary/secondary education quality leads to difficulty in producing HE-ready students in Africa, including in South Africa, especially for black students.
- It is essential to keep in mind the 'equity of outcomes' as well as equity in access. The UNISA experience casts doubt on the effectiveness of distance education in expanding access successfully (14% graduation rates in 2005).
- There is a need to strengthen linkages between schools and universities, between different universities, and between university and labour markets.
- There are many social challenges, which include the following: language of instruction; resources; social crises (HIV/AIDS); effectiveness and efficiency of HE (9 years for a 3 year degree).
- Multiple strategic interventions and investments are necessary, which involve governments, and promote institutional leadership and responsibilities for Quality Assurance.

The following questions should be further discussed:

1. What counts as success?
2. What are the factors needed to ensure success?

III. ACCESS AND SUCCESS TO HIGHER EDUCATION IN LATIN AMERICA AND THE CARIBBEAN: THE CASE OF BRAZIL, OPPORTUNITIES AND CHALLENGES

- In developing countries, colonial history has had a strong impact on the system and tradition of HE. This of course varies from one colonial power to another.
- Do we over value the traditional model of the University?
- Do all countries have to follow the path of what happens in the developed world, whereby the focus is on a single type of research intensive institution?
- Latin America must first eradicate illiteracy and develop quality basic education (10% participation rate HE).

- Enhancing access in large quantities and in an equitable fashion is difficult in Latin America because of poor infrastructure – basic education is linked to HE and it is difficult to talk about one and not the other.
- In Brazil, quality teacher education in public universities supplies good teachers to private schools; poor teacher education in private universities provides poor teachers to public schools.
- Market forces led to the development of a large private HE system of low quality with most students attending private universities.
- HE is insufficiently diversified or differentiated in Latin America as in most industrialized countries.
- In Brazil, the Government has tripled budgets to maintain and expand the HE system, including by strengthening and expanding public, federal universities which represent only 3% of total student enrolment at present.
- Scholarship schemes are being created to increase and broaden participation (Pro-Uni). Another scheme was launched, which focuses on vocational/technical education.
- The value and perception of HE is changing – it is not just a one time activity, but persists throughout one's life.
- The role of Distance Education (DE) an important modality in expanding access to education, but there needs to be a merger of both the face to face modality with DE.

IV. INTERNATIONALIZATION STRATEGY FOR JAPANESE UNIVERSITIES: MANAGING COMPETITION AND COLLABORATION

- The changing context of higher education in Japan is creating a shift from a sellers' to a buyers' market bringing about pressure for product differentiation.
- School registration and subsequent availability of students for HE has been declining (almost 25% less secondary school graduates in 2006 compared to 1996).
- The impact of globalization has created the need for Japanese students to be 'internationally ready'.
- There are now increased numbers of students from East and Southeast Asia.
- There is increasing emphasis on the internationalization of policies and approaches. Hiroshima University has a strong internationalization strategy.

- Networking to promote collabouration – the links with the African Universities Initiative is a good example
- Creation of South-Africa Japan University Forum
- Key advantage to networking approach – output adds to the intellectual infrastructure by facilitating access to new knowledge, new skills and new capabilities that are available elsewhere; capacity building.

CHAIR'S REPORT AT THE PLENARY

In an emerging knowledge society access to HE is more important than ever but access without success is meaningless. Nations and society needs to consider the costs and implications of not finding ways to provide access and success in higher education which would have the following repercussions:

- Economic Growth targets would not be met;
- Social justice or social cohesion agenda would not be delivered;
- Intellectual capital would not be used to best effect for innovation.

In short, the goals of the overall development agenda which we are discussing for our shared future would not be reached. Key premises/assumptions of the workshop discussion were the following:

- Some issues of access and success are beyond the control of HE
- Expectations of HE and HE Institutions are growing, yet HEIs are not always given the means to meet these multiple expectations
- Access and success must be seen as being interconnected

ACCESS WITH SUCCESS IN HIGHER EDUCATION

How we define access depends very much on the context(s) and can be viewed as a continuum between increasing participation in quantitative terms, to widening participation, to embracing socioeconomic and minority groups. What counts as success is obviously more than simply getting people in. It can be measured by completion rates, quality outcomes and using all of society's potential. Our measures of success need to be broader, perhaps accepting as well that students may enter HE, complete a module, gain knowledge and skills, but stop short of a qualification. Graduate employment should not be the only measure of success either since participation in HE brings other benefits to both individuals and society at large.

Access to higher education is better discussed in the context of interconnected education systems. The links are multidirectional as HE preparedness requires strong basic and secondary education and yet HE is also where the required quality teachers who can deliver this basic

education are trained. Furthermore, the increased success in secondary school impacts on HE, creating more demand and pressure for expanding access. This dynamic process needs early policy recognition so that adequate resources are allocated to guarantee access with quality provision, thus success in the HE systems. In this regard, the workshop recognized the systemic and holistic approach that needs to be taken for HE to play a central role in delivering quality teacher education, which in turn positively affects earlier levels of education and improves the conditions for access with success.

Diversification of HE institutions and their missions is essential – the predominant academic/research model of the traditional university is not the only route to knowledge creation. We need to highlight the importance and value of differentiated HEI systems and recognize diverse ways of defining research and knowledge creation which includes not only academic/scientific research, but also scholarship, problem solving and other ways of creating knowledge and offering opportunities for learning in new ways.

HEIs need to act to reduce gaps in society. Firstly by ensuring they do not widen them – they must be models of equitable institutions. They have the capacity, autonomy and responsibility to do so. Unless access with success is successfully addressed, given the requirements of the knowledge society, university education could, on the contrary, have a counter effect by widening the socio-economic gaps that already exist.

The policy and programme instruments and tools that can be used to address equity in access with success include:

- Affirmative action, but with policies developed for institutions in order to prepare faculty and staff so that they can understand the needs and provide support to help promote the access of students to HE in ways that promote success;
- Differentiated admission policies are important for broadening access and participation because by applying rigid selection processes universities can contribute to widening gaps;
- Expectations of standards/outcomes should be the same in order to establish and maintain quality irrespective of the admissions policy;
- Pedagogy, modes of delivery, as well as the suitability of the curriculum on offer should be varied;
- A more flexible modularized curriculum which takes into account the need to promote the access of students to HE opportunities as well as to promote the potential multicultural nature of the student body;
- There should be more flexibility in HE systems to allow for student mobility such as some form of certification to acknowledge what has been achieved by a student even if a particular course of study is not completed.

- ICTs have tremendous potential and go a long way to improving access but are not the panacea; the full spectrum of technologies should be used as a means to improve learning for all students whether studying face to face or at a distance.

- A convergence of distance education and face to face learning with the effective use of ICTs could provide a very effective *Blended Teaching and Learning* approach.

- Facing the large demand for teacher education, both initial and in-service, ICTs offer a variety of supports that can facilitate meeting the required targets.

The workshop also discussed how some aspects of internationalization of HE could meet the access with success imperative, drawing some distinctions between the networking, collabouration and partnership approaches and cross border educational provisions, especially by an increasing number of private providers. It was agreed that indeed international networks and student mobility could increase and improve access as long as the curriculum on offer was relevant to the learners and the local context when delivered abroad, and as long as measures to prevent the brain drain were in place in case of mobility schemes. Here participants noted that in a globalized world, the impact of actions, such as active recruitment, in one system of higher education – perhaps with a declining student enrolment – could have a major negative impact on another system.

RECOMMENDATIONS

- Policy and actions related to improving access and success in higher education must be set within the context of a holistic view of the education system and all its parts– basic education, secondary education, diversified HEIs, and connected with the outside – meeting the needs of the word of work and local and global societies.

- In a globalized world of growing competition among HEIs, to meet the access with success imperative, a premium must be placed on internationalization approaches that favour networking, collabouration and partnerships and on mobility schemes that prevent the brain drain and promote brain circulation. HEIs and bodies such as UNESCO, UNU and IAU must advocate and facilitate such approaches.

- HE policy at governmental and institutional levels should take into account that HE is offered by different sets of institutions that cater to the diverse needs of learners as well as society. This would improve access and success in higher education.

- ICTs should not be seen as the panacea to increasing or widening access to higher education but should be seen as part of a continuum of modalities – DE and face to face – that can create a blended teaching and learning environment, facilitating learning for all.

- Definitions of success should take into account contexts; measures of success should be cognizant of individual, institutional and systemic needs, expectations and criteria. Success should not only be judged by the number of graduates gaining employment. Educated people who are capable of seeing and understanding global issues and challenges are also an indicator of access with success.

- Clear coherent policy frameworks and policies should be developed to ensure that access and success are viewed as a continuum of interconnected challenges. Access measures need to be properly funded, and accompanied by on-going learner support, appropriate monitoring, reporting and evaluation instruments, including solid data gathering and analysis at institutional and systemic levels.

- HEIs should create formulae and policies for access based on merit that take the quality of prior education and socioeconomic background of learners into consideration in order to level the playing field and accompany learners towards successful completion. HEIs must develop flexible curricula, assessment and certification approaches that retain quality but address the broadening of access imperatives.

- Policy must be developed jointly by a variety of decision makers which includes HE professionals and institutions whilst retaining the learners very much at the centre of this process.

OTHER ISSUES RAISED IN THE PRESENTATIONS AND SUBSEQUENT DISCUSSIONS

In addition to these main issues in which participants had time to articulate recommendations, there were a number of other topics which merit being highlighted. These are listed below.

- Developed and developing countries need to work *together* in terms of increasing access and success. It is not a matter of one side helping the other, but rather a desire to promote mutual learning where all can benefit.

- Access of a different kind – cross border access to human resources to meet skills shortages in the workforce.

- What measures are needed to avoid brain drain and to ensure there is brain circulation or compensation to the country of origin?

- To what extent do universities need to redevelop a consciousness of international solidarity?

- How can they be helped so that financial imperatives do not drive their international strategies – particularly in publicly funded universities?
- Changes in Japanese demographics, similar to several industrialized countries, and their impact on secondary schools and HE recruitment led to the debate on how long current equilibrium can be sustained before major changes to educational systems need to happen.
- Language of instruction can be a major obstacle to using international cooperation as a response to meet unmet demand in some countries.
- English may need to be adopted in more HEIs in order to facilitate mobility.

WORKSHOP SESSION 6
E-LEARNING

244-253
WORKSHOP 6 REPORT

Presenters:

Hideyuki Tokuda, Chairperson/Professor, Faculty of Environmental Information, and the Graduate School of Media & Governance, Keio University

Peter F. Haddawy, Vice President for Academic Affairs, Asian Institute of Technology

Derek Keats, Executive Director, Information and Communication Services, University of the Western Cape, South Africa

David Wiley, Director, The Center for Open and Sustainable Learning

Chair:

Norman H. Okamura, Telecommunication Specialist, Social Science Research Institute, University of Hawaii

Coordinator & Presenter:

Brendan Barrett, Head of UNU-Online Learning and co-founder of the Media Studio, UNU

Rapporteur:

Andreina Lairet, eCourse Producer, Media Studio, UNU

THE ROLE THAT E-LEARNING CAN PLAY IN TRANSFORMING HIGHER EDUCATION IN A GLOBALIZED WORLD

INTRODUCTION

The workshop brought together leading specialists in the area of online education to discuss how the recent trends in technology, networks, software and content licensing are acting as a positive force for change in the higher education sector. These transformative processes are altering how we do things in our institutions of higher learning and influencing how we approach lifelong education, knowledge dissemination and the creation of communities of practice.

The workshop explored these trends and, where appropriate, compared experiences from Africa, Asia and the Pacific, and North America. Some themes that were covered included the notion of open networks, the impact of open source software on the educational sector, and the evolution of open content and open educational resources, with reference to the use of new copyright licenses that provide a flexible range of protection and freedom for authors and educators, such as Creative Commons. The speakers covered the vision, challenges, issues associated with, and their real-life experiences of e-learning.

The session was chaired by Professor Norman H. Okamura, the Director of the Telecommunications and Information Policy Group and Chair of the Graduate Certificate Programme in Telecommunications and Information Resource Management of the School of Communications and Journalism at the University of Hawaii. The audience in the UNU Media Studio was joined by participants from the University of Hawaii, University of Guam, the National University of Samoa and the University of Sydney, as well as by individual participants from Saipan, through the use of video teleconferencing.

SUMMARY OF THE PRESENTATIONS

The first presentation was made by Professor David Wiley, Director of the Center for Open and Sustainable Learning, Associate Professor of Instructional Technology, at Utah State University. Professor Wiley is a former visiting scholar at the Open University of the Netherlands and a non-resident fellow at the Center for Internet and Society at Stanford Law School. He spoke on the theme of **E-learning and openness.**

Prof. Wiley began by introducing some changes in general that have been stimulated by the advent of the web and other key technologies; a shift from analog, tethered, isolated, generic, consumption-oriented and closed systems and approaches to new trends that are digital, mobile,

connected, personalized, creative and open. Likewise, education has become something that is with us everyday of our lives. These trends are impacting on e-learning and 1995 was a critical year when a lot of innovation occurred but unfortunately at that time, while e-learning did become both digital and mobile, it failed to cross the innovation gap in terms of becoming connected, personalized, creative and open. It is important to recognize, and this is often forgotten, that e-learning should not be viewed through the same lens as traditional learning. They are as different as polo and water polo. Just as one cannot apply the same principles when playing polo and water polo, so one should not judge e-learning by the same principles that apply to the traditional model or one might end up "swimming on horseback." It is essential to admit that e-learning is different because being online is different.

The next point that Professor Wiley highlighted was that "culture really matters" with respect to e-learning, and this is also something that we tend to overlook. Moreover, in crossing the innovation gap to a new form of e-learning that is connected, personalized, and creative, it is essential to understand that openness is the key. This was explained with reference to a particular example where professors are encouraged to use blogs and to their students who assist in posting them, to use only open materials in the class, to write their own teaching materials, to put those teaching materials in a wiki and encourage student contributions, and to open participation to the class. By adopting these practices, Professor Wiley introduced the idea that academics should become more like gardeners and less like publishers, in the sense that rather than controlling the entirety of the content (such as in an academic research paper or course syllabus), they only need to supervise and maintain content produced and managed in a collabourative way. He also stressed the need to encourage student involvement in the preparation of course materials and other learning materials. In relation to opening up content to students, Professor Wiley acknowledged the need to overcome the fear of having your content spoilt – you have to be flexible and accommodating.

In a sense, the recommendations put forth by Professor Wiley emphasize the need for university professors to regard quality over quantity, and also to welcome criticism from their students. This all points to the importance of maintaining very high quality standards in higher education institutions, and the need to open up to new ways of teaching and learning, while at the same time staying in line with current trends and innovations. Professor Wiley argued strongly that content should be seen as the infrastructure. Just like we have relied on roads, railways, water supply systems, the electricity grid, etc. we are now coming to increasingly rely on content as a form of infrastructure to support our societal systems (and our educational systems).

Prof. Wiley's presentation was followed by Professor Hideyuki Tokuda's presentation. Professor Tokuda is from the School of Environmental Information, and the Graduate School of Media & Governance at Keio University in Tokyo. He has been teaching at Keio University since 1990. The title of his presentation was **E-learning in Keio University**. Representing one of the highest ranked private Japanese universities, Keio University has achieved a great deal in the use of IT for higher learning. Professor Tokuda began his presentation with a general overview of Keio University, the oldest university in Japan (150 years old in 2008). There are five campuses

with approximately 4,600 faculty members. It has a network of 160 international partners and over 800 international students. He explained Keio University's efforts to become an open and international university, started back in the 1990s, when the reform of the Japanese education system was being promoted and emphasis was being placed on collabouration among industry, government and academia.

For example, the Keio information superhighway (KISH), set up in 1994, was one of the first initiatives to use IT for knowledge creation and information sharing. In addition, special agreements with various corporations have made it possible for Keio University to serve as a testing ground for leading technologies, free of charge. Some of these leading technologies include high-speed broadband connectivity (which began at 256 kbps in 1994 and recently reached 43 Gbps, soon to be 1 Tbps) and the development of robots. Prof. Tokuda pointed out that Keio University was developing e-learning in four main areas: information infrastructure, applications and services, digital contents, and people and campus culture. Keio University's commitment to e-learning can be seen in their plan to develop a ubiquitous network infrastructure that allows connectivity "anytime, anywhere, anyone and anything".

In the applications and services area, he explained that Keio University is using IT to develop various types of classrooms that will permit group work and fieldwork through a single sign-on system. Another goal is to attain the integration of learning and administrative services. He also pointed out that the Shonan Fujisawa Campus (SFC) is working to provide its students with better quality education and wider educational opportunities, and to contribute to society by opening the university's knowledge, making it a public resource for learners through collabouration with other universities, among other strategies. A good example of this is the Keio University Global Campus project. Towards the end of his presentation, Professor Tokuda raised concerns related to e-learning that emerge through the struggles around open vs. closed culture, on vs. off campus, faculty vs. student culture, and e-society and e-space.

Next, Professor Peter F. Haddawy, Vice President for Academic Affairs and Professor of Information Management (Computer Science), Asian Institute of Technology, made a presentation entitled **E-learning for Enriching the Learning Experience.** Professor Haddawy began his presentation by giving a brief overview of AIT (its main campus in Bangkok with satellite campuses in Vietnam, Indonesia, Sri Lanka, Taiwan and soon Pakistan). He explained that one of the main concerns at AIT is how to make the faculty's time more efficient. He explained that at AIT they strive to obtain high-quality, effective teaching that responds to the challenges of location and time. In this context, he shared some of AIT's initiatives to better utilize faculty's time. He also talked about the need or the possibility of raising the quality of teaching. He stated that the challenge of e-learning is to use IT to create stimulating environments for discovery so that e-learning does not simply replicate e-lecturing. He particularly emphasized the need to move away from the "talking head" type of e-learning where lectures are simply recorded and made accessible online.

He explained various projects in which he is involved that use IT to enhance learning. All of the projects are in the medical sciences. One such initiative is COMET: Collabourative

Intelligent Tutoring for Medical Problem Based Learning. This system is used in the medical sciences for enhancing the learning experience. It proved to be an asset for improving students' clinical reasoning abilities, but it had some limitations (e.g., insufficient breadth of knowledge to permit greater creativity on the part of the students). He also described a system that uses virtual reality for surgical simulation thus making it possible to create scenarios that naturally would be difficult to create. In his closing remarks, Professor Haddawy argued that faculty should be encouraged to re-engineer their teaching to make best use of the technology, incorporating modern pedagogical theory, which should be student centred, collabourative, active and problem-based. He also called for the integration of e-learning into the curriculum in a manner that requires faculty members to adapt new models of teaching and learning. Finally, he highlighted the need to create generic platforms to support the development of such systems.

Prof. Derek Keats, Executive Director, Information and Communication Services at the University of the Western Cape, South Africa, ended the morning session and spoke about **E-learning in an education 3.0 world**. He began his presentation by outlining some of the initiatives in which the University of Western Cape is currently involved, including AVOIR – the African Virtual Open Initiatives and Resources. He then referred to the plenary keynote presentation from Joe Ritzen entitled "Higher Education's Perfect Storm" and pointed out the need for innovation in higher education. He explained that, in contrast to the time when universities first came into existence, the organization of education is no longer based on scarcity – we have all the books we could ever need, we have the entire faculty with the expertise, we have the institutions and we have the students. So the central question becomes what might a shared future mean in a world where the organization of education is no longer based on scarcity? What might be the pathway to that future? How can we create it in Africa?

These questions also lie at the heart of the notion of Education 3.0. Under this new model for education, Prof. Keats explained that students today have new choices to make and a more challenging role to play in education. He described students as socially networked producers of reusable learning content that is available in abundance under licenses that permit the free sharing and creation of derivative works. He called for institutions to create arrangements that will permit the accreditation of learning achieved, not just courses taught. He made the comparison to the writing of Chris Anderson on The Long Tail, where the future of business is based on selling less of more. In the context of the music industry, emphasis has shifted from the focus on "big hits" to selling a lot of music in a diverse range of categories for varied tastes. In terms of financial returns, selling a diverse range of music earns just as must money as selling a hit. The same could apply to courses where having students take a very diverse range of courses is as important as having a large number of students take a few courses.

He pointed to a number of drivers towards Education 3.0. These include the ever-increasing number of digital natives (young people who have grown up with access to digital technologies throughout their entire life) entering higher education. Another driver is the growing abundance of free and open educational resources. He argued that the web is now more programmable and that social networking has resulted in the blurring of the distinction

between work and play. As a result of the above tendencies, our attitudes towards learning are changing and we are finding new ways to access and recognize learning. Professor Keats also highlighted factors that could impede education 3.0 from becoming a reality. These include the lack of widespread technological understanding (especially from Digital Immigrants – that is older people who use technology, but retain their pre-computer/internet world accents), institutional arrangements based on scarcity (institutions as islands), lack of mechanisms to assure quality without control, the current financing arrangements for higher education and the growing digital divide in Africa and the developing world (unequal access to technology and lack of bandwidth). He then proceeded to explain the emergence of the personal learning environment (PLE) where students take control and manage their own learning. For him, PLE allows learners to network and communicate at the same time that they are managing content and setting learning goals for themselves. He continued his presentation with an illustration of how Education 3.0 is evolving at the University of Western Cape in South Africa and referred to a number of collabourations including NetTel@Africa and AVOIR. The University of Western Cape also has a Free and Opencourseware strategy and project that encourages students to rip, mix and learn.

The final presentation of the day was made by Brendan Barrett, Academic Programme Officer and head of the UNU Media Studio. His intervention touched upon the importance of collabourating to build and share open educational resources. He began by explaining that the mission of the UNU Media Studio is to develop and share engaging online (open) educational content using innovative methodologies. This content can vary from the very high end, expensive media, such as a video documentary, to the very low end, accessible and do-it-yourself content of a blog. The central challenge is to ensure that the "content" engages you in some way or the danger is that the message will be lost. Sharing lies at the heart of the work of the UNU and one central question is how to share in a creative manner. At present, UNU is looking into obtaining an open content licensing as one means to this end, with reference to Creative Commons in particular. The other central tenet of the work of UNU is an emphasis on collabouration with institutions across the globe, so as to support publishing of educational content from any location with Internet access, where the content can be extended and updated at any time by anyone, and as a result where money can be saved or used more efficiently and effectively. UNU has increasingly referred to the need to transform the existing World Wide Web from an information resource into a Global Learning Space. This could be achieved by promoting a diverse range of e-learning projects (there is no one single model or best practice) to combine the global reach of modern communication technologies with global and local perspectives. This should be combined with another Promethean task, whereby we push for an Information Society that is open to all. Like the Titan Prometheus, this would be like stealing fire from the Gods so that others can benefit through open network infrastructure (using what already exists more effectively), open source software (as an enabling tool to promote programming skills more widely), open content (so support the rip, mix and learn culture) and open standards to ensure long sustainability of everything.

In an open Information Society and a Global Learning Space, it may be possible to unleash the massive collabouration needed to address pressing global issues. UNU has taken some preliminary steps in this direction through a number of projects, including the UNU-Global Virtual University, the Asia Pacific Initiative and the UN Virtual Water Learning Centre. However, this is just the start, Barrett said. According to Yochai Benkler in his book on the Wealth of Networks, the Internet and Web driven changes offer new opportunities and, if harnessed properly, could greatly assist with the attainment of various important global development goals. Moreover, this is part of a growing movement promoting openness, collabouration and sharing as exemplified by Tapscott and Williams in their book entitled Wikinomics.

However, for education and learning, the application of these technologies and approaches also represents something of a potential Pandora 's box. We can imagine the potential but we cannot imagine the actual impact of this transformation on higher education. The challenges associated with e-learning 2.0 or Education 3.0 are immense. For instance, despite that fact that the Web is often described as driving a new surge of creativity in the connected societies, it is important to recognize that this is limited to around 1% of Internet users, the remaining 90% are consuming and in some cases synthesizing, but not creating (i.e., see wikipedia, blogging or YouTube). The central challenge therefore is to re-orient our educational systems so as to encourage more people to create, collabourate, contribute and participate. We need to remove the obstacles to both participation and creativity, or risk being locked into yet another system which brings benefits for a relatively small group of connected, like minded people (the emergence of the creative class).

RECOMMENDATIONS

The main recommendations from the workshop were developed through a collaborative process involving all participants, the chair and the presenters. These recommendations can be summarized as follows:

1 The workshop participants agreed that information and communications technology (ICT) and e-learning are a critically important infrastructure for higher education in a globalized environment. The participants considered that ICT and e-learning provide an opportunity for new models of higher education to emerge. The participants call on higher education institutions to adopt, and adapt to, e-learning or risk becoming irrelevant. There areas considered to be influential are as follows:

1.1. Open access, networking, content, standards, source software.

1.2. Sharing content beyond institutional and national borders.

1.3. Culture is very important, and strategies to create collabourative flows of content resources are needed.

2. The workshop participants called upon UNU and UNESCO to consider the following specific and practical recommendations:

2.1. UNU and UNESCO should provide and assist institutions of higher education with e-learning training toolkits (including recommended software, hardware, and policy configurations).

2.2. UNU and UNESCO should facilitate collabouration amongst the interested institutions of higher education to develop and share e-learning programmes.

2.3. UNU and UNESCO should continue to facilitate ICT and e-learning programmes and experiments and to create synergies with institutions of higher education from all areas with the intent of building sustainability, including "south-south" cooperation.

2.4. UNU and UNESCO should develop a strategy for ensuring quality for distributed and decentralized models of education programmes that e-learning gives rise to.

2.5. UNU should take the lead in working with Japan, the U.S., the European Union and other interested parties to seek to enhance telecommunications capacity for emerging and developing economies. For example, UNU should encourage implementation of WINDS and ESA satellites for educational cooperation and e-learning innovation.

2.6. UNU and UNESCO should explain and appeal to the international community including Member states about the need to develop the network and content infrastructure.

2.7. UNU, UNESCO, and all United Nations agencies should adopt a Creative Commons or other open license that permits free distribution, remix, and translation. All UN-sponsored training programmes should result in the production of open educational resources.

PHOTO GALLERY

Tadamichi Yamamoto

Director-General, Public Diplomacy Department, Ministry of Foreign Affairs of Japan (MoFA)

With the rapid development and prevalence of information and communications technology, knowledge has become the main driving force of growth, making higher education more important than ever.

Higher Education Institutions (HEIs) should contribute to conducting more mutual exchange beyond regional and country borders in their educational research fields.

Isao Kiso

Director-General for International Affairs, Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT)

Together, we must explore the challenges and opportunities for higher education, such as access, equity and quality, in order to ensure that globalization works for the benefit of all.

Koïchiro Matsuura

Director-General,
United Nations Educational,
Scientific and Cultural
Organization (UNESCO).

Hans Van Ginkel

Rector,
United Nations University (UNU)

Universities must grow into international platforms for dialogue; platforms for opening, analyzing and exchanging new ideas.

Yoriko Kawaguchi

Member, House of Councillors, Japan

It's crucial to increase understanding of other cultures through primary and secondary education.

Jo Ritzen,

President, Maastricht University

Government policy has to give universities the possibility for innovation.

Gender inequity constitutes one of the main grounds of infringement on equal rights to quantitative and substantive education.

N'Dri T. Assié-Lumumba

Fellow of the World Academy of Art and Science; Professor, Africana Studies and Research Center, Cornell University

Universities and research institutes must pioneer for new disciplines in science.

Hiroyuki Yoshikawa

President, National Institute of Advanced Industrial Science & Technology, Japan

Carl Lindberg

Special Advisor to the Swedish National Commission for UNESCO on Education for Sustainable Development

HEIs have a special responsibility to work so that sustainable development becomes a guiding light in the education sector, from pre-school to university.

Antoni Giró i Roca

Rector, Technical University of Catalonia and President, Global University Network for Innovation

This is a crucial moment to revisit the role of higher education and to rethink and propose ways for the exchange of values between higher education institutions and society.

There are three areas where education is particularly important for the creation of qualified human capital for development - engineering, economics, and broad-based humanities.

Kazuo Takahashi
Visiting Professor, UNU

David Wiley
Director, The Center for Open and Sustainable Learning

Infrastructure creates opportunities for local capacity to innovate.

Jan Sadlak

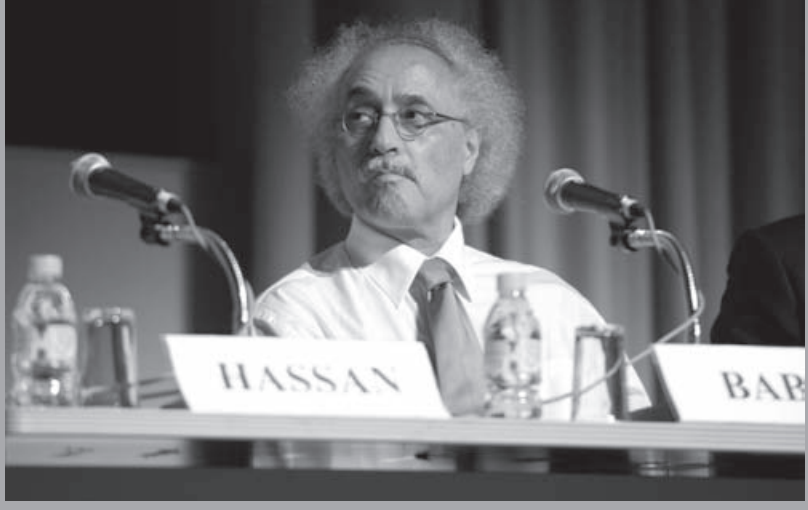
Director, European Centre for Higher Education (UNESCO-CEPES)

The new stage of globalization is characterized by the emergence of "knowledge societies" in which industry and higher education are uniting to convert the intellectual resources of a region, country or city into factors that help achieve economic growth and social gain.

Mohamed H.A. Hassan

Executive Director, The Academy of Sciences for the Developing World

Providing adequate research facilities and attractive work conditions to talented African scientists is the only way to reduce brain drain.



Mohamed Séghir Babès

President, National Economic and Social Council of Algeria

Africa suffers more than any other region of the world from the negative impact that health-related problems, such as infectious diseases, have on education, human resources and the training and quality of its human capital.

The reform of Africa's higher education must be seen by NEPAD as Africa's comprehensive response to the challenges posed by globalization.

B.S. Ngubane

Ambassador Extraordinary and Plenipotentiary, Republic of South Africa

Masafumi Nagao

Center for the Study of International Cooperation in Education, Hiroshima University

As universities are the apex of research and knowledge, they can undoubtedly play a crucial role in influencing change that is sustainable through identifying and releasing untapped resources for EFA, particularly in regions that are lagging behind.

Narciso Matos

Executive Director, Foundation for Community Development, Mozambique

We must strengthen higher education institutions in Africa and their contribution to national development.

(from left to right) **Hans d'Orville**, Assistant Director-General for Strategic Planning, United Nations Educational, Scientific and Cultural Organization (UNESCO); **Hans van Ginkel**, Rector, United Nations University (UNU)

(from left to right):
Yoriko Kawaguchi, Member, House of Councillors, Japan; **Jo Ritzen,** President, Maastricht University; **N'Dri T. Assié-Lumumba**, Fellow of the World Academy of Art and Science; Professor, Africana Studies and Research Center, Cornell University; **Hiroyuki Yoshikawa**, President, National Institute of Advanced Industrial Science & Technology, Japan; **Carl Lindberg**, Special Advisor to the Swedish National Commission for UNESCO on Education for Sustainable Development; **Antoni Giró i Roca**, Rector, Technical University of Catalonia and President, Global University Network for Innovation

Speakers and panelists from the 2007 UNU/UNESCO international conference on globalization and higher education.

CONFERENCE PROGRAMME

DAY 1

WEDNESDAY, 29 AUGUST 2007

MASTER OF CEREMONY

Hatsuhisa Takashima, Special Adviser to the UNU Rector (Media and Public Relations)

10:00 – 11:00

OPENING REMARKS AND INTRODUCTION

- **Tadamichi Yamamoto**, Director-General, Public Diplomacy Department, Ministry of Foreign Affairs of Japan (MoFA)
  "Shaping Humankind through Education"
- **Isao Kiso**, Director-General for International Affairs, Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT)
  "The Changing Roles of Higher Education Institutions"
- **Koïchiro Matsuura**, Director-General, United Nations Educational, Scientific and Cultural Organization (UNESCO)
  "The Forces of Globalization: Changing the Nature and Function of Higher Education"
- **Hans van Ginkel**, Rector, United Nations University (UNU)
  "A Better Future for All: Roles of Education and Science in Broadening Understanding"

11:00 – 13:00

KEYNOTE PRESENTATIONS ON "GLOBALIZATION AND THE CHANGING ROLES OF HIGHER EDUCATION"

Co-Chairs: Hans d'Orville, Assistant Director-General for Strategic Planning, UNESCO, and Hans van Ginkel, Rector, UNU

Keynote speakers will present an overview of the changing roles of Higher Education in an increasingly knowledge intensive, globalized world. A brief Q&A period will follow each presentation.

- **"Higher Education (and Research) and Sustainable Development"**
  Yoriko Kawaguchi, Member of the House of Councillors, Japan
- **"Higher Education's Perfect Storm"**
  Jo Ritzen, President, Maastricht University
- **"Higher Education, Innovation and Entrepreneurship"**
  Hiroyuki Yoshikawa, President, National Institute of Advanced Industrial Science & Technology, Japan

- "Higher Education, Environment and Development"
  Carl Lindberg, Special Advisor to the Swedish National Commission for UNESCO on Education and Sustainable Development
- "Higher Education and Human and Social Development"
  Antoni Giró i Roca, Rector, Technical University of Catalonia (UPC) and President, Global University Network for Innovation (GUNI)

13:00-14:30 **LUNCH**

15:00-18:15 **PANEL DISCUSSION ON GLOBALIZATION AND HIGHER EDUCATION: EMERGING THEMES AND PATTERNS**

14:30-16:15 PANEL 1: HIGHER EDUCATION AND SOCIETAL NEEDS

Chair: Hans d'Orville, Assistant Director-General for Strategic Planning, UNESCO

- **"Higher Education, a Catalyst for Development"**
  Kazuo Takahashi, Visiting Professor, UNU
- **"Higher Education, Society and the Media"**
  Koichi Kabayama, Director, Printing Museum, Tokyo
- **"Continuing Education Open to All"**
  David Wiley, Director, the Center for Open and Sustainable Learning
- **"The Bologna Process: a Regional Response to Global Challenges"**
  Jan Sadlak, Director, European Centre for Higher Education (UNESCO-CEPES)

16:30-18.15 PANEL 2: STRENGTHENING AFRICAN HIGHER EDUCATION

Chair: Hans van Ginkel, Rector, UNU

- **"Higher Education, Research, and Innovation in Africa"**
  Mohamed H.A. Hassan, Executive Director, the Academy of Sciences for the Developing World (TWAS)
- **"How to Involve Civil Society in Strengthening African Higher Education: Some Key Issues Based on the Mandate of National, Social and Economic Councils to Reach the MDGs**
  Mohamed Séghir Babès, President, National Economic and Social Council of Algeria

- **"Challenges and Opportunities for Higher Education in Southern Africa"**
  B.S. Ngubane, Ambassador Extraordinary and Plenipotentiary of the Republic of South Africa
- **The Africa-Asia Dialogue for Basic Education Development Project:** a joint initiative of UNESCO, the Japan International Cooperation Agency (JICA), the United Nations University and the Center for the Study of International Cooperation in Education, Hiroshima University
- **"Strengthening African Higher Education"**
  Narciso Matos, Executive Director, Foundation for Community Development, Mozambique

DAY 2

THURSDAY, 30 AUGUST 2007

WORKSHOP "GLOBALIZATION AND HIGHER EDUCATION: CHALLENGES AND OPPORTUNITIES"

09:30-10:00

OPENING PLENARY SESSION

Opening remarks and clarification of the workshop structure, objective and aims

Co-Chairs: Hans van Ginkel, Rector, UNU and Hans d'Orville, Assistant Director-General for Strategic Planning, UNESCO

10:15–13:00

PARALLEL WORKSHOP SESSIONS

Presenters will introduce the salient issues in each of the workshops; presentations will be followed by comments and discussions. The afternoon meetings are reserved for discussions to identify points of view, suggestions and recommendations. These can be further elaborated in the future and could contribute to the World Conference on Education +10 and the World Conference on Science +10 process, among others.

WORKSHOP SESSION 1: RESEARCH FOR INNOVATION AND HUMAN AND SOCIAL DEVELOPMENT

Chair: A.H. Zakri, Director, UNU Institute of Advanced Studies (UNU-IAS)

Coordinator: Balakrishna Pisupati, Research Fellow and Team Leader of the Biodiplomacy Programme, UNU-IAS

Rapporteur: Wendy S. Elliot, Biodiplomacy Programme Associate, UNU-IAS

Presenters:

- **Hebe Vessuri**, Senior Researcher and Head, Department of Science Studies, IVIC, Venezuela and Member, Council of UNU
- **Luc Soete, Director**, UNU Maastricht Economic and Social Research and Training Centre on Innovation and Technology (UNU-MERIT)
- **Shinichi Yamamoto**, Director and Professor, Research Institute for Higher Education, Hiroshima University
- **Hiroyuki Yoshikawa**, President, National Institute of Advanced Industrial Science and Technology (AIST)
- **Mohamed H.A. Hassan**, Executive Director, the Academy of Sciences for the Developing World (TWAS)
- **Mary-Louise Kearney**, Director of the Secretariat of the UNESCO Forum on Higher Education, Research and Knowledge

WORKSHOP SESSION 2: EDUCATION FOR DEMOCRACY, DIALOGUE AND PEACE

Chair: Yozo Yokota, Special Adviser to the Rector, UNU

Coordinator: Vesselin Popovski, Senior Academic Programme Officer, Director of Studies on International Order and Justice

Rapporteur: Morten B. Pedersen, JSPS-UNU Postdoctoral Fellow

Presenters:

- **Emile Rwamasirabo**, Ambassador Extraordinary and Plenipotentiary, Republic of Rwanda
- **Kazuo Takahashi**, Visiting Professor, UNU
- **Deepika Udagama**, Head, Faculty of Law, University of Colombo (Sri Lanka)
- **Gabriela Warkentin de la Mora**, Director of the Department of Communication and UNESCO Chair in Communication, Universidad Iberoamericana, Mexico

WORKSHOP SESSION 3: INTERCULTURAL LEADERSHIP AND CHANGE

Chair: Jairam Reddy, Director, UNU-International Leadership Institute (UNU-ILI)

Rapporteur: Nicholas Turner, Intern, UNU Peace and Governance Programme

Presenters:

- **Ingrid Moses**, Chancellor, University of Canberra and former Chair, UNU Council
- **Pornchai Mongkhonvanit**, President, International Association of University Presidents (IAUP) and President of Siam University
- **Mona Taji**, Higher Education Specialist, Higher Education Reform for the Knowledge Economy Project (HERfKE)
- **Andrei Marga**, Professor of Contemporary Philosophy and Logic, Babes-Bolyai University, Romania and Council Member, UNU
- **Salah Hannachi**, Ambassador Extraordinary and Plenipotentiary, Repubic of Tunisia, Dean of the African Diplomatic Corps

WORKSHOP SESSION 4: EDUCATION FOR SUSTAINABLE DEVELOPMENT

Chair: Maria C.E. (Rietje) van Dam-Mieras, Chair, Natural Sciences, Open University of the Netherlands, Visiting Professor at UNU on Education for Sustainable Development

Coordinator: Katsunori Suzuki, Senior Visiting Fellow, UNU-IAS and Yoshihiro Natori, Senior Fellow, UNU-IAS

Rapporteur: Yoko Mochizuki, Postdoctoral Fellow, UNU-IAS and David Mutekanga, JSPS-UNU Postdoctoral Fellow

Presenters:

- **Carl Lindberg**, Special Advisor to the Swedish National Commission for UNESCO on Education for Sustainable Development
- **Dzulkifli Bin Abdul Razak**, Vice Chancellor, Universiti Sains Malaysia
- **Ryokichi Hirono**, Professor Emeritus, Seikei University
- **Eun-kyung Park**, Director, Environment and Culture Institute, and Director, RCE of Yonsei University
- **Antoni Giró i Roca**, Rector, Technical University of Catalonia (UPC) and President, Global University Network for Innovation (GUNI)

WORKSHOP SESSION 5: ACCESS AND SUCCESS

Chair: Eva Egron-Polak, Secretary-General, International Association of Universities (IAU)

Coordinator and Rapporteur: Christina Lloyd, Head of Teaching and Learner Support, Student Services, the Open University, UK

Presenters:

- **Goolam Mohamedbhai**, President, International Association of Universities (IAU)
- **Mala Singh**, Executive Director, Higher Education Quality Committee of the Council on Higher Education, Pretoria, South Africa and Vice Chair of the Regional Scientific Committee for Africa, UNESCO
- **Paulo Speller,** Political Scientist, Rector of the Federal University of Mato Grosso (UFMT), Cuiabá
- **Masafumi Nagao**, Professor, Center for the Study of International Cooperation in Education, Hiroshima University

WORKSHOP SESSION 6: E-LEARNING

Chair: Norman H. Okamura, Telecommunication Specialist, Social Science Research Institute, University of Hawaii

Coordinator and Presenter: Brendan Barrett, Head of UNU-Online Learning and co-founder of the Media Studio, UNU

Rapporteur: Andreina Lairet, eCourse Producer, Media Studio, UNU

Presenters:

- **Hideyuki Tokuda**, Professor, Chairperson/Professor, the Faculty of Environmental Information, and the Graduate School of Media & Governance, Keio University
- **Peter F. Haddawy**, Vice President for Academic Affairs, Asian Institute of Technology
- **Derek Keats**, Executive Director, Information and Communication Services, University of the Western Cape, South Africa
- **David Wiley**, Director, the Center for Open and Sustainable Learning

14:30–16:00

PARALLEL WORKSHOP SESSIONS
(Discussions continued: Policy Recommendations)

16:30-18.00

CONCLUDING PLENARY SESSION

Co-Chairs: Hans van Ginkel, Rector, UNU and Hans d'Orville, Assistant Director-General for Strategic Planning,

- Reports of the working groups
- Discussion of conclusions

Higher education is a key factor in promoting democracy, sustainable development and economic growth – a foundation for building a better future for all. It has an indispensable role to play in closing the "knowledge divide" between those who have access to knowledge and learn to master it, and those who do not. UNESCO is facilitating cooperation at the international level in order to address issues such as access, mobility, equity and equality so that higher education and higher education institutions can better contribute to the creation of sustainable and inclusive knowledge societies.

Koïchiro Matsuura, Director-General of UNESCO

Universities must grow into international platforms for dialogue and centers of creativity and innovation. The globalizing, knowledge society brings into focus new themes in education and research well beyond the regular discipline-based programmes such as climate change and sustainable development that must be addressed if education and science are to contribute to next generations of locally rooted, but well-informed global citizens capable of jointly ensuring "peace and progress," the ultimate goal of the United Nations.

Hans van Ginkel, Rector of UNU

United Nations Educational, Scientific and Cultural Organization

For further information about UNESCO's activities related to globalization, please see:
www.unesco.org/bsp/globalization

Japanese Funds-in-Trust

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Pathways Towards a Shared Future: Changing Roles of Higher Education in a Globalized World

TOKYO, JAPAN