

DEVELOPMENT Outreach

PUTTING KNOWLEDGE TO WORK FOR DEVELOPMENT  FALL 2001

THE KNOWLEDGE ECONOMY

23374

ALSO: James D. Wolfensohn on Fighting Terrorism *and* Poverty

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Promoting knowledge and learning for a better world

ABOUT THIS ISSUE

SEPTEMBER 11 lent a new focus to the World Bank's efforts at poverty reduction. With repercussions from the terrorists' attacks affecting growth in developing countries, World Bank president James D. Wolfensohn calls in a special report in this issue for a rededication of the institution toward eradicating poverty, promoting inclusion and social justice and bringing "the marginalized into the mainstream of the global economy and society."

WITH THIS RENEWED COMMITMENT, the Bank's work on bridging the divide between the world's "haves" and "have nots" becomes even more timely. On the cutting edge of this work is the concept of the "knowledge economy," as presented by our guest editor, Carl Dahlman. What exactly is the "knowledge economy?" The term goes beyond technological advances that are linking the world ever more closely, to focus on knowledge—and its creation—as an economic product vital to a country's well-being. In OECD countries, this product is measured as public and private spending on higher education, research and development and investment in software. Expenditures on these activities in developed countries are dramatically higher than those in the developing world. Dahlman argues that developing countries need to focus on forming comprehensive strategies to take advantage of the knowledge economy. This means not only creating more knowledge, but putting it to productive use to improve its social and economic impact. Without such forward-looking strategies, countries will continue to fall behind in the twenty-first century.

IN THIS ISSUE, we also look at the process of technical assistance and capacity building within the development community, questioning whether we actually "do the right things." Eveline Herfkens, minister for Development Cooperation of the Netherlands, boldly points out that the development community as a whole needs to look beyond business as usual.



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PAGE 9



PAGE 19



PAGE 31

2 Fight Terrorism *and* Poverty

JAMES D. WOLFENSOHN

Because of the terrorist attacks, growth in developing countries will falter, pushing millions more into poverty. Our goal must be to eradicate poverty, while fighting terrorism.

SPECIAL REPORT: THE KNOWLEDGE ECONOMY

6 Updating the Economic Incentive and Institutional Regime for the Knowledge Economy

CARL J. DAHLMAN

Some key elements are necessary to stimulate the use and the creation of knowledge: rule of law, competitive regime, efficiency of the financial systems, labor markets, social safety nets, transparency in government.

9 Human Capacity Building for the New Economy

SHENGMAN ZHANG

The new economy will benefit nations in proportion to their success in building human capacity.

13 The University is Responsible for Development: Challenges and Solutions in Latin America

XABIER GOROSTIAGA

In order to confront the challenges of the 21st century, the university must redefine its objectives to achieve professional training, a better quality of life, and the redemption of what is public.

14 OpenCourseWare

CHARLES VEST

OpenCourseWare is built on the belief that the most powerful, transformative force on earth may well be education.

17 New Information Infrastructure: A Knowledge Booster

PAULI HEIKKILÄ

New initiatives are needed to give more people quality access to the knowledge and information that are available on the Internet.

19 The Indian Innovation System

RAGUNATH A. MASHELKAR

Innovation is the key to the production as well as the processing of knowledge.

22 Mapping Progress on the Road to the Knowledge Economy: Brazil, China and India

ANUJA ADHAR UTZ

Knowledge-driven development has recently emerged as an important engine of growth and poverty reduction.

25 Supporting the Private Sector

AFSHIN MOLAVI

International Finance Corporation investments help the private sector in developing countries to create a dynamic information infrastructure.

FEATURES

28 Can We Do the Right Things? The Future of Technical Assistance and Capacity Building

EVELINE HERFKENS

Effective institutional development requires a radical break with outmoded practices.

31 Africa's Business Gets Insurance Against Political Risks

JAIRO OUMA JURA

The newly established African Trade Insurance Agency seeks to develop trade and investment in Africa by offering guarantees against political risks in business transactions.

34 VOICES FROM THE FIELD

First-hand insight into the issues of development and a window for global interaction

36 WHAT OUR READERS THINK

37 KNOWLEDGE RESOURCES

Electronic tools that facilitate the sharing of knowledge

38 BOOKSHELF

40 CALENDAR OF EVENTS

Fight Terrorism

BY JAMES D. WOLFENSOHN

THE HORRIFYING EVENTS of September 11th have made this, for many, a time of reflection on how to make the world a better and safer place. The international community has already moved strongly to do so, by confronting terrorism directly and increasing security. We have also seen real collaboration aimed at averting global recession. These are signs of a rising cooperative spirit—seeking international responses to international problems.

But we must go one step further. The greatest long-term challenge for the world community in building a better world is that of fighting poverty and promoting inclusion worldwide. This is even more imperative now, when we know that because of the terrorist attacks, growth in developing countries will falter, pushing millions more into poverty and causing tens of thousands of children to die from malnutrition, disease and deprivation.

Poverty in itself does not immediately and directly lead to conflict, let alone to terrorism. Rather than responding to deprivation by lashing out at others, the vast majority of poor people worldwide devote their energy to the day-in, day-out struggle to secure income, food and opportunities for their children.

And yet we know that exclusion can breed violent conflict. Careful research tells us that civil wars have often resulted not so much from ethnic diversity—the usual scapegoat—as from a mix of factors, of which, it must be recognized, poverty is a central ingredient. And conflict-ridden countries in turn become safe havens for terrorists.

Our common goal must be to eradicate poverty, to promote inclusion and social justice, to bring the marginalized into the mainstream of the global economy and society.

We can do this through steps that help prevent conflicts.

◆ Take the example of the Nile Basin Initiative. It is no secret that water shortages pose a challenge to development and peace in North Africa and the Middle East. The initiative is a coming-together of the ten countries of the Nile River Basin, providing a vehicle for cooperation on a program of sustainable water use and development. This is a good example of multilateral action to prevent conflict and to work directly for poverty reduction.

Equally important, we can help peace set down roots in societies just emerging from conflict. For example in Bosnia, where international support is helping communities come together at the local level on small-scale projects, creating jobs, and bridging ethnic differences

Or in post-conflict societies like East Timor and Rwanda—where the international community is helping to rebuild infrastructure, reintegrate soldiers into the society and workforce, and restore the capacity of governments to manage their economies. Success may take years of hard work, but the alternative is a never-ending cycle of violence.

◆ Central to conflict prevention and peace building must be strategies for promoting social cohesion and inclusion. Inclusion means ensuring that all have opportunities for gainful employment, and that societies avoid wide income

and Poverty

inequalities that can threaten social stability. But inclusion goes well beyond incomes. It also means seeing that poor people have access to education, health care, and basic services such as clean water, sanitation and power. It means enabling people to participate in key decisions that affect their lives. That is what we mean by empowerment.

But can we really make progress against poverty? Recent history tells us that we can. After increasing steadily for 200 years, the total number of people living in poverty worldwide started to fall 15 or 20 years ago. Over twenty years, the number of poor people has fallen by perhaps 200 million, even as the global population grew by 1.6 billion. This has been a direct result of the better policies that developing countries have been putting in place.

And progress extends well beyond income measures. Education and health have also improved. Since 1970, the proportion of those in the developing world who are illiterate has fallen sharply, from 47 percent to 25 percent; and since 1960, life expectancy has risen from 45 to 64 years.

Yet we must not underestimate the challenges that remain. Half the developing world—some 2 billion people—live in countries that have seen little growth in the last two decades. And even in those developing countries that have been doing relatively well, hundreds of millions of people are marginal to the progress of growth. As a result, well over 1 billion people, around 20 percent of the population of this planet, live on less than \$1 a day.

And the scale of the challenge is not only immense, but rising. In the next thirty years the population of the world will increase from 6 to 8 billion. Virtually all those 2 billion will be in the poor countries of the world.

In the wake of the tragedy of September 11th, facing these challenges, and taking multilateral action to meet them, are more important than ever. What should be our agenda?

First, scale up foreign aid. This may be much harder in an international economy that is slowing, but the needs and the stakes were never greater. Aid to Africa fell from \$36 per person in 1990 to \$20 today. And yet it is Africa, a continent that today is making great efforts to improve, that may feel most sharply the poverty fallout of the terror-

ist attacks. We cannot let Africa fall off the map as we turn our attention elsewhere.

Second, reduce trade barriers. The WTO summit must go ahead, and it must be a development round, one that is motivated primarily by a desire to use trade as a tool for poverty reduction and development. Substantial trade liberalization would be worth tens of billions of dollars to poor countries, and yet we know that at times of economic downturn there are increased pressures for protectionism. We must fight these pressures.

Third, focus development assistance to ensure good results. This means improving the climate for investment, productivity, growth, and jobs; and empowering and investing in poor people so that they can fully participate in growth.

And fourth, act internationally on global issues. This includes confronting terrorism and internationalized crime and money laundering, but also combating communicable diseases like AIDS and malaria, building an equitable global trading system, safeguarding financial stability to prevent deep and sudden crises, and safeguarding the natural resources and environment on which so many poor people depend for their livelihoods.

And all this we must do with developing countries in the driving seat—designing their own programs and making their own choices.

But we must also bring in the private sector, civil society, faith-based groups, and international and national donors. Ours must be a global coalition—to fight terrorism, yes, but also to fight poverty.

Whether we take up that challenge is up to us. Some generations have had the courage. Others have turned away. Our parents and grandparents responded to the unspeakable horrors of the Second World War not by withdrawing, but by coming together to build an international system. By contrast, the choices taken after the First World War led to calamity. Which course we choose will determine not just our future, but whether our children and grandchildren can live in peace. 

James D. Wolfensohn is president of The World Bank.



The Knowledge Economy

A SPECIAL REPORT

THERE IS MUCH INTEREST in the "knowledge economy" although this term is used to denote different things. Whatever the term, it is clear that we are in the midst of an era of unprecedented advances in science and technology that are having a dramatic impact on economic and social activities. These advances are not only taking place in the realm of information and communication technologies, where perhaps some of the progress is most readily visible, but also in biotechnology, health, medicine, new materials, and in many other traditional fields.

One of the main implications of the advances in knowledge is that we are in a context of continuous restructuring, at the national, regional, sectoral, firm and organizational levels. Developing countries face a risk of a growing knowledge divide with respect to developed countries on two counts. First, they invest much less on the production of knowledge. In OECD countries investments in knowledge, measured as public and private spending on higher education, expenditure on research and development, and investment in software, average about 5 percent of GDP. In less developed countries this investment averages about 1 percent. Second, developing countries are also at a disadvantage because the institutional infrastructure, such as efficient and flexible financial, labor, information and education markets, and social safety nets that facilitate continuous restructuring, are not sufficiently developed to allow them to take advantage of the new possibilities to improve their economic performance and social welfare. It is not just that they need to produce more knowledge, but, more importantly, that they make effective use of relevant knowledge wherever it is produced. Developing countries therefore have to develop comprehensive strategies to take advantage of the knowledge economy, which includes investing more in education and the information and communications infrastructure. This more comprehensive strategy needs to address four key areas which are covered in this special report:

- An economic and institutional regime that provides incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship (see the article by Dahlman);
- An educated and skilled population to create, share, and use knowledge well (see articles by Zhang and Gorostiaga);
- A dynamic information infrastructure to facilitate the effective communication, dissemination and processing of information (see articles by Vest and Heikkila); and
- An efficient innovation system of firms, research centers, universities, consultants, and other organizations to tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology (see article by Mashelkar).

The article by Molavi summarizes some of the new initiatives that the International Finance Corporation is taking to help countries take advantage of the knowledge economy. The article by Adhar Utz summarizes a benchmarking tool that developing countries are beginning to use to assess their preparedness for the knowledge economy, and a program to help policy makers develop the more comprehensive strategies that are necessary.

Carl J. Dahlman, GUEST EDITOR

Updating the Economic Incentive and Institutional Regime for the Knowledge Economy

BY CARL J. DAHLMAN

BECAUSE OF THE RAPID ADVANCE in the creation and dissemination of knowledge we are in the midst of what could be called a knowledge revolution. But more knowledge by itself will not have an economic and social impact unless it is put to productive use. With the rapid advances in information and communication technology it would not be difficult to connect developing countries to all the knowledge in the libraries of the world. However, just having access to knowledge will not change much, unless people, firms, and organizations have the incentive and the capability to put that knowledge to effective use. A large part of that capability has to do with people's education and skills. But a larger part has to do with the incentive and institutional struc-

ture of an economy. This article focuses on some of the key elements of the economic and institutional regime that are necessary to stimulate the effective use of knowledge as well as its creation. These include the rule of law, the competitive regime, the efficiency and flexibility of the financial system (including venture capital), labor markets, adequacy of social safety nets, and, finally, some elements of transparency and accountability in governance.

Rule of law

THE WAY PEOPLE obtain relevant knowledge and the incentives to gather, provide and use it are affected by the institutional structure of a society. These interactions involve relationships between the legal rules and procedures, social con-



THE WAY PEOPLE OBTAIN KNOWLEDGE AND THE INCENTIVES TO GATHER, PROVIDE AND USE IT ARE AFFECTED BY THE INSTITUTIONAL STRUCTURE OF A SOCIETY.

ventions, and organizations such as firms, government and non-government organizations and markets. If people exert an extra effort to set up a new enterprise or to provide a service more efficiently, they need to have some reasonable assurance that they will be able to benefit from the fruits of that extra effort, rather than to have it arbitrarily seized by the government or others. There has to be some reasonable certainty about the private property and the enforceability of commercial contracts. Therefore, a clear rule of law that respects individual and commercial rights and that is enforced consistently and fairly is a very important prerequisite to promote the more effective use of knowledge. This is particularly important for the successful development of small and medium enterprises, which are usually at a disadvantage compared to large enterprises that often receive privileged treatment in getting through government red tape and accessing finance. Promoting the creative energy and entrepreneurship of people is a critical element of developing a knowledge economy as they typically get their start as small firms trying out new ideas, even if only a minority are new knowledge-based start-ups.

Intellectual property rights

AN AREA UNDER THE RULE OF LAW that requires specific discussion in the context of the knowledge economy is the protection of intellectual property rights. This is a particularly complex and difficult area. The basic rationale is that it is necessary to give intellectual property rights over the creation of new knowledge to those who exert the effort to produce it, in order to provide an incentive to undertake the effort. These rights include patents, trademarks, trade secrets and copyrights. Patents give protection for novel technical inventions to the creator for a period of twenty years. Trade secrets protect intellectual property that is not patented but is kept secret by the firm. Copyrights give protection for 50 years over literary or artistic works. On the other hand, from a social perspective it is desirable to disseminate knowledge at zero or marginal cost to as many users as possible so that they benefit from it. This is because knowledge is not exhausted by its use, unlike typical commodities. There is, thus, an inherent tension between the need to provide property rights to provide an incentive for the creation of new knowledge and the desirability of disseminating it at a marginal cost. The time limitations granted by patents and copyrights are an attempt to balance those considerations. However this is an imperfect balance.

Moreover, since most of the new technical knowledge is being produced by advanced countries, granting stronger protection to intellectual property means that developing countries, who are primarily users of knowledge, end up transferring rents to the producers. Therefore, the trend towards strengthening intellectual property rights is hurting poorer countries with little innovative capability of their own.

An argument can be made that they should receive preferential treatment in the enforcement of patent rights. For some middle income countries with strong capabilities to generate knowledge, the situation is more complicated because they have an incentive to protect their own technical (patent) and literary or cultural knowledge (for example India, China, and Brazil, which have strong technical innovation capabilities as well as thriving film and literary industries). Thus, they have a greater need to put in place stronger intellectual property rights. In addition, strong intellectual property right protection is usually one of the prerequisites that foreign investors want to see in a country before they are willing to transfer their most competitive technologies. Therefore, countries that want to access that technology have to put in place stronger protection. This seems to be an inevitable trend. However, it can be argued that appropriate mechanisms should be developed to help poorer developing countries to buy or get preferential access to patented technology in areas of great social need such as treatment for aids, and that special global efforts should be made to develop technologies that are particularly relevant to their needs, such as vaccine against malaria or other endemic diseases mostly prevalent in poor countries. It is also important to protect indigenous knowledge against appropriation and patenting by foreign companies, and to develop appropriate mechanisms to compensate the original owners of that knowledge when it is industrialized.

Competition

COMPETITION IS CRITICAL to stimulate the creation as well as the effective use of knowledge because these require the exertion of effort and resources. Without competition there would not be a drive to improve performance. Some of the key elements to foster competition are openness to international trade as well as pushing firms to export, so that they are forced to keep up with new technologies and to improve the quality of goods and services to world standards. However, beyond openness to trade it is also important to put into place proactive competition regulatory authorities. Market-supporting institutions such as fair trade and anti-monopoly commissions are important to maintain competition among domestic monopolies as well as to protect against large foreign companies that may enter the domestic market. Small and medium enterprises and independent start-ups, which are critical for the knowledge economy are particularly vulnerable to predatory behavior by large firms.

Openness to international trade

THIS IS IMPORTANT not only because of the pressure it puts on domestic producers to improve performance, but also because in the context of the very rapid expansion of global knowledge it is critical to get access to many new products and

AN EFFICIENT AND FLEXIBLE FINANCIAL SYSTEM INCLUDES NOT ONLY BANKS, BUT FINANCIAL MARKETS THAT CAN RESPOND MORE QUICKLY TO CHANGING OPPORTUNITIES.

services which may not even exist in the local environment. Even large developing economies such as China and India, which have large research infrastructure and hundreds of thousands of scientists and engineers engaged in research and development, account for less than one percent each of the global R&D effort. Therefore it is critical to access global knowledge through the import of goods and services that embody some of that knowledge, through direct foreign investment, technology licensing, foreign study and work, foreign technical literature and, increasingly, through electronic means and direct access to research and databases on the Internet.

Financial markets

THE FINANCIAL SYSTEM and the key institutions and rules that regulate it are the "brains" of a knowledge-based economy because they process information to allocate scarce capital to the most productive use. This is particularly important when there are so many new technologies that are creating new opportunities and making a lot of existing production outmoded, if not obsolete. The financial system has to continuously reallocate capital from declining sectors to promising new sectors. This means that there must also be efficient systems for dealing with failed enterprises through expeditious bankruptcy procedures as well as to identify promising new enterprises. An efficient and flexible financial system includes not only banks, but financial markets that can respond more quickly to changing opportunities. In addition, bankers are quite conservative and only lend to enterprises with a track record who have assets that can serve as collateral. Therefore, they are not appropriate for financing new start-ups, knowledge-based enterprises that do not have a track record or tangible assets, but which are at the very heart of the knowledge economy. This requires the development of a venture capital industry with the necessary expertise to judge the prospects of these new ideas, and the willingness to put up risk capital to partner with the technical entrepreneurs and help them develop their business plans, launch, and scale up the enterprises. However, this requires venture capitalists with the expertise to assess the potential value of new ideas, a legal regime that is sufficiently robust to enforce contracts on future payoffs, and a well developed capital market that allows the venture capitalists to eventually sell their stakes on the stock market, and recycle capital to take risks with new firms.

Labor markets and social safety nets

LABOR MARKETS MUST BE FLEXIBLE to re-deploy workers out of declining industries to growth industries. This means that there must be good labor market information as well as mechanisms for facilitating the retraining of labor, so that the workers will have the skills required in the new jobs. This has

- ◆ implications for the formal educational system. The formal educational system has to provide its graduates, at whatever level, with the basic skills to be able to continue to learn throughout their lifetime as the needs of the work environment change. It also means that efficient training mechanisms have to be put in place to provide the specific new skills that are required by workers who are laid off and have to retool themselves for new opportunities. However, it is clear that with the wrenching restructuring that occurs as part of the redeployment of resources to new opportunities, there will be many workers who are not able to adjust to the new requirements. Thus, appropriate social safety nets in terms of minimum incomes and social services must be set up to help these workers and their families who otherwise may be falling between the cracks.

Governance and accountability

FINALLY, at a broader institutional level, better governance mechanisms will have to be established to cope with the demands for constant restructuring, redeployment and adjustment, which this dynamic process places on the rules of the game and the role of accountability of government, both at the national and the international level. This means not only better communication and coordination within different parts of government, in how it procures goods and services. It also means accountability to the citizens for all the hard choices that have to be made. In addition, with the rapid advance and diffusion of communications and information technology, and knowledge, there is a risk of a growing knowledge divide between those with education and access to ICT technologies and complementary assets, and those, mostly rural, less educated persons, who do not have access. Therefore governments will have to take strong proactive steps to deal with the problems that arise from the risk of the growing divide, in order to prevent internal inequality and the risk of social breakdown.

THIS HAS BEEN A QUICK SUMMARY of some of the key elements of the economic and institutional regime that must be taken into account in developing effective strategies to take advantage of the knowledge economy. The main message is that developing an effective strategy is not just a matter of investing in R&D of the new information infrastructure, or even just investing in education. Rather, it is important to also improve the broader economic and institutional context in which this is taking place, to ensure that there are appropriate incentives and institutions to stimulate people to exploit these opportunities, and to deal with the restructuring and other problems that are part of rapid change. ■

◆ Carl J. Dahlman is program manager of Knowledge for Development, the World Bank Institute.



HUMAN CAPACITY BUILDING FOR THE NEW ECONOMY

BY SHENGMAN ZHANG

OVER THE NEXT QUARTER CENTURY, an additional two billion people will be added to our planet. Whether a large population represents an asset or a setback to progress depends, above all, on whether people will have the capacity to shape their future. The new economy offers unprecedented opportunities. But the gains will not be automatic. It will benefit nations in proportion to their success in building human capacity.

Capacity building spans investments in education in schools and universities, as well as formal and informal training for youth and adults. Here, I will discuss the new opportunities and risks in capacity building which face us in today's world.

Unprecedented opportunities

THE NEW ECONOMY. Knowledge Economy, Information Society—these are a few of the terms people use to denote the new global order. Whatever the term one uses, it is clear that we are in a period of dramatic change. Advances in information technology and knowledge dissemination are transforming the landscape of the global economy. Examples of change are all around us. Over the last quarter of a century, for instance, the cost of 1 MHZ of processing power has fallen from some \$7,500 dollars to 20 cents. And the cost of sending 1 trillion bits has fallen from \$150,000 dollars to 10 cents. As someone observed, what all this means is that IT and the Internet today can amplify brain power in the same way that the technologies of the industrial revolution amplified muscle power.

This revolution is opening new possibilities in at least three ways. First, the new order is allowing a *leapfrogging over old technologies*. For example, cellular phone technology is now viable for villages and poor neighborhoods that have never been wired for traditional phones. The number of mobile lines is already larger than the number of fixed lines in Hong Kong (China) and Korea. In fact, the number of mobile phones per thousand people is larger in Hong Kong (636) and Korea (500) than in the United States (312) or Canada (226). Second, new technologies are providing *links to global knowledge* recorded electronically. Technical advances have made it easier to find knowledge, just-in-time to solve problems. Third, IT is drastically improving *access to quality education*, through computer-

- ◆ changes in education: not just more education, but substantially different education. Beyond the mastery of basic subject matter, numeracy, and literacy, success in the new economy requires behavioral skills such as the ability to think critically, communicate well, and work effectively in teams. Creativity, risk-taking, entrepreneurship, flexibility in the face of change—are increasingly important. Computer literacy, too, has become a core competency.

Over the past two decades, the skills needed to succeed have changed radically, but not the skills taught in schools. In countries at all levels of income there is a mismatch between the skills of secondary school graduates and the needs of technology-driven employers. An OECD report found that one out of every four adults in advanced countries failed to reach minimum literacy levels for coping with today's life and work. Some have low literacy skills despite high levels of education. Learning in schools is important but not sufficient. Policies for the workplace and family settings are needed, and employers' role in promoting literacy skills is critical. Above all, education now needs to prepare workers for lifelong learning—much of it informal—so that they can continuously upgrade their skills. The new economy thus calls for an education system that is attuned to the needs of firms, sufficiently flexible to adapt to changing demands, and encourages lifelong learning.

Beyond education, the institutional dimensions of the new economy are also vital. To make the most of its human capacity, a country needs an efficient innovation system of firms, research centers, universities, and think tanks. It also needs a strong

THE NEW ECONOMY CALLS FOR AN EDUCATION SYSTEM THAT IS ATTUNED TO THE NEEDS OF FIRMS, SUFFICIENTLY FLEXIBLE TO ADAPT TO CHANGING DEMANDS, AND ENCOURAGES LIFELONG LEARNING.

assisted learning and Internet-based distance learning. China, for example, has already trained more than two million college students through radio and television education.

But these new opportunities have also raised the stakes. Technical progress is shrinking the world to a global village. This makes us more interdependent and also subject to greater competition and new imperatives. What are some of these imperatives—for people, businesses and countries?

First, they are pressed to find *competitive advantages*. Investors are increasingly seeking first-mover advantages; new products and services, in response to customers' diverse, fast-changing demands; speed to market; and access to customers and sources of information. Second, they face *the need to restructure*. The rapid development of IT is pushing down prices and exposing inefficiencies of firms and institutions. Third, they find *investments in people* a greater priority than ever. This is especially because competitiveness of people and societies now depends on their skills, knowledge, and command of information.

The new educational needs

INVESTMENT IN PEOPLE starts with education, but what are the new educational needs? Today, the new economy calls for

national information infrastructure that facilitates effective communication, dissemination, and processing of information.

Challenges and risks

THROUGHOUT HISTORY, the success of economies has been based on knowledge. What is different today is that knowledge is becoming the most important factor for competitiveness and social welfare. This poses new challenges which may not always be easy to recognize.

A COUNTRY'S PREPAREDNESS The results of studies conducted at the World Bank show great contrasts in the preparedness of countries across regions, from East Asia to South Asia, from Latin America to Sub-Saharan Africa. The APEC (Asia Pacific Economic Cooperation) members in general show considerable advantages in basic education, infrastructure, and growth. But comparing the US and Korea with China and Indonesia, we see large differences in the economic and institutional capacity. On the other hand, the literacy rates in China and Indonesia are relatively high for lower income countries. But enrollment rates are low, as are the indicators of information technology access.

Are these differences likely to get larger or smaller? We think the globalization of trade, finance, and information flows should help all countries. What is noteworthy is that IT spending has been growing twice as fast in developing countries as in industrial ones over the past decade. But there is also the risk that the accelerating pace of change may widen the digital divide and the knowledge divide. Increasingly, skilled people, investment capital, and other resources may flow to those countries with stronger knowledge bases, reinforcing inequality.

THREE BASIC RISKS One risk is of further *excluding people* who lack the right education. Technical change and organizational change are widening the wage gaps between skilled and unskilled workers. In the United States over the past 20 years, people with the least education have seen their real wages fall. The pain of exclusion will be felt even more strongly in developing countries, where access to education and IT is much more uneven. To reduce the risk calls above all for improvements in access to basic education, and increasingly in secondary and higher education as well. It also calls for labor market reforms that will permit people to use their skills in an increasingly flexible way.

The second risk is the *brain drain*, which occurs when countries lose the competition to retain, regain, or attract skilled labor. The position that knowledge now occupies—as a key source of comparative advantage—has been speeding up the movement of skilled people to places where they can most easily turn knowledge into wealth. The United States is now

erating financial resources for human capacity; c) improving the framework of institutions, policies, and regulations

REFORMING EDUCATION AND CAPACITY BUILDING Reform of education and human resource policies is a priority for most countries. East Asian countries have a far greater equality in basic education compared to those in South Asia, Latin America and Africa. But knowledge inequalities are large, for example across provinces in China. Furthermore, there is substantial scope to improve the quality and relevance of education: by focusing on systemic education reform, on-the-job training, options for *lifelong learning*, and gender equity.

To be competitive, an education system must be part of a human resource strategy. Education must connect citizens to the world economy, through technology to access knowledge; textbooks that meet international standards; computer literacy; and distance learning. It should build skills and values: an understanding of competitiveness, rooted in local culture and the environment; the rule of law; and ethical standards. Human resource policy needs to start from the premise that all children should have access to basic education regardless of their means. Education reform must also ensure that education spending is allocated and used efficiently. Most workers require on-the-job training, to keep up with fast-changing needs. Training on the job is one of the most important ways that people acquire skills. Countries also need to develop effective life-long learning. In the Penang area of Malaysia, 24 companies support a center that trains local employees to stay current with the latest technology.

EDUCATION MUST CONNECT CITIZENS TO THE WORLD ECONOMY, THROUGH TECHNOLOGY TO ACCESS KNOWLEDGE.

attracting many of the brains of the world for this reason. Since 1979, China has sent 300,000 students for training in the United States, but only about 100,000 have returned.

The third risk is of losing the *competition for capital investment*. In the global, competitive economy, capital investment follows human resource capacity. Singapore, for example, developed its highly skilled workforce within the context of a strategy to attract foreign direct investment in high-technology industries. China has had exceptional success in its publicly sponsored high technology and science zones, where foreign-owned enterprises now account for three fourths of the exports and labor productivity is twice as high as in the rest of the economy.

Catching the fast-moving train

TO CONTAIN THESE RISKS of a widening knowledge gap, and ultimately an economic and social development gap, governments can do a lot to catch the train of the new economy so that the digital divide becomes a digital dividend, and the knowledge divide turns into a knowledge dividend. Based on the successful experiences and our research findings, we believe the countries and regions may want to act on three fronts: a) reforming education and capacity building; b) gen-

Countries can reap significant gains by widening the access of girls and women to education and modern-sector employment. One of the seven International Development Goals focuses specifically on eliminating gender disparities in primary and secondary education by 2005. Educating girls yields high returns for both economic growth and social welfare. A World Bank study shows that an increase of one percentage point in the proportion of women with secondary education is associated with an increase of 0.3 percent in national per capita income. This implies that a country impedes its growth if it fails to provide girls with the same levels of education as boys.

GENERATING FINANCIAL RESOURCES The needed financial investments in human capacity are so large that countries need to broaden the sources of finance. In most countries, more public spending needs to be directed to educating the poor, concentrating on both primary and secondary schooling. In higher education, private investment and public-private partnerships should be encouraged.

For example, we note China is using several innovative ways to leverage public resources. The country is investing in *distance education* using innovative methods and advanced information technologies. It is funding the underlying IT

infrastructure by allowing the entry of private domestic and foreign capital and by auctioning rights to lucrative markets, along with obligations to provide low-cost service to marginal areas. The country is also tapping *private resources*: one third of China's higher education costs are now borne by students, not the government; and four million students are presently studying at privately funded tertiary education institutions. The country is also developing *international alliances* in education. Beijing University alone has relationships with a hundred foreign universities.

Given the large diversity in the stage of development of the APEC members, there is wide scope for cooperation with various dimensions. One is *financial assistance* from the richer to the poorer economies to help address the knowledge divide. A second is *technical assistance* to improve curriculums, educational programs and institutions. Third, there is ample scope for *cooperation by private companies* as well as others with resources and relevant experience.

IMPROVING INSTITUTIONS, POLICIES, AND REGULATIONS

Finally, reform of government policies and institutions is key to the efficient use of knowledge, capacity and entrepreneurship. Governments themselves can promote greater transparency and efficiency using technology to their advantage. For example, investments in electronic or e-government in

areas from procurement to customs are giving good results in Argentina, Brazil, Chile, and Mexico. Governments can also promote greater inclusiveness and participation of the private sector, the civil society and others to get the most from knowledge opportunities.

The government's economy-wide policies are also key. APEC members have made considerable advances in promoting competition through openness to international trade and foreign direct investment, and exchange of technology through licensing and foreign collaboration. On the other hand, there are also areas for greater stress such as policies for the labor market that promote continuous upgrading of workers' skills and enhance employment opportunities, especially for women.

The stakes are high. People and countries with the capacity to participate in the new economy will reach unparalleled levels of prosperity. But those who lack the right knowledge and skills will increasingly be left behind, without the ability to improve their living standards, to manage their environment sustainably, or to provide a decent start for their children.

Shengman Zhang is World Bank managing director. This article is based on a paper developed for a speech given at the APEC High Level Meeting on Human Capacity Building, Beijing, China (May 15, 2001). The complete text can be seen at: www.worldbank.org/wbi/wbikp/news.html

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The University is Responsible for Sustainable Development

Challenges and Solutions in Latin America

"The world that we have created to date as a result of our way of thinking has problems that cannot be solved by continuing to think in the way we thought when we created them."

— ALBERT EINSTEIN

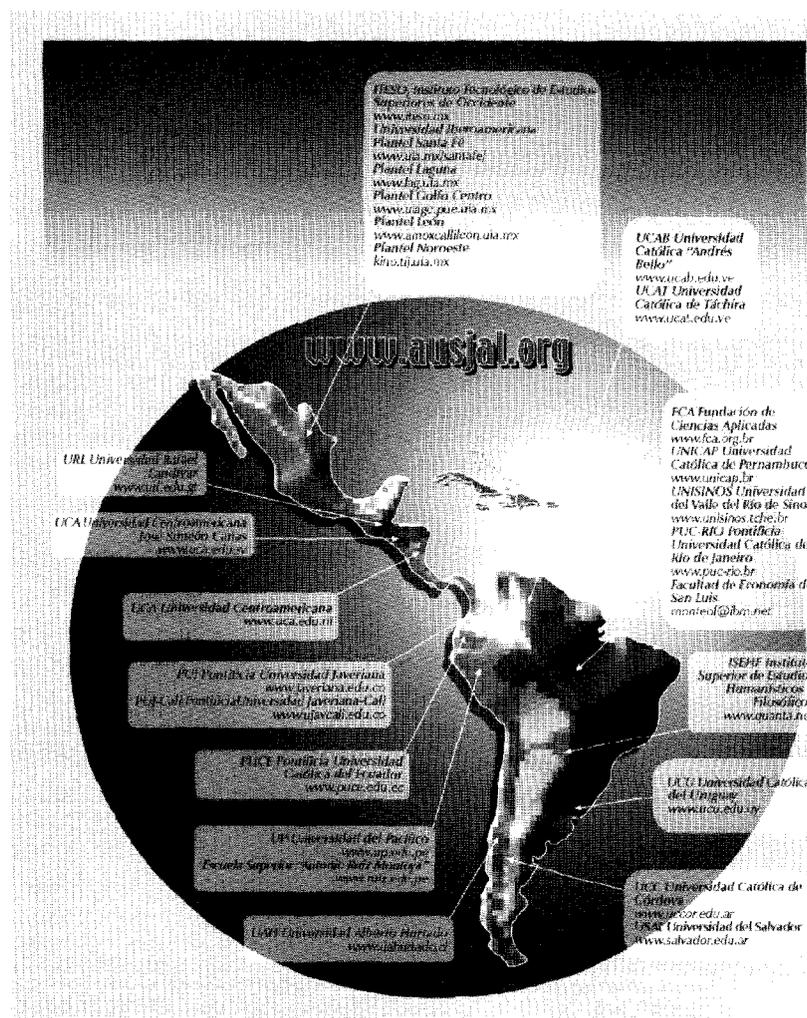
BY XABIER GOROSTIAGA

UNIVERSITIES HAVE NOT PLAYED a relevant role in the current problems of Latin America in this era of knowledge, information and communications. In order to confront the challenges of the 21st Century, the university must redefine its objectives in order to achieve professional training for increased social production, a better quality of life, and the redemption of what is public.

Challenges

THIS UNIVERSITY DEBATE has become more complex due to external factors. International financial entities have often claimed that the university used up excessive resources from the educational budget, while its rate of return was inferior to that of basic education. This theory generated confrontations within the educational system and inside ministries, with respect to the "fight for the budget," as well as a growing breach between the educational sectors, the public and the private university. The World Bank and UNESCO paper, *Higher Education in Developing Countries: Peril and Promise. The Task Force on Higher Education and Society* (World Bank, 2000), was instrumental in Latin America in reformulating the debate

CONTINUED ON PAGE 33



OpenCourseWare

BY CHARLES VEST

AT MIT, WE SEE THE QUALITY OF OUR SHARED human future on earth as a problem to be solved, a problem massively difficult but massively worth the solving, and a great deal of our scholarship and research is dedicated to that end. At the same time, MIT strives to lead the world not only in delivering but in designing an exceptionally rigorous science-based education for exceptional students from around the globe. This spring, those two interests—in world-changing research and world-class teaching—gave birth to a single project we hope may be as significant as any scientific or technological advance ever to emerge from our labs: MIT OpenCourseWare.

Knowledge for all

ON APRIL 4, 2001, MIT announced that it would make virtually all of its undergraduate and graduate course materials available, free of charge, to anyone, anywhere on earth, through the World Wide Web. At the initial press conference, one reporter asked, in effect: Why in the world would MIT professors give away their ideas for free? Wouldn't they be concerned about the lost potential for income? A faculty member on hand gave the simple reply: that for scholars and teachers, the greatest possible reward is the sense that other people find their ideas important, inspiring, useful—that their work can indeed change the world.

In a market-driven universe, where the Internet and the World Wide Web are increasingly seen as vehicles for making money, MIT OpenCourseWare seems counterintuitive. But as any scientist can tell you, the most exciting new ideas usually do. OpenCourseWare emerged as the surprising result of an intensive faculty and staff effort to decide what major initiative MIT should undertake in the evolving field of "distance learning." Eventually, we came to see the great pedagogical challenge of the moment as this: to define what the "Internet revolution" will mean, and should mean, for higher learning on this planet.

We are faced, of course, with the stark fact that even now only five percent of the world's population has access to computers and the Internet. Obviously, to make the conversation relevant for the vast majority of humanity, a critical priority must be to provide much more access for many more people around the globe. Government, industry, academia, and non-governmental organizations must together find the will and

the hardware to bridge the Digital Divide.

But frankly, this technical challenge is the easy part—extraordinarily expensive, perhaps, but easy. For us at MIT, the real issue was the intellectual one. As increasing numbers of people and institutions gain online access, how should all that technology best be used for education? And especially, how should it be used to make the most difference for those in greatest need—those parts of the world isolated by geography, poverty, or politics?

The Universal College idea

ONE VISION, popular since the birth of the Internet, is a kind of Universal-College-From-Your-Keyboard: take the best professors in the world in each subject, capture their lectures electronically and make them available worldwide.

That idea still has advocates, but it has its limitations. Taken to the extreme of hundreds of thousands of students worldwide receiving precisely the same lecture from the same professor on a machine is a nightmare in my view. Furthermore, it mirrors the model of business-to-consumer, or B2C, electronic commerce. B2C electronic commerce is somewhat interesting and important. But it is business-to-business, or B2B, electronic commerce that has been the truly transforming influence of the Internet in business and industry—and we believe the same will be true in education. The direct merchandizing of university courses, even interactive ones, will definitely have a role in global education. But the real power will arise as faculty in colleges and universities all over the world openly share educational materials with each other.

It is that intellectual revolution we hope MIT OpenCourseWare will ignite. The material made available will include detailed lecture notes, course outlines, reading lists, problem sets, essay topics, simulations, and demonstrations. Having access to those resources will *not* mean that users will be able to earn an MIT degree online, or even academic credit; OpenCourseWare is not an attempt at interactive distance learning.

But it *will* mean that educators and students around the world will be able to select whatever pieces interest them, add their own flavor, and shape them for use in the context of their own research, curriculum, culture, and goals. It will mean that the cumulative wisdom of our faculty—not just as scholars, but as expert teachers—will be available to help other educators instruct and inspire their own students. And it will mean that as new knowledge and educational content emerge, we can



disseminate them around the world instantly—a key step toward closing the gap between the information “haves” and “have-nots.”

It is no secret that university faculty have always shared such materials informally with a few colleagues and former students at similar institutions. Now we must do this in a globally open manner and with the speed of “Internet time.” Together, the creators and its users of these materials will weave a new worldwide web of knowledge and learning that will complement and stimulate innovation in ways we cannot even imagine today.

A worldwide intellectual network

WE CERTAINLY HOPE MIT OpenCourseWare will be of use to individuals—from the precocious high school senior studying biology in Singapore, to the city planner battling sprawl in Madrid (and even to the MIT student in bed with the flu and unable to make it to class!). But the truth is that most learning, especially within colleges and universities, will remain a deeply human activity, built on an ancient model of mentorship and dialogue. Information technology will enhance the role of the teacher, but it will never supplant it. And anyone who has ever been to college can attest that what they learned, they learned in part—perhaps in large part—from their fellow students. Those are dimensions no amount of “information” alone can replace.

So again, following the “B2B” and open system models, our true audience is not primarily individual students, but rather our global colleagues in education—from faculty members launching a new engineering university in Ghana to a professor in Rio seeking better ways to convey the deep mysteries of economics. The real power of OpenCourseWare will come in the ways it allows us to share our strength with other faculties and institutions. Our excitement about the potential of OpenCourseWare has been reflected in the support we have received worldwide. Since the announcement in April, we have received literally thousands of messages of support and enthusiasm from around the globe.

♦ Especially encouraging, of course, has been the indispensable and generous support of the Andrew W. Mellon Foundation and the William and Flora Hewlett Foundation, who together will fund the project’s crucial start-up and pilot phase. Their combined grant of \$11 million—\$5.5 million from each—will allow MIT to roll out the first edition of OpenCourseWare in Fall 2002, with the goal of making materials from more than 500 courses available within the following year. Experience gained from the first phase will help determine the costs and challenges of the second phase, expected to take six years more.

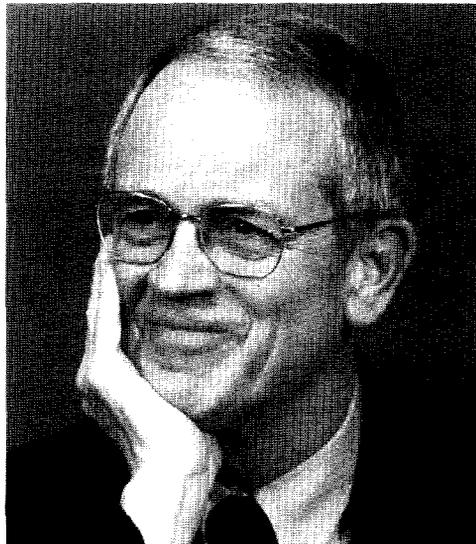
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The way of the future

WITH THE INITIATIVE NOW seriously under way, we are naturally looking to the future, and to our final great vision for the project, that other institutions will be willing and able to throw open their intellectual doorways as well—that OpenCourseWare will be a beautifully contagious idea. “Our hope,” said Paul Brest, president of the Hewlett Foundation, “is that this project will inspire similar efforts at other institutions and will reinforce the concept that ideas are best viewed as the common property of all of us, not as proprietary products intended to generate profits.”

MIT OpenCourseWare may go against the grain of today’s dominant market values. But it is a great celebration of the democratizing openness and opportunity inherent in the Internet and the Web. And it is a perfect expression of the core values and traditions of MIT and of all the world’s finest institutions of higher learning. OpenCourseWare is built on the belief that the most powerful, transformative force on earth may well be education, that the soul of education and human development is the free and open sharing of information, philosophy and modes of thought, and that the perma-

ment challenge of educators is to widen the world’s access to information and ideas and encourage others to do the same. As we open our own electronic doorways, we look out on the dawning with tremendous hope. ■



MIT PRESIDENT CHARLES VEST

**ONE VISION, POPULAR
SINCE THE BIRTH OF THE
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♦ Charles Vest is MIT president. Visit: <http://web.mit.edu/ocw>

New Information Infrastructure

A KNOWLEDGE BOOSTER

BY PAULI HEIKKILÄ

MAN HAS MADE remarkable technological advances, which have affected not only industry and commerce, but the whole of our society and our daily lives. During the last few decades, the progress in information and communications technologies has been revolutionary, with the explosive growth of mobile telephony and the Internet in the 1990s. In an amazingly short time, we have seen the industrialized world go through a metamorphosis. Technology-based products and computerized production processes have become parts of almost all aspects of business, work, and leisure. It is now possible to find valuable sources of information and to contact friends and colleagues all over the world in real time.

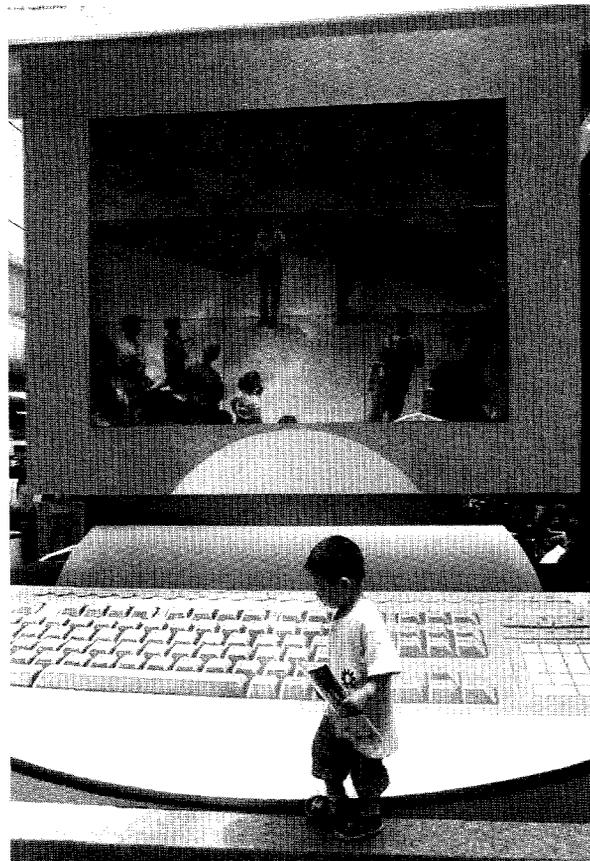
The new applications and useful services can be implemented, once all the new technologies are fully taken advantage of, and when many more people have access to the networks. However, the future may be as unpredictable as the past. Progress is being hindered by a number of obstacles, and the coverage of the networks is still far from being truly global. The goal of this article is to analyze the situation more closely, and also to propose new approaches.

Technology, liberalization and globalization

THE MAIN FACTOR enabling this rapid development has been technology, driven forward by microelectronics and telecommunications, which double their performance at regular intervals. It is expected that this exponential growth of processing power and transmission speed will continue for at least a decade—or even more.

However, technology cannot be developed or fully put to use unless the educational, legal, and business environment supports it. In most countries, the state used to maintain tight control of the media and telecommunications. It is obvious that the relaxing of this control in favor of competition and free exchange of information has been one of the main factors driving the fast development in information and communication technologies.

On the other hand, the government has nowadays acquired an important role for setting the rules for on-line security and privacy. Today, the competence of national law is becoming blurred, as a result of globalization and technological convergence. This creates an urgent need for international cooperation in order both to reap rewards from development and also to be able to fight its dark side: viruses, hacking, and the



controversial question of offensive or illegal content. What used to be local regulation therefore needs to be gradually replaced by international agreements, enabling the Internet to be used for dissemination and sharing of knowledge even more effectively and globally.

Know the past, know the future?

IF WE TAKE A LOOK at the technology forecast made by any company or institute in 1986, the predictions about the development of basic technology—such as microelectronics—were just about right, but we will find no real understanding of what was to happen in the mobile telecommunications business, let alone the Internet. If we go back to 1991, when the GSM system was introduced in Europe, the technological understanding was excellent, but few realized the business impact. If we look at the documents of the large European research program ESPRIT at that time, we will find practically no references to the word “Internet”. But if we look at business forecasts made in the late 1990s about the growth of on-line business, we will find that they were seriously exaggerated. An economic bubble had been created, and in time, it burst.

The inevitable conclusion is that over the past 15 years, the development of the raw technology has been relatively easy to predict. The capabilities in computing and communications have grown at a known pace. What we were not able to foresee, has been their usage patterns, and the innovations that change

research, safety, a stable legal environment etc.

The roots of the Internet are in military research, initiated to ensure that computers would survive a nuclear attack. The Internet protocols were mostly developed in universities and other public institutions, including the WWW, which evolved from a system meant for physicists to share information. Since the late 1980s or early 1990s, in many countries all university students have been given Internet accounts. The backbones that the networks needed were mainly funded by the public sector. Even in 1995, many companies, including Microsoft, did not yet really believe in the Internet. But the seeds had already been sown. In a short time, the Internet then evolved into the current multimedia extravaganza, now being driven by private industry. Yet this would not have been possible without the initial investment and role of the public sector and universities.

Can we extrapolate from here?

THE SIMPLE AND POPULAR extrapolation today is that broadband access will become more and more widespread, which will then provide the public with all kinds of on-line shopping and entertainment. This is very likely to happen, but it is useful to analyze the limitations and to attempt to foresee the risks. The Internet was never designed for the uses it fulfills today. A growing proportion of Internet content and services is no longer based on consensual public standards, but rather on proprietary solutions and file formats, requiring the

THE MOST POPULAR INTERNET CONTENT SHOULD BE ACCESSIBLE EVERYWHERE WIRELESSLY AND AT REASONABLE COST.

those patterns. On the other hand, usage patterns do not necessarily change just because the opportunity is there, or because the stock market believes they should. Relatively simple changes in the interface such as the web browser, the added value of mobility for the voice phone we had used for decades, and the use of one set of Internet protocols instead of the older dedicated telecom protocols—the consequences of all of these quite small changes have surprised us. Gigantic business successes and failures have taken place. Direct extrapolations of the usage patterns of any given time have been inaccurate. Enormous, though yet unseen potential exists in the future development of technology and networks. However, determined work and cooperation will be required in order to make the best out of that potential.

The role of the public sector

IT IS EASY TO ASSUME that the development is being driven solely by competition and companies. Where the infrastructure is already in place, this is indeed the case. However, if we look back in time, we will realize that the infrastructure would never have come into place without a strong contribution by the public sector, which is responsible for education, basic

end-user to frequently update or upgrade the terminal software (and even hardware), and to be wary about security issues.

I believe the next development phase is likely to introduce new and, above all, easier usage patterns, which will enable a normal end-user to enjoy the wealth of the Internet content more easily and without needing to be a computer enthusiast. The most popular content should be accessible everywhere wirelessly and at reasonable cost. There is no one single solution to these challenges; several parallel approaches must be explored at the same time. There is one path little traveled yet, which I would like to propose in the final section of this article.

Digital versatile broadcasting

BEFORE THE INTERNET ERA, and still today, television and radio programs are transmitted using terrestrial and satellite networks. These networks are mostly unidirectional and thus do not provide very good Internet access methods as such, but they are extremely cost-effective for broadcasting. What is even more important, they exist physically almost everywhere around the globe. They are still used mainly for analog broad-

CONTINUED ON PAGE 27

THE INDIAN Innovation SYSTEM

BY RAGUNATH A. MASHELKAR

INNOVATION IS THE KEY to the production as well as processing of knowledge. Indeed a nation's ability to convert knowledge into wealth and social good through the process of innovation determines its future. The purpose of innovation is to create a new value for an individual, team or organization, or for a society at large. New values could be in the form of breakthrough products or services, new strategies, new processes and new methods for organization. In this article, we will discuss the issue of the Indian Innovation System, specifically linked to science and technology innovation.



The strong Science and Technology (S&T) base of India gives us the confidence that India has a sound S&T capacity. The credit for this goes to the great architect of this base, namely, Pandit Jawaharlal Nehru. To Pandit Nehru, science was not only a tool for economic development but also a means for the emancipation of mankind and the qualitative transformation of a stagnant society. The 1958 science policy resolution reflected his own belief beautifully: "It is an inherent obligation of a great country like India with its tradition of scholarship and original thinking, and its great cultural heritage, to participate fully in the march of science, which is probably mankind's greatest enterprise today". Indian S&T in the post-independence era has marched ahead in that spirit.

India today possesses a massive science and technology infrastructure spread across the country. With over 200 universities, 1500 research institutions and 5000 Ph.D.s being turned out every year, India is in an enviable position with regard to the S&T manpower. Scientific institutions have been set up and nurtured in many diverse sectors. These have included agriculture, atomic energy, electronics, environment, ocean, space, biotechnology, non-conventional energy sources, defence, health, and more. The chain of national laboratories, which was set up after independence, has built several core competencies in a large number of areas. All this gives India a marvellous launching pad, on which it can set up a really ambitious growth agenda.

Some achievements

INDIAN SCIENCE and technology in the post-independence period is something to be proud of. Thanks to the "green revolution," India is able not only to feed its masses but has enough to spare and export. The "white revolution" has made India the largest milk producer in the world.

With a comprehensive defense research and development infrastructure, India is among the few countries of the world, which makes the most sophisticated weapons and weapon systems, including missiles of various descriptions and multi-barrel rocket systems. It has developed low-level tracking radar, night vision devices, and sophisticated ship sonar systems. An indigenous light combat vehicle and a remotely piloted vehicle are at an advanced stage of development. Today, India ranks among the few nations of the world that have a credible capability in space science and technology, including design and construction of satellites and launch vehicles. India's capability in nuclear science and technology, including nuclear fast breeder reactors, has been the result of indigenous efforts. The entire range of technologies from prospecting of raw materials to the design and construction of large nuclear reactors is now available on a self-reliant basis.

There have been other proud moments in Indian science and technology. We had path-breaking developments in parallel computing, breaking into the export market for supercomputers. And India has unveiled the new, PARAM 10000 supercomputer, with a capability of 100 Gigafllops (100,000,000,000 mathematical operations per second). The open frame architecture of C-DAC's PARAM 10000 places India in the League of Nations, which are expanding the frontiers of supercomputing to teraflop range. Presently, only the United States, Europe and

Japan have such technological capability.

In the industrial R&D sector, India has achieved success in many areas. The Indian pharmaceutical industry, which was practically non-existent at the time of independence, has emerged as one of the most competitive producers of therapeutics in the world. It has contributed greatly to improving the standards of healthcare in the country and making modern medicine available to the people at an affordable price. India is a net exporter of pharmaceuticals, meeting more than three quarters of its requirements of bulk drugs and almost all of its requirement of formulations. Agro-chemicals is yet another area of success for Indian S&T. The industry, which was predominantly dependent on imports until the early seventies, is today self-sufficient in all matters of technology and production, thanks to the contribution of the indigenous know-how. In the area of petroleum refining and petrochemicals, the country has made some impressive strides. In the area of industrial catalysis, India ranks among the top few countries possessing world class capability for catalyst development and manufacture, in some cases, even exporting its technology to the USA and Europe.

The Indian leather industry has been transformed from a mere exporter of raw hides and skins a few decades ago to a vibrant, modern industry that ranks among the top five export earners. R&D has contributed to the entire range of technical activities from leather processing technologies for curing, dehairing, tanning and finishing (all environmentally clean), to process automation and modernization of tannery operations, and novel product design.

Other innovation systems

MANY SOCIETIES IN INDIA have nurtured and refined systems of knowledge of their own, relating to such diverse domains as geology, ecology, botany, agriculture, physiology and health. We are now seeing the emergence of terms such as 'parallel', 'indigenous' and 'civilizational' knowledge systems. Such knowledge systems are also expressions of other approaches to the acquisition and production of knowledge. They were, as yet, neglected by modern science, as the pharmaceutical industry has realized.

The growing dominance of a single view of the natural world as expounded by modern science will undermine these knowledge systems. Further, the process of globalization is threatening the appropriation of elements of this collective knowledge of societies into proprietary knowledge for the commercial profit of a few. These fragile knowledge systems need to be protected and enhanced through national policies and international legislation, while ensuring their development and proper use for the benefit of their holders.

In particular, a greater awareness about the cultural relationships between various knowledge systems needs to be created. A systematic and in-depth analysis of the parallelism of insights between indigenous and civilizational knowledge systems, on the one hand, and certain areas of modern science concerned with fundamental aspects, on the other will have to be launched. In particular, a strong linkage between the indigenous knowledge holders and scientists will be needed in the new millenni-

um to explore the relationship between different knowledge systems. Some of the greatest opportunities are provided, especially in the Indian context, in the area of traditional medicine.

Examples of this new partnership between these two domains of knowledge are gradually emerging in India. Let us cite a couple of examples. The first is a medicine that is based on the active ingredient in a plant, *Trichopus zeylanicus*, found in the tropical forests of south-western India and collected by the Kani tribal people. Scientists at the Tropical Botanic Garden and Research Institute (TBGRI) in Kerala learned of the tonic, which is claimed to bolster the immune system and provide additional energy, while on a jungle expedition with the Kani in 1987. A few years later, they returned to collect the samples of the plant, known locally as arogyapacha, and began laboratory studies of its potency. These scientists then isolated and tested the ingredient and incorporated it into a compound, which they christened "Jeevani"—giver of life. The tonic is now being manufactured by a major Ayurvedic drug company in Kerala. In November 1995, an agreement was signed between the institute and the tribal community to share a license fee and to assign 2% of net profits to the tribe. The process marks perhaps the first time that cash benefits have gone directly to the source of knowledge of traditional medicines—the original innovators.

Grassroot innovation

WE NEED A PARTICULAR FOCUS on community knowledge and community innovation. To encourage communities, it is necessary to scout, support, spawn and scale up the green grass root innovation. It will generate employment on one hand and it will use natural resources sustainably through linking of innovation, enterprise, and investment. This will again require building up adequate linkages with modern science and technology and market research institutions. One will need new innovative models of development, employment generation, and conservation of natural resources.

We need to build more organisations like Gujarat Grassroots Innovation Augmentation Network (GIAN). GIAN has attempted to set up a venture capital fund for small innovation providing for its linkage with R&D and scaling it up into a viable enterprise. The recent effort by two science departments, which set up a Technopreneurs Promotion Program is also noteworthy, since it provides the much needed financial support for the first time to individual innovators, be it an artisan, a farmer, or a school boy. The establishment of the National Innovation Foundation is another step in the right direction, since it will help create a national register of these grass root innovators and will facilitate the process of taking these innovations to the market place. Eventually, it is the partnership of all the players, in the formal sector as well as the informal sector, that will make the Indian innovation movement happen. Two examples of this partnership are noteworthy.

India's publicly funded R&D institutions are also participating in this grand endeavor. The experience of the Council of Scientific & Industrial Research (CSIR), which is the world's largest publicly funded industrial R&D institution is worth sharing. CSIR is building new innovation models by forging unusual local partnerships, reaching out to the remote corners of India. A village called Athaoni, on the border of Maharashtra and Karnataka is the place from where Kolhapuri chappals come to us. They were until recently made by an age-old traditional technique. Scientists from the Central Leather Research Institute (CLRI) studied the process and helped them to reduce the processing time from 30 days to 10 days through the application of good science—the stamping process was standardized and certain innovative changes in design, based on computer aided techniques, were made to give more comfort to the wearer. But this was not a top down process. The oldest man in the village was consulted, he was convinced that the age-old traditions will have to change. Today several hundred artisans have been trained by CLRI. This has not only enhanced family incomes for the villagers but also changed their perception of science and development—in short a micro social transformation. CSIR has realized that in this innovation chain, it is not techno-

economics alone, but the socio-economic and socio-cultural aspects that need to be taken into consideration.

India's new S&T policy

INDIA'S POLICY on science and technology would have to be directed along five lines. The first priority will be to use the great powers of science and technology to meet the basic human needs, particularly taking note of locale-specific situations; these would relate to food, health, water, energy, employment, shelter, and the like. The second priority would be to use science and technology to create wealth, both by enterprises as well as by individual Indian entrepreneurs. The third priority would be to embark on a major thrust in emerging knowledge based areas such as informatics, biotechnology, new and renewable energy sources, new materials and environment-related programmes. In all of these areas, India can make a major headway and surge ahead of the rest of the world. It would, then, use this position to its advantage in the global technological scenario. The fourth priority relates to strategic areas, where neither for love nor for money, technologies will be available to us. This would involve nuclear energy, defence research, and space science and technology. Fortunately, we have built self-reliance and enormous capabilities over the past few decades in all these areas. It is on this powerful base that India will make its confident march into the twenty-first century.

Ragunath A. Mashelkar is director general of the Council of Scientific and Industrial Research, India. Visit: www.csir.res.in

*A strong linkage
between the
indigenous
knowledge holders
and scientists will be
needed in the new
millennium*

Mapping Progress

*On the Road to the Knowledge Economy
in Brazil, China, and India*



BY ANUJA ADHAR UTZ

KNOWLEDGE-DRIVEN development has recently emerged as an important engine of growth and poverty reduction. Elements of the knowledge economy are already quite visible in Brazil, China, and India—which are home to 45 percent of the world’s population. However, these elements manifest themselves in different ways. The information technology software and services industry in India, for example, has caught the imagination of the world, currently accounting for almost 2 percent of India’s GDP, and grossing an annual revenue of US\$8.26 billion during 2000–01.¹ China has flourishing high-tech parks along its coast that are hotbeds of innovation. Brazil is distinguished by world class technology development in areas such as aeronautics (Embraer), tropical agriculture (Embrapa), and biotechnology (Genoma).

However, these are only a few of the more spectacular examples. Knowledge is increasingly becoming a key factor of development, and the “knowledge economy” is in no way purely confined to information and communications technologies (ICTs) or high-tech industries. It is defined as one where knowledge is created, acquired, transmitted, and used more effectively by enterprises, communities, and individuals for greater economic and social development. Such an economy taps and uses the growing stock of knowledge and advances in

- ICT for its overall development.

A benchmark for knowledge assessment

TO ASSESS countries' progress in their transition towards a knowledge economy, the World Bank Institute has developed a benchmarking tool—the knowledge assessment methodology (KAM).² The KAM shows how an economy compares with its neighbors, competitors, or countries it wishes to emulate. It helps to identify the problems and opportunities that a country faces, and where it may need to focus policy attention or future investments.

The basis of the KAM is a data set comprising 66 structural and qualitative variables for 95 countries (both developed and developing). These variables serve as proxies for the four pillars of a knowledge economy, namely: *an enabling economic incentive and institutional regime; an educated and skilled population; an efficient innovation system; and a dynamic information infrastructure.* Good performance in all these areas is a prereq-

uisite for increasing the efficiency and flexibility of the economy to respond to new challenges, to take advantage of new opportunities, and to ensure that the benefits of growth are broadly shared by all in society.

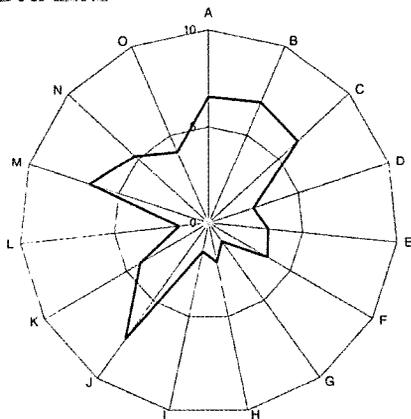
This article presents the knowledge assessment scorecards for Brazil, China, and India as well as that of the United States, which is one of the most knowledge-driven economies in the world. The scorecards can be used to assess progress made by these countries on each of the four pillars of the knowledge economy. Generally speaking, the stronger a country performs on each of the pillars, the better positioned it is to make effective use of knowledge for its economic growth and social welfare.

The education base

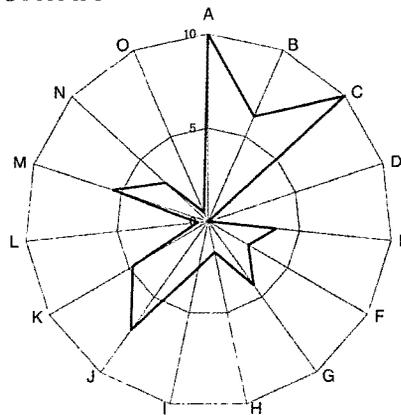
THE PICTURE that emerges from the scorecards is mixed. Brazil, China, and India still show weaknesses in their economic and institutional regimes which provide only limited

KNOWLEDGE ASSESSMENT SCORECARDS

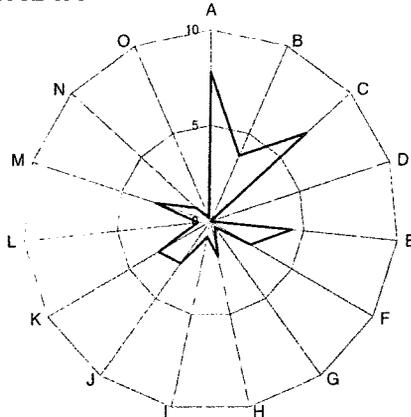
BRAZIL



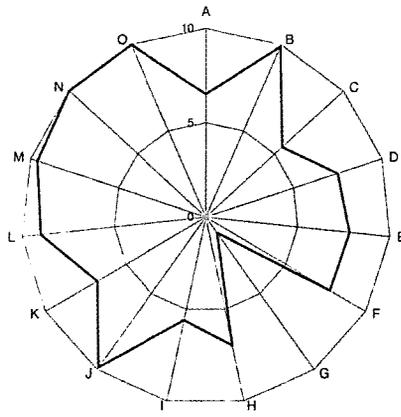
CHINA



INDIA



USA



PERFORMANCE INDICATORS

- A Average annual GDP growth 1990-99 (percent)
- B Human Development Index, 1999

ECONOMIC INCENTIVE AND INSTITUTIONAL REGIME

- C Gross Capital Formation as a percentage of GDP (average annual growth 1990-99)
- D Tariff and nontariff barriers, 2001
- E Rule of law, 1999
- F Control of corruption, 1999

INNOVATION SYSTEM

- G Foreign direct investment as a percentage of GDP, 1990-99 average
- H Expenditure for research and development as a percentage of gross national income, 1987-97 average
- I High technology products as a percentage of manufactured exports, 1999

EDUCATION AND HUMAN RESOURCES

- J Adult literacy rate (percentage age 15 and above), 1999
- K Secondary enrollment, 1997
- L Tertiary enrollment, 1997

INFORMATION INFRASTRUCTURE

- M Telephones (mainlines plus mobile phones) per 1000 people, 1999
- N Computers per 1,000 persons, 1999
- O Internet Hosts per 10,000 people, 2000

incentives for the efficient use of existing knowledge, for the creation of new knowledge, and for the dismantling of obsolete activities and the start-up of more efficient new ones. This pillar is central to an economy's overall ability to make effective use of knowledge and is thus critical to the effectiveness of the other three key areas. Therefore, the enabling environment will need to be strengthened in these countries to support their transition to knowledge based economies.

A strong education base is fundamental to the knowledge economy. A major weakness of Brazil and India's knowledge structure is their secondary enrollment rates, which are quite low compared to China, a country with less than 20 percent of Brazil's per capita income. On the other hand, Brazilian enrollment rates in tertiary education are higher than those of India or China. These differences in the level of educational attainment are reflected in the way these countries participate in the knowledge economy. India and Brazil, with their relatively high share of university graduates but lower levels of adult literacy, have been successful in small high-tech segments. China, with its higher level of basic education, has been very successful in generating economic growth from a broad range of manufacturing activities. Improving educational attainment levels as well as the quality of education and putting in place better mechanisms for life long learning are major challenges for these countries to make more effective use of knowledge for their development.

The innovation system

BRAZIL, CHINA, AND INDIA are also weak in the innovation system—a telling indicator is that their spending on research and development as a percentage of GDP is less than a third of what it is in OECD countries. In terms of the information infrastructure (telephones, computers, Internet, and so on), they lag considerably behind advanced countries such as the United States, thus exacerbating the risk of a growing "digital divide" between developed countries that are prepared to reap the potential benefits of the information revolution, and developing countries like themselves that have only limited access.

Knowledge sharing

THE KAM is also a useful tool to spark debate on countries' preparedness for the knowledge economy. At a recent six day policy forum for high-level delegations from Brazil, China, and India, the KAM provided a practical starting point for

benchmarking these countries and for identifying challenges that they would have to address in developing strategies on how to succeed in the global knowledge economy of the twenty-first century. This forum, organized by WBI in partnership with the British Council and the OECD, included teams of policymakers from government (ministries of finance, planning, education, science and technology, and information infrastructure), as well as representatives from the private sector, academia, think tanks, media, and non-governmental organizations.

A unique aspect of the forum was that it provided an opportunity for knowledge sharing and for frank and open discussion not only across the functional parts of government, as represented by the various ministries, but more importantly, with representatives from the private sector and civil society. They also learned from comparing and contrasting strategies and case studies across the three countries. The teams became aware that to benefit from the knowledge revolution, they will need to have a more comprehensive and consistent approach and devise concrete strategies for all the relevant policy domains. Furthermore, they concluded that to ensure a coherent strategy across sectors, their governments will need to be more responsive and dynamic to take account of inter-sectoral linkages, and encourage networking and interaction among all actors—in government, private sector, and civil society.

As a follow-up to this forum, these countries are developing their own knowledge strategies. The Indian Planning Commission has recently published a report on "India as Knowledge Superpower: Strategy for Transformation." The Chinese team has begun to develop a full fledged knowledge strategy and is organizing an international seminar on this topic; and the Brazilian team is also planning a conference for private sector representatives.

China, with its higher level of basic education, has been very successful in generating economic growth from a broad range of manufacturing activities.

1 National Association of Software and Service Companies (NASSCOM) at www.nasscom.org.

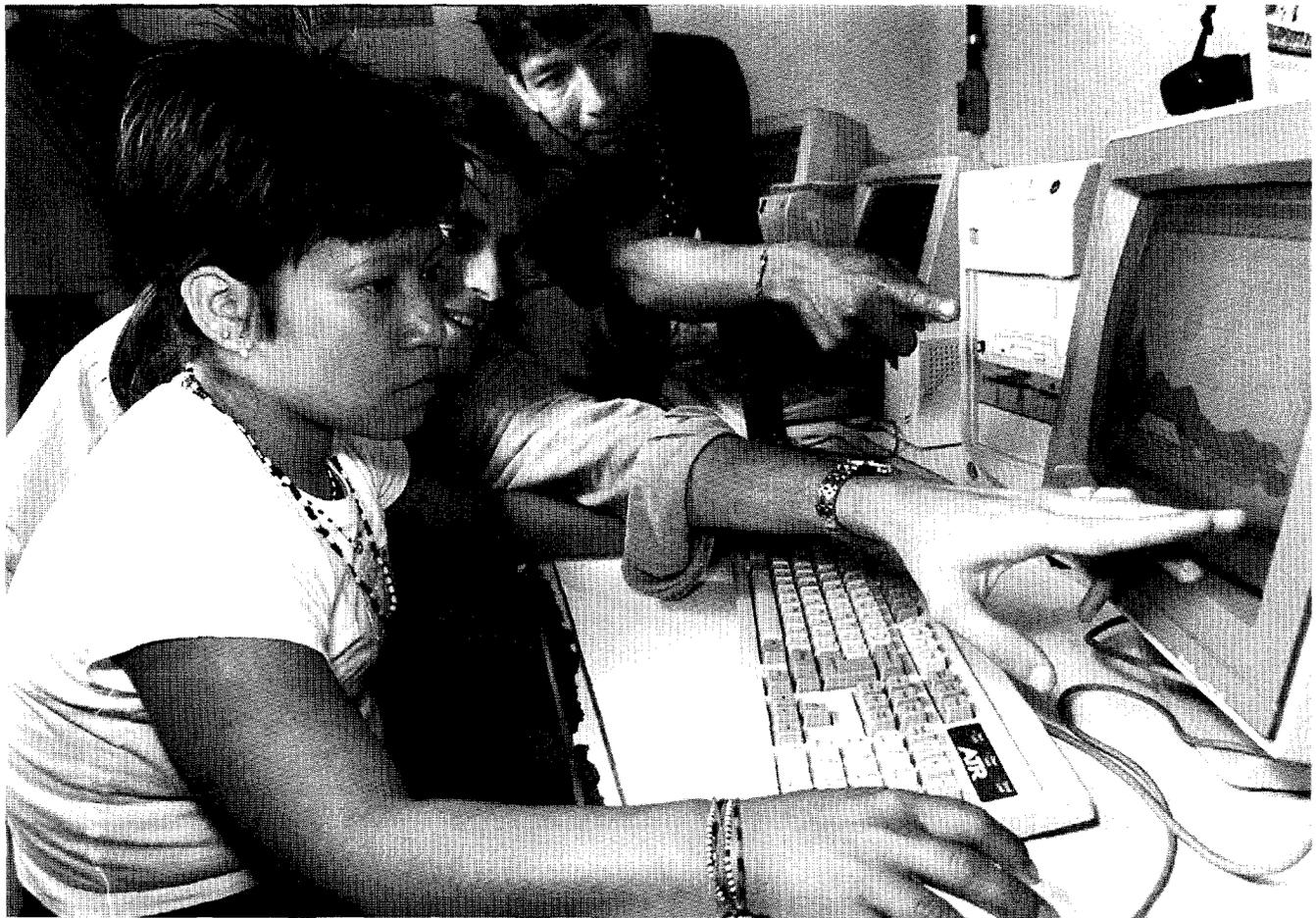
2 Available at www1.worldbank.org/gdln/kam.htm. The data comes from various sources published in 2001.

Anuja Adhar Utz is a knowledge management officer working on the Knowledge for Development Program at the World Bank Institute. For more information on this program, visit: www.worldbank.org/wbi/knowledgefordevelopment; also, see country specific analysis: *Korea and the Knowledge-based Economy: Making the Transition (2000)*; and *China and the Knowledge Economy: Seizing the 21st Century (2001)*. For more information on the knowledge economy, visit: www.developmentgateway.org

SUPPORTING THE PRIVATE SECTOR

BY AFSHIN MOLAVI

WHEN MARIANA RODRIGUEZ and David Fischman left their comfortable engineering jobs in a Lima office to open a private computer institute in 1983, their colleagues and family were surprised. With only \$700 in cash, low-rent office space, and two computers, the former engineers opened the doors to CyberTec, an institute that promised to teach Peruvians basic computer skills. CyberTec was immediately overwhelmed with demand. Peruvians flocked to the institute, signing up for classes faster than the fledgling institute could grow.



After a decade of high demand and fast growth, the computer institute was transformed into a private university in 1994. Today, Rodriguez, Fischman and their two original partners are founding board members of the Universidad Peruana de Ciencias Aplicadas (UPC), one of the top private universities in Peru, with two campuses in Lima, 3,000 students in 11 undergraduate programs, 1200 computer technical career students, more than 100 MBA students, and many more in IT training and Business courses.

Education initiatives

LAST YEAR, the International Finance Corporation, the private sector arm of the World Bank, approved a \$7 million investment in UPC to support the continued growth of this innovative private university. The UPC success story reflects the growing demand for private education in the developing world as governments find education budgets strained and citizens see education as a critical tool for social and financial mobility. It also reflects the specific demand for high-tech education and the need to invest in the continued growth of existing institutions to keep up with technological innovations

The IFC investment in UPC reflects the institution's belief that nations that progress along the "knowledge economy" pipeline tend to prosper economically. IFC's mission is to promote sustainable private sector investment in developing countries as a way to reduce poverty and improve people's lives. Education is a proven reducer of poverty and a key to a nation's economic growth.

As Peter Woicke, executive vice-president of IFC, said: "Quality education is an essential element for economic growth, upward social mobility, and competition in the interconnected economy. Faced with growing lower- and middle-class populations that are too often underserved, these nations can increasingly rely upon private education to complement public education." Though still a small part of the portfolio, IFC invested in private education projects in the following countries in the years 2000-1: Nigeria, South Africa, Cameroon, Ghana, Uganda, Uruguay, Argentina, Peru, Brazil, and India. The investments ranged from a private student loan programs in South Africa and India to a scholarship fund for underprivileged children in Uganda to an expansion loan for a private university in Argentina.

Building the communications infrastructure

EDUCATION, HOWEVER, can only substantially benefit a nation if the means to disseminate that knowledge are

advanced. Developing countries need to become fellow travelers on the information superhighway. All too often, it seems as if poorer countries are moving in the slow lane. IFC is committed to bridging this global digital divide. The joint World Bank-IFC Global Communications and Information Technology Unit (CIT) has pledged up to \$370 million for an expected 20 projects in fiscal 2001. So far, \$260 million of projects have been approved, ranging from an innovative project that brings the internet to Indian slums, partial credit guarantee for telecoms projects in India and Thailand, a major telecoms investment in Morocco, and the financing of an internet service provider in Tajikistan.

An innovative \$1.6 million IFC pilot project in India that provides internet services to India's slums and rural areas showed how rapidly even illiterate children can become comfortable with computers while clearly displaying this underserved segment of the population's desire to gain knowledge. Crowds of children gather around the computer kiosks, adeptly maneuvering the mouse, browsing the web on kid-friendly sites, and playing computer games on the keyboard. Over the next three years, the project will install 60 more public computer kiosks throughout the country to test its potential to increase literacy.

The range of IFC investments reflect the need to help create a dynamic information infrastructure to facilitate the effective communication, dissemination, and processing of information. The establishment of the communications infrastructure complements IFC investments in education because an educated and skilled population is required to create, share, and use knowledge well.

While telephone lines, cellular services, and software packages help the private sector of developing countries, new educational opportunities—like UPC—ensure the continued growth of the middle class and lower middle class that is so critical to private sector development, and poverty-alleviating economic growth. By investing in private educational institutions and communications infrastructure in the developing world, IFC is seeking to spread the benefits of the global knowledge economy.

Perhaps one day the IT Worx software engineer in Cairo might be able to teach a class via internet to UPC in Lima, his image and words carried along smoothly by an effective broadband network linking the two countries thousands of miles apart.

"Quality education is an essential element for economic growth, upward social mobility, and competition in the interconnected economy."

Afshin Molavi is a communications analyst at the International Finance Corporation. Visit: www.ifc.org

New Information Infrastructure

CONTINUED FROM PAGE 28

casting. Digital television broadcasting has been started in a few countries, but it still mainly carries only conventional television programming. It is interesting to note that this particular area has lagged behind in the deregulation process. In many countries, the state still maintains tight control over what kind of programming is to be broadcast, especially over the terrestrial network. As a result of this, we have a wrong paradigm of the technological and economic capabilities of the future digital technology, DVB, which stands for digital video broadcasting. It could equally well be called "digital versatile broadcasting". DVB is capable of providing extremely cost-effective digital information and data broadcasting—such as Internet content—wirelessly.

However, this calls for increased international initiative and cooperation. Using this technology, the most interesting content of the Internet could relatively readily be made available globally, using existing terrestrial and satellite networks. To access the content they want to download, end-users would only need an inexpensive PCI card or USB device. It is also possible to use a mobile phone or any Internet connection as an upstream channel.

The alternative architectures of such hybrid systems are beyond the scope of this article. However, they have been shown to be technologically feasible, and with inexpensive and wireless terminals available, they could make the Internet available to millions of new users, and possibly change the usage patterns again.

Conclusions

THE RAPID DEVELOPMENT of computers and communications will continue at least for the next ten years. The main commercial driver today is entertainment, but many people cannot afford broadband access, or it may not even be available in the area where they live. Internet usage is also hampered by the constant need to update and upgrade the end-user terminals, as

well as growing security concerns.

New initiatives are therefore now needed in order to give more people quality access to the knowledge and information that are so rich and valuable on the Internet. One new approach can be implemented by capitalizing on assets that we already have, such as the broadcasting infrastructure. By using existing digital technologies, such as

those standardized by DVB, the wealth and the knowledge stored on the Internet could be available to many more people.

Pauli Heikkilä is managing director, Digita Oy, Helsinki, Finland. For additional information and contacts, visit: www.digita.fi <Digita Oy> www.digitv.fi <Digital television in Finland> www.dvb.org <DVB forum>

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CAN WE DO THE RIGHT THINGS?

THE FUTURE OF TECHNICAL ASSISTANCE AND CAPACITY BUILDING

BY EVELINE HERFKENS

E

FFECTIVE INSTITUTIONAL development requires a radical break with outmoded practices. That break is not easy to make. Recently, the Dutch Development Program hired external consultants to evaluate our performance. When I think about institutional development, I think about something those consultants told us. Our focus is *on doing things right*. The focus should be on *doing the right things*.

Doing things right means losing sight of the big picture in which you operate. Concentrating on your own job and your own responsi-

bility to carry it out to the best of your ability. And it means fear of change, of taking risks and making mistakes. Procedures take priority over goals. Doing the right things means starting with a clear vision of the context in which you work. Being flexible so that you can adapt to new situations. Knowing where you are headed and how to get there.

Doing the right things

THINKING OF THE RIGHT THINGS to do in capacity building and technical assistance, five items spring to mind.

Ownership

Before a country can begin to build its capacity, it has to decide for itself what its goals are and how it plans to get there. Every country has to answer this question on its own. That is why Poverty Reduction Strategies are so important. I must add that institutional development is not just a matter of good government structures. As important as these may be, they will succumb to the corruption of power unless they are counter-balanced by a vibrant civil society that provides primary impulses, checks and balances. Institutional development is about government, parliaments and civil society, and how they interact. And, more in particular, about how to maintain a focus on poverty in all matters of public finance—and in a participatory way.

◆ Strengthening local capacity

Every country, North and South, has some capacity, though not always in the amount or form that it would like. Capacity is ever present, even without external inputs. So the burning question is not *how* we should deploy our Western knowledge and our Western experts, but should we deploy them at all?

The good thing is that the list of programs and organizations dedicated to institutional development with little or no foreign involvement is growing steadily. Their priority is to mobilize the expertise within their own country. By reversing the brain drain, for example. One of them is the African Capacity Building Foundation (ACBF), into which the Partnership for African Capacity Building (PACT) was integrated last year, is a sound organization, with committed partners—and it is almost completely African.

◆ Flexible, made-to-measure solutions

Institutional development is an abstract term. Behind it are flesh-and-blood people and organizations. Journalists, police officers, agricultural advisors, tax inspectors, statisticians, doctors, auditors. We are talking about their combined capacity, as individuals and embedded in organizations and networks. Training doctors is one thing. Putting them to work as part of a sound policy for the health sector is something else entirely. I do not know which is worse: a doctor without a hospital or a hospital without a doctor.

◆ In general, we seem to know more about improving capa-



ment in people and organizations. A balance that we have to find through sector-wide approaches. There are no blueprints, just careful analyses of individual countries and individual sectors. Capacity building begins with listening, talking, analyzing and mapping out the problems; responding by asking questions; and only then coming forward with potential solutions, solutions which are made to measure. One of those solutions might be foreign technical assistance. But it is not the only one. We can also consider entirely different forms of knowledge transfer.

Mainstreaming poverty reduction

Our goal is poverty reduction. In the end, the critical question is what institutional development means in the fight against poverty. It is not just a matter of capacity within certain organizations and institutions. The legal framework, and norms and values, also come into play, as does the way in which organizations interact and cooperate. Take, for example, consultation between management and employees, or independent advisory boards, statistics agencies, and media.

It is not enough for organizations to do their work efficiently and have people to run them. In many developing countries, we see a process of systematic but silent exclusion

of the poor. We need to keep on asking countries whether they are using their public finances to tackle poverty seriously. That involves removing legal obstacles, streamlining legislation and improving coordination between organizations. Institutional development is about taking the hot political issues by the horns.

Coherence in rich-country policy

For rich countries, doing the right thing also means taking a critical look at our own policy and programs. They contain a lot of obstacles to building institutional capacity. Tied aid is just one of many possible examples.

Stop doing things right!

FOR A LONG TIME, we have known what the right things are: focusing on ownership, helping countries analyze the strengths and weaknesses of their own institutions and capacity, doing away with supply-driven or tied aid, stopping using foreign experts to fill the gaps, keeping our eyes and ears open for the effects on poverty, and thinking critically about our own attitudes. But we have just begun to put these ideas into practice. We have made the mental shift to a new paradigm,

but our behavior in practice is lagging far behind. Very often, implementation is still *business as usual* and we are still *doing things right*. Especially when it comes to technical assistance.

Rethinking technical assistance

BACK IN 1993, the Berg report leveled sharp criticism at the unimpressive results of technical assistance. But even before that, Kim Jaycox, then World Bank Vice-president for Africa, made the case that expatriate technical assistance in fact undermines African capacity. We cannot pretend that the situation has changed much since then. Why is it so difficult to break the mold?

In the first place, because technical assistance fits in perfectly with the myth of Western superiority—and even reinforces it. Both in the North and the South. We give, they receive. We know, they learn. We have to take care of things, because they cannot. Last year we set up a new policy framework for technical assistance, and we decided to close down the department that sends Dutch experts to the developing world. There was fierce parliamentary and public debate. I saw an article by a Dutch expert who was against reducing the number of development workers in the field. The article was headed: “*If the (Dutch) doctor leaves, development stops.*” And another quote: “*Herfkens kills babies*”. Vested interests in the development industry are hiding behind do-good intentions.

Recipients, too, have been brainwashed by this counterproductive paradigm, which manifests itself in an outmoded collection of instruments, heavy on parallel activities like project implementation units. Not for nothing does the draft of the Millennium Partnership for the African Recovery Program say: “As part of the process of the reconstruction of the identity and self-confidence of the peoples of Africa, it is necessary that this is understood and valued by Africans themselves.” I am reminded of what a friend from Mozambique once told me: “When *you* move to Mozambique, you are by definition an expat expert. But when *I* move to the Netherlands, I am only an immigrant.”

The second reason we are stuck is that foreign technical assistance is so diffuse and hard to pin down. It is part of almost every intervention, program and project at every level.

There are really two sides to technical assistance—first, the official policy debates and political posturing and second, the real world, with the gritty dilemmas that come up in any effort at implementation. We pay too much attention to the first and not enough to the second. The end users of TA are usually hidden away in the middle levels of developing country organizations and are rarely consulted. Many do not even think of TA as something they can mold to fit their own needs.

But unless we all push for change and reform, technical assistance will remain everybody’s and nobody’s problem. We have to tackle it. Because it is not just one more item on our political agenda. It is the only way forward to effective poverty reduction. TA still accounts for about a quarter of ODA. That is about fifteen billion dollars a year. We owe it to ourselves and to the recipient countries to use that immense sum of money as effectively as possible.

Bridging the gap

FOLLOWING ARE A FEW Dutch initiatives and plans, designed to bridge the gap and start doing the right things.

As already mentioned, that last year we set up a new policy framework for technical assistance. We decided to close down the department that sends Dutch experts to the developing world. There was fierce parliamentary and public debate. Now we see eye to eye. We will respond to demand, adopt sector-wide approaches and begin by analyzing capacity.

We are mainstreaming poverty reduction in all areas of policy, including institutional development. In our thoughts and our actions, the link with poverty reduction must come first. We are increasing our capacity for institutional analysis in order to reach more informed opinions about our programs and to assess the institutional fabric and existing capacity.

We work together with other donors to harmonize procedures. And we will continue to raise the same issue in the DAC. We are now looking at the options for pooling technical assistance, with field studies in four countries on how to improve donor coordination.

A new capacity building window in the Netherlands-World Bank partnership program. Here too, the emphasis should be on knowledge sharing, ownership and adapting to the capacity of individual countries.

Financing a follow-up to the Berg study, *Reforming Technical Cooperation and Capacity Development into a New Century*, carried out by UNDP. Last month in New York, we met for the first time with UNDP, the World Bank, WBI, bilateral donors and organizations from developing countries. This study hopes to do for institutional development what the David Dollar report did for aid in general.

We have no shortage of new ideas. The problem is how to free ourselves from old ideas and practices. At every turn, we still face lack of confidence in recipient countries, the tendency to cling to familiar procedures and a powerful lobby for the interests of our own TA industry. We are so focused on justifiable expenditure of donor funds that we lose sight of what it’s really all about: ownership and development of local capacity.

Let’s not put off change until we know exactly how the new approach will look. Institutional development is an adventure into the unknown, a voyage of institutional discovery—and a learning process for all parties. Technical assistance and capacity building are a part of all this. You can look at them as two sides of the same coin. The value of that coin is the contribution that institutional development makes to poverty reduction. We want that value to rise, and preferably in local currency. We could do that by speculation, or even gambling. But I would rather take justifiable risks and resolute action, if possible in a joint venture.

Eveline Herfkens is minister for Development Cooperation of the Netherlands. This article is based on her speech at WBI’s Spring Meetings Donor Breakfast, Washington DC (April 30, 2001)



AFRICA'S BUSINESS GETS INSURANCE AGAINST POLITICAL RISKS

BY JAIRO OUMA JURA

ANYONE WHO THOUGHT that insurance stops at the divide between economic investment risks and political risks in trade transactions is on the edge of an awakening. A new World Bank approved agency, called African Trade Insurance Agency (ATI), now seeks to help, encourage and develop trade, investments and other productive activities in Africa by offering guarantees against risks in business transactions. The agency is an international institution established by an agreement between sovereign states, and works in collaboration with other private insurers.

The high probability of political risks

FOR A LONG TIME traders and investors, both local and foreign, had to limit the injection of investment capital for fear of

negative political events. In fact, it is difficult to understand the magnitude of risk on investments under the current eerie market. In Africa many private and public insurance companies do not offer compensation to investors for losses or damages arising out of political or war afflictions.

But why is this? Since the nineteenth century, Africa has been known as a hot spot with an erratic, belligerent attitude among nations. The colonial past saw many wars and revolutions between tribes, nations, as well as against the colonial regimes. This has eased off with African states gaining independence. However, civil wars are still being waged, and there are across-the-border sporadic incursions throughout the continent. It is no wonder, therefore, that most underwriters avoid clauses for protection against political risks, because Africa is still rife with violent and destructive coups and counter-coups, civil wars, abject poverty, socio-economically

instigated clashes and hooliganism. Some schools of thought may argue that, given the political volatility in the region—with rampant wars in Senegal, Sudan, Ethiopia, Eritrea, Burundi, Congo, Uganda, Somalia and Angola—it would not be economically viable to provide insurance against political risks. Under the prevailing circumstances there is fear that the purse for insurance claims would be soon depleted, leaving an insufficient financial base to guarantee such risks. But this is not what ATI thinks.

Help is on the way

AS AN AUTONOMOUS LEGAL ENTITY, ATI is set up on the private corporation model and subject to state laws. Therefore, ATI operates within the legal framework of individual states and international trade laws as a corporation, which can sue and be sued in case of any breach of contract. Though currently located in Nairobi, Kenya, ATI is open for membership to all African nations. The initial group of participating countries is: Burundi, Kenya, Malawi, Rwanda, Tanzania, Uganda and Zambia. The overall objective of the project is to increase the number of participating countries over time and cover most of the continent in due course. In a world where trade is wont to fluctuating returns and an unstable environment, ATI seeks to deliver high quality services to those who entrust their premiums to it.

The Regional Trade and Facilitation Project (RTFP) was initiated by Common Market for Eastern and Southern African Countries (COMESA), with the support of the World Bank, with a view to facilitating access to, and improving the terms of, trade finance for imports and exports. This project provides credit to participating countries to back up insurance policies through offshore trust accounts, which would be accessible to private insurers to pay valid claims.

The unique ownership structure of ATI, its strategy and philosophy, will prove extremely viable to any risk-conscious investor with an intermediate or long-term perspective. The insurance maximum period is three years, plus two years of pre-shipment cover. The expected range of premium rates oscillates from 0.4 percent to 2.5 percent per annum, depending on the length of credit involved. ATI is really unique in the way it covers risks engendered by both political and commercial instability, moving away from the idealized version of traditional insurance service organizations. A remarkable feature is that exporters and investors from Africa and from outside the continent are welcome to contact the agency, which will be promoting conventional bilateral transactions through reduced export costs to traders.

Right now it may be foolhardy to think of this worthy project as a dark horse. Insurance companies contribute a lot in the financial stability of any economy. The systemic risks must be reduced because of increased wars, crime and other vices on productive and real assets owned by individuals and businesses. This would perhaps be an extraordinary success story never seen before in Africa. The ATI approach is based on the probable assumption of an insured peril occurring;

that markets are volatile and unpredictable in the short term; that diversification is the only sure way of managing risks over time; and that high portfolio turnover is demonstrably tax inefficient and harmful to the best interest of investors. ATI would, therefore, charge premiums sufficient to compensate for any forecasted losses as covered by the contractual policies. This will be provided on a first-come-first-served basis for all member countries, and premiums will also be the same for all.

A partners coalition

IN AN EFFORT TO HARMONIZE its involvement in international trade development, COMESA has extended an encouraging hand in funding the Regional Trade Facilitation Project. This will boost the regional macro-economic activities. In its bid to process applications for political and commercial risk insurance, ATI will provide a standard application form for each type of transaction that requires a cover, as well as guidance to fill out the form.

Like any other non-depository contractual financial intermediary dealing in life, health, property, and casualty insurance, ATI engages in short-term to intermediate term liability exposures. To this end, ATI's strategy is to liaise with existing Africa-based credit risk insurers to develop synergies in political and commercial risk insurance that can assist the private sector. According to the Commissioner of Insurance, Mr. Sammy Makove, the Africa Trade Insurance Agency should be encouraged because it would be operating at a high level to improve trade without competing with other underwriters in the local market. "Though working outside our jurisdiction, ATI will contribute immensely to the African economy," he commented.

One active participant in the project is the Multilateral Investment Guarantee Agency (MIGA), which offers political risk insurance for a variety of forms of investment, including equity, quasi-equity, and third-party debts. Whereas ATI, through RTFP, offers insurance for trade transactions, MIGA handles all investments in the form of equity ownership of an enterprise. Potential investors and lenders eligible for such facilities will be directed accordingly. Risks covered by insurance policies include coverage against losses caused by war or civil disturbances, embargo, government interference with carriage of goods and/or entities owing insured obligations, expropriation, cancellation of licenses, imposition or increase of import or export taxes among others. Standard documentation that already exists covers:

- Sale of goods usually on credit terms
- Letter of credit information
- Financial lease
- Import/export of capital equipment for use by an insured in carrying on its business
- Loans by foreign lenders
- Loans by local lenders
- Contract/performance bonds
- Import/export of goods to stock for sale

Import/export of goods for processing
Services etc.

Perhaps, exporters, investors and potential investors should start warming up to this good news because, at the heart of ATI's edge, there are the cost and commitment to retribute losses incurred from political upheavals. To succeed in doing this, ATI will cooperate with private risk insurers in the region to implement the Regional Trade Facilitation Project/MIGA, and provide insurance products that are tailored to the needs of the market. Its target market will include non-African firms selling goods and services in participating African countries. ATI will also team up with foreign banks, financial institutions financing exports to member countries, and African companies from participating countries that trade internationally.

Sustainable Development

CONTINUED FROM PAGE 13

in a more constructive manner. It strengthened a theory that within AUSJAL (Association of Universities Entrusted to the Company of Jesus in Latin America) is called "the educational continuum," which proposes the integration of different educational subsystems into a national coordinated system responding to the challenges of Latin American society. The search for an educational alliance, a type of Educational Social Contract that integrates both public and private education (involving state, business, and civil society) is a democratic, participatory, efficient way of overcoming the educational deficit. A poor education system amplifies underdevelopment and its effects, such as the rise in poverty, inequality, the environmental crisis, and discrimination against women. The problem is not only the increase in poverty but also the increase in inequality, where the educational gap between those who know and those who don't is an amplifying factor to the income gap. The educational deficit in quality, relevance, and equity is increasingly considered to be the principal endogenous cause of modern underdevelopment in Latin America.

Solutions

IN 1990, AUSJAL decided to confront that challenge and put forward an educational proposal containing six objectives, priorities, and lines of action. The proposal, later published in *Challenges*, was endorsed by 26 universities, more than 200,000 students and 10,000 professors in 13 Latin American countries. A guiding principle was accepted that would direct AUSJAL's actions: "To develop a high scientific quality and a sharp application of studies, in order to achieve higher social productivity in the creation of goods and services required to improve the quality of life of our societies. The increase in scientific and technological capacity must be encouraged by a humanism that leads effectively to solve the great injustices suffered by our societies, and particularly by the majority

Positive outcomes

IT IS FEARED that the agency may monopolize the continental market in covering political risks, which are very costly to run. However, this fear is unjustified. It is true that the agency may dominate the field for a short period of time. But it may also help achieve sustainability and international competitiveness by high-quality services to the best satisfaction of all insurance consumers. The availability of such facilities would develop an interest in Africa on the part of international banks outside the continent, hence encouraging the development of the private sector.

This initiative should be given utmost support and cooperation to resuscitate the dwindling economies of the African nations through trade and insurance investment programs. ♣

Jairo Ouma Jura is a freelance journalist in Nairobi, Nigeria.

who are poor. The sense of the common good, responsibility, the democratic spirit, and the increase of the organizational capacity of our societies must be the seal of the ethical contribution of our universities".

The recognition of these potentials and weaknesses has served to define a set of strategic priorities that recently have been approved unanimously in the *AUSJAL Strategic Plan* (2001), and which address three thematic areas: 1) What we train for; 2) The person we train; 3) The training institution.

The first block of priorities specifically looks at society: for whom, for what development and for what types of societies do we train. The second block looks at the person that is being trained, the latter's integral formation, motivation and capacity for the transformation of this society of exclusion and poverty. The third block refers to the change needed in the university itself. This process requires evaluation and indicators to verify the progress we are making toward achieving these priorities.

This ambitious proposition aims to respond to the challenge formulated by Albert Einstein: "The world that we have created to date as a result of our way of thinking has problems that cannot be solved by continuing to think in the way we thought when we created them." AUSJAL's proposal presents not only a new way of professional quality and ethical sensibility, but also a new way of university action. ♣

Xabier Gorostiaga, S. J. is executive secretary of the Association of Universities Entrusted to the Company of Jesus in Latin America (AUSJAL). For more information and the complete text of *Challenges for Latin America* and AUSJAL's Education Proposal, visit: www.ausjal.org

References on this subject:

Gorostiaga, Xabier S. J., "In search of the missing link between education and development. Challenges and opportunities for the private university in Latin America and the Caribbean," in Philip G. Altbach, ed. *Private Prometheus: Private Higher Education and Development*. The Center for International Education. Boston College. Westport, London: Greenwood Press, 1999.

Armed Conflicts Destroy African Environment

BY EMMANUEL KORO

GENERALLY KNOWN TO TAKE AWAY the lives of hundreds of innocent people, Africa's armed conflicts are also destroying the natural resources on which people's survival and socio-economic welfare depend. It is against this background that the Washington-based conservation organisation, the World Wide Fund (WWF) held a workshop this year, in Victoria Falls, Zimbabwe, to raise awareness of the negative impact of armed conflicts on the environment and to develop concrete strategies for mitigating its effects.

Devastating consequences

"ARMED CONFLICT as we have witnessed it over the years, has brought in some cases irreparable damage to both humans and natural resources," said Edward Chindori-Chininga, Zimbabwe's deputy minister of Environment and Tourism who officially opened the workshop. "Wildlife has often borne the brunt of the worst negative effects of armed conflict, because it provides a source of ready protein for people and its territory can be taken over." Chininga called for the need to take into account long-term biodiversity conservation measures, which involve the survival of human beings as well as the preservation of natural resources. He said that in the Great Lakes Region, the Rwandese civil war impacted negatively on the rich and unique biodiversity of the Virunga Volcanoes region.

Robert Mwinyihali, manager of the Zoning and Wildlife Reserve Program in the Democratic Republic of Congo, said: "People in the DRC are relying on natural resources, specifically the poaching of wildlife such as elephants, gorillas and rhinos. The rebels took advantage of the situation to exploit minerals; to exploit everything they could, in order to raise money to fuel the war that is going on." Mwinyihali said that for the past two years, armed conflict in the DRC has had a severe impact on the country's forests; the timber went to Kigali, Rwanda, and Kampala, Uganda, as stated correctly in a UN's recent report. The UN report on DRC said Uganda and Rwanda were involved in 'mass-scale looting' of DRC's resources which includes diamonds. He said DRC nationals were not benefiting from their resources. "It is the predatory rebels who are benefiting, while local people lack basic public infrastructure such as roads."

- The protracted DRC conflict has impoverished and displaced people and has increased pressure on the exploitation of minerals and wildlife through poaching. A Sierra Leone national who attended the workshop and spoke on conditions of anonymity said, "Inequity is an underlying cause of conflict in Sierra Leone." He said people living near protected areas such as national parks were not involved in their management and, when threatened with hunger they invaded these areas to exploit natural resources. Mozambique's 12-year civil war had a severe impact on its wildlife, resulting in a sharp decline of its elephant population through poaching. Although its forests are recovering, its elephant population is still struggling to reach a viable size. Ethiopia's long and multi-faceted conflict left a legacy of deforestation, soil erosion, destruction of wildlife and decline in water quality.

Minister Chininga said Zimbabwe's war of liberation had a negative impact on protected wildlife areas. "Even today, 21 years after independence, in protected areas around Victoria Falls, wildlife was being killed or maimed by land mines that were planted during the war of liberation," he said. He said Zimbabwe's war of liberation was largely caused by the inequitable distribution of resources such as land, and that, even today, the land issue in Zimbabwe has not been totally resolved.

James Shambaugh, Africa senior program officer of WWF Biodiversity Project said armed conflicts led to a decline in trade and agricultural produce, resulting in an inevitable dependence on bush resources such as bush meat for survival. He said that in an armed conflict scenario increased exploitation of natural resources habitat destruction and soil erosion were inevitable because conservation is not a priority. Shambaugh said that conservation organisations' staff either flee from the countries in conflict or get killed. There are numerous examples in parts of Africa. Commenting on what should be done to help mitigate the impacts of armed conflict on Africa's environment, Shambaugh said that there is a need for conservation organisations to maintain their presence despite

the existence of an armed conflict. However, he said it was important for these organisations to put in place contingency measures to adequately prepare themselves for the eventuality of conflict. Andrew Plumtree, director of Uganda-based Albertine Rift Programme Wildlife Conservation Society was quoted in the workshop draft report saying the fighting in

"Voices from the Field" provides first-hand insight into issues of current concern to the development community. To participate, send your views to: devoutreach@worldbank.org. Make your voice heard.



Rwanda that took place in 1994, caused loss of habitat, mammals in protected areas, financial resources from gorilla tourism and from international donors. "However, protected area boundaries remained intact when NGOs maintained a presence," he said. "It is important for NGOs to work with local communities, and it is possible to prepare for war."

Local communities need help

SHAMBAUGH SAID, "It would be a good idea for these groups to improve their collaboration with organizations from the other sectors. For example, from the disaster relief and development sectors, as well as the decision and policy makers from all these areas outside of conservation to ensure that they have a better perspective." He said the issue of what local communities could do to mitigate the impacts of armed conflict on the environment was very challenging, because under the circumstances their focus would be on maintaining food source and security.

The draft workshop report on armed conflict and the environment proposes to integrate conflict management mechanisms into conservation practices as one of the strategies for mitigating the impact of armed conflict on the African environment. The report recommends to identify resource-based interdependencies, add incentives for collaboration, and anticipate conflict. The report strongly recommends the need to improve equity in distribution of benefits from conservation activities, in order to avoid armed conflict. It also says that armed conflict can be avoided through increasing transparency, sharing of information to support negotiation and conflict resolution. "Survival depends on peace, so peace-building should become a tool of the trade," says the report.

Emmanuel Koro is president of Sub-Saharan Africa Forum for Environment Communicators (SAFE)

WHAT OUR READERS THINK

A lawyer and women's rights advocate comments on the latest issue of Development OUTREACH dedicated to "Gender Equality and Social Inclusion."

THE FOCUS ON "Promoting Gender Equality" in the Spring 2001 issue of *Development Outreach* is an excellent follow-up to The World Bank's recently published policy research report, *Engendering Development Through Gender Equality in Rights, Resources, and Voice*. By examining the connection between gender inequality and the general failure of communities to thrive, this important work lends support and inspiration to the many people who do understand the pressing need to improve the lives of women and children around the world.

For decades, the argument for women's equality has been framed in terms of morality. However, I suspect that a far more persuasive argument for ending discrimination against women is economic: gender inequality inevitably distorts and lowers "the bottom line." It is axiomatic that when women, who comprise more than half of the world's population, are not permitted to be full participants in a society, the true potential of that society can never be realized.

The World Bank's work was sparked by the energy emanating from the Fourth World Women's Conference in Beijing, China in 1995. That conference, which provided a forum for the women of the world to meet and compare notes, accomplished two very important goals: first, it established that "equality" is an idea whose time had clearly come; and second, it defined a framework within which women could return to their homes and implement specific strategies to dismantle the barriers of discrimination confronting women in every corner of the world.

The rhetoric of Beijing caught fire as world leaders recognized the need to fully enfranchise women and girls. Beyond being morally right, the full empowerment of women is now seen as an economic necessity. Because women historically have been treated as second-class citizens—or not considered citizens at all—many activists, not surprisingly, had come to believe that the *status quo* was incapable of change. Beijing offered the promise that change was not only possible but ultimately inevitable.

Since Beijing, the ideal of equality as a fundamental human right to which both women and men are entitled has been vitally important to the global women's movement. Nonetheless, that ideal, standing alone, is not enough; we must effectuate genuine implementation of the Beijing commitments to empower women. Our efforts are bolstered in important ways when an institution such as the World Bank unequivocally articulates the urgent need for countries to end gender inequality in order to progress

WHAT OUR READERS THINK

economically. The recognition that discriminatory treatment not only harms women and children but also hinders the development of nations is clearly a powerful argument for gender equality.

The special report discussing violence against women in *Development OUTREACH* calls upon all nations to address "gender-based violence as a pervasive human rights violation as well as significant health and development issues, with powerful implications for coming generations." Women cannot experience violence and equality simultaneously. World leaders must join in global initiatives to eliminate the violence that maims and murders millions of women each year in the form of domestic violence, sexual assault, rape as an instrument of war, forced impregnation, forced abortions, honor killings, female genital mutilation, and trafficking for sexual exploitation.

While shattering the remaining obstacles to women's equality will by no means be easy, we can be confident that having the World Bank as a partner in this effort advances the cause significantly.

BONNIE J. CAMPBELL

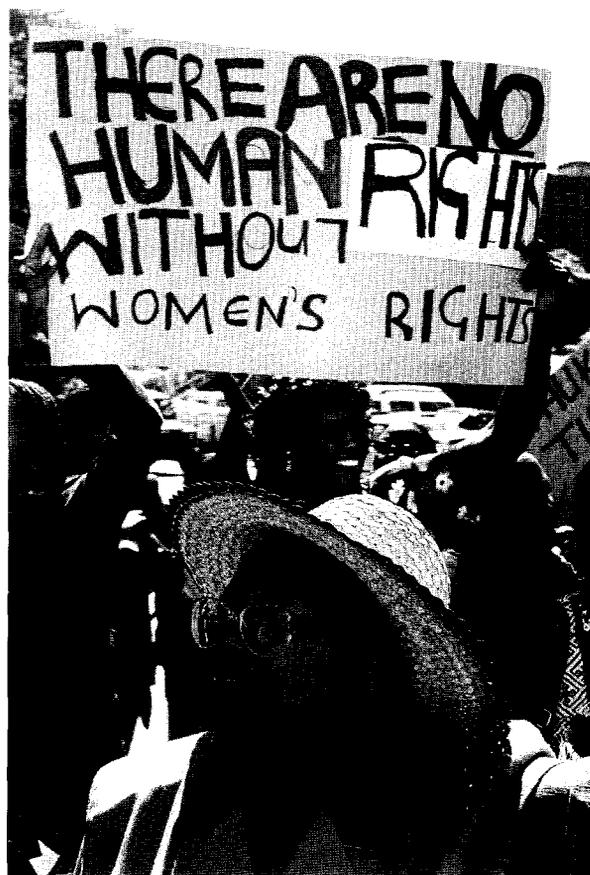
Bonnie J. Campbell, an employment attorney at Arent Fox Kintner Plotkin & Kahn, PLLC, in Washington, D.C., is the former Iowa Attorney General and served for six years as Director of the U.S. Justice Department's Violence Against Women Office. She was a member of the U.S. delegation to the Fourth World Women's Conference in Beijing.

A college lecturer from Nigeria comments on the role of women NGOs

YOUR ISSUE OF *Development OUTREACH*, Spring 2001, in which "Promoting Gender Quality" was discussed has been very topical. Indeed you have captured it all when you argued that "In no region do women and men have equal social, economic and legal rights, a fact that constrains the choices available to women in all walks of life." This is very true.

However, from my own independent observations of the many women groups, associations or NGOs from this part of the globe, it appears that they are elitist in nature, not broad-based in composition, and hence lack grass-root women's support. This to a greater extent has been the clog in the wheel of progress in many of the women's efforts to promote gender equality.

I could give you a typical example. The local processing and marketing of cow-milk in Nigeria is dominated by the Fulani women. From a research I conducted from 1998 to 1999, I discovered that this industry provides employment to about 2,650 Fulani women per day per local government area in the Northern-States. However, the Fulani woman's mean income from this industry is about 5,508 Naira a



month, about US\$50.00. Unfortunately, the woman is left with the responsibility of providing daily soup ingredients for the family and also her own basic cosmetic and ornaments requirement, including those for the children. Her situation is further compounded where health care is involved. In the period of the milk glut (Dungu season), i.e. July to September, or the period of severe scarcity (Cheedu season), i.e. February to April, the woman is often forced by circumstances to sell herself in order to make ends meet. Thus exposing herself to the danger of HIV/AIDS.

Surprisingly, when I asked the women whether they had heard of or had been approached by any women NGOs for assistance on their personal hygiene or their children's immunization, the answer was NO. In fact, they do not know that these women NGOs championing their cause exist at all. One wonders why.

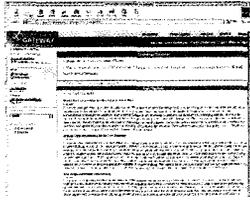
Therefore for Gender Equality/Women Empowerment efforts to succeed, attempts must be made by the enlightened women NGOs to reach out to the grass-roots and help the rural woman who often bears the brunt of it all.

AMINU WAZIRI GUMAU

Aminu Waziri Gumau is senior lecturer in the department of Estate Management, School of Environmental Technology, Federal Polytechnic, in Bauchi, Nigeria

KNOWLEDGE RESOURCES

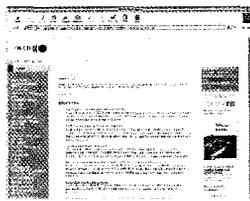
Looking for development information, networking opportunities, likeminded partners, a professional exchange? Reaching those goals is as close as your computer screen. A network of development websites will take you to the four corners of the world and will put you in touch with a multicultural cornucopia of knowledge.



The **KNOWLEDGE ECONOMY WEBSITE** provides information on the World Bank Institute's Knowledge for Development Program, including information on a variety of services/events that have been

developed to help developing countries take advantage of the knowledge revolution. Click on "Useful Websites" for a list of hundreds of links.

Visit: www.developmentgateway.org/topic/index?page_id=3719



The **ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD)** provides member governments with a setting in which to discuss, develop, and perfect economic and social policy. It collects data, monitors trends, and forecasts economic developments.

Visit: www.oecd.org



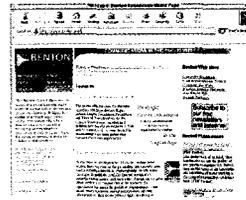
ENTOVATION INTERNATIONAL LTD. is committed to enhancing the prosperous sustainability of enterprises around the world through the optimal flow of knowledge in innovation systems. Entovation already has a

Knowledge Innovation methodology, and is integrally connected to industrialized and developing nations of the world.

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Visit: www.oneworld.org/thinktank/id



THE BENTON FOUNDATION seeks to shape the emerging communications environment and to demonstrate the value of communications for solving social problems.

Visit: www.benton.org



The **ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS** defends and promotes non-commercial, productive online space for NGOs and collaborates with like-minded organizations to ensure that

the information and communication needs of civil society are considered in telecommunications, donor, and investment policy.

Visit: www.apc.org



iEARN is a non-profit organization, founded in 1988, that empowers teachers and young people to work together on line, via a global telecommunications network. iEARN has pioneered online school linkages to enable students to engage in

meaningful educational projects.

Visit: www.iearn.org

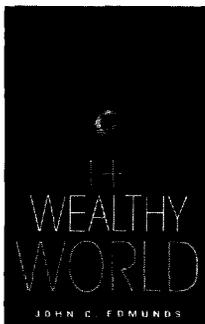


INTERNATIONAL WOMEN'S TRIBUNE CENTER (IWTC) is an NGO that facilitates and enhances telecommunication development worldwide by offering, organizing, and coordinating technical cooperation and assistance

activities. IWTC is dedicated to achieving women's full participation in shaping a development process that is just, peaceful and sustainable.

Visit: www.iwtc.org

THE WEALTHY WORLD: THE GROWTH AND IMPLICATIONS OF GLOBAL PROSPERITY, by John C. Edmunds and Karen Maccaro. John Wiley & Sons, 2000



World wealth creation exceeded \$2 trillion per month in 1999. The potential for world wealth might be as high as \$500 trillion or \$83,333 for each person on Earth. The book explains the reasons for this increase and its implications in a world whose financial systems are becoming increasingly unified. It lays out a key component of the approaching world economy,

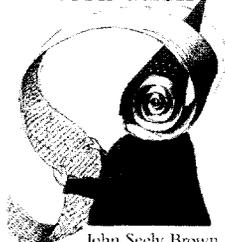
including the impact of the global rise of technology and interconnectivity and the implications of these factors on global wealth.

BREAKING THE DIGITAL DIVIDE: IMPLICATIONS FOR DEVELOPING COUNTRIES, by Elena Murelli, ed., et al. Commonwealth Publications, 2001

This book presents the results of an extensive study of the digital divide, the growth of the Internet, online education, health informatics, the net and the economy, regulation of the Internet and much more. Individuals, organizations, and governments with a specialist interest in the transition to an information society and/or knowledge economy will find this book timely.

THE SOCIAL LIFE OF INFORMATION, by John Seely Brown and Paul Duguid. Harvard Business School Press, 2000

The Social Life of Information

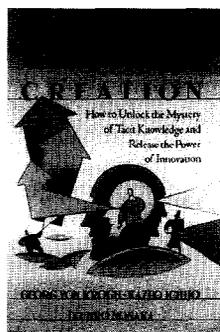


John Seely Brown
Paul Duguid

The authors plunge into the gap between the hype of the Information Age and its reality. Brown, the chief scientist at Xerox and the director of its Research Center, and Duguid, a historian and social theorist, measure how IT interacts with the social fabric. They cast their gaze on many trends and ideas, such as software agents, the

electronic cottage, and the rise of knowledge management. Their aim is to help remedy the tunnel vision that prevents technologists from seeing the social context that their ideas must ultimately inhabit.

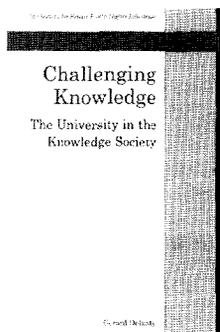
ENABLING KNOWLEDGE CREATION: HOW TO UNLOCK THE MYSTERY OF TACIT KNOWLEDGE AND RELEASE THE POWER OF INNOVATION, by Georg Von Krogh, et al. Oxford University Press, 2000



This book provides new concepts about how knowledge in organizations can be created and used for competitive advantage by describing knowledge-enabling conditions. It discusses practical approaches to the amorphous, constantly evolving human realm of knowledge, and offers pragmatic guidelines on how to become a learning organization.

The real source of sustainable advantage, the book claims, is the continuous creation of new knowledge.

CHALLENGING KNOWLEDGE: THE UNIVERSITY IN THE KNOWLEDGE SOCIETY, by Gerard Delanty. Open University Press, 2001



Drawing from current debates in social theory about the changing nature of knowledge, this book offers a most comprehensive sociological theory of the university. Delanty views the university as a key institution of modernity and as the site where knowledge, culture, and society interconnect. He assesses the question of the crisis of the

university with respect to issues such as globalization, the information age, the nation state, academic capitalism, cultural politics, and changing relationships between research and teaching.

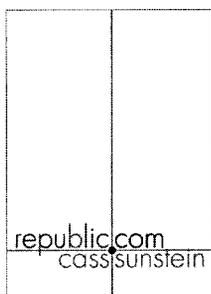
WHERE ON EARTH ARE WE GOING?. by Maurice Strong. Texere, 2001



The book is a vivid portrait of the world stage, giving a thoughtful account of the scenario that lies ahead for the Earth by the year 2031 if human consumption and pollution continue to occur at their

current rates. The author explains how he came by his opinions and how he became an authority on the subject. Maurice Strong's apocalyptic prophesy for the future—environmental disaster, global warming, reemergence of diseases, and political turmoil—is a call to action for all who care about the state of the earth in the near future. His goal is to shape a peaceful and equitable future for all humankind.

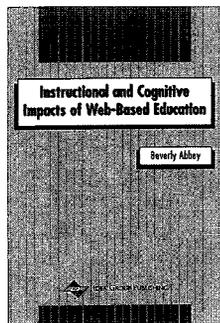
REPUBLIC.COM, by Cass R. Sunstein, Princeton University Press, 2001



The author focuses on the increasing volume of extremist voices that have found a forum on the Internet, and expresses concern about a new Babel obfuscating information, rather than enhancing it. He weighs free speech against the need for meaningful and responsible communication.

His prose is clear and accessible—the kind of reasoned discourse that he values and wants to preserve. Sunstein proposes a program of government-sponsored public media spaces which, although unlikely, points to some serious problems that we have to confront.

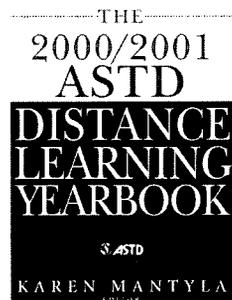
INSTRUCTIONAL AND COGNITIVE IMPACTS OF WEB-BASED EDUCATION, by Beverly Abbey, ed. Idea Group Publishing, 2000



Web sites are increasingly being used by educators in place of traditional content media and instructional approaches, such as texts and lectures. This new teaching philosophy has led to a myriad of questions concerning instructional design principles, learners' cognitive strategies, human-Internet interaction factors and instructional

characteristics of Web media that transverse political, geographic and national boundaries. This book is a compendium of materials by noted researchers and practitioners that addresses national and international issues and implications of Web-based instruction and learning.

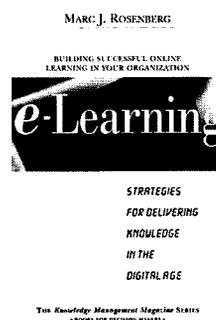
THE 2000/2001 ASTD DISTANCE LEARNING YEARBOOK: THE NEWEST TRENDS AND TECHNOLOGIES, by Karen Mantyla, ed. McGraw-Hill Professional Publishing, 2000



Distance learning is the hottest trend in the training industry today. But rapidly changing technology and powerful new developments make it difficult for human resources professionals and trainers to stay current in the field. Now a single annual reference brings together "the best of the best" articles and information,

summarizing the state of the distance learning field. This book includes information on creating distance learning proposals and pilot programs; Internet-based training, videoconferencing, and other technologies; setting up and administering a program; career development for trainers, and more.

E-LEARNING: STRATEGIES FOR DELIVERING KNOWLEDGE IN THE DIGITAL AGE, by Marc J. Rosenberg. McGraw-Hill Professional Publishing, 2000



"If there is any reason to fear e-learning, it is that we will fail to understand why we are doing it. This book combines the right amount of reflection on why with a heavy dose of sound advice about how to. It has a lot in common with its subject. It is just what we need just in time" (John W. Cone, vice-president, Dell Learning, Dell Computer Corporation).

Rosenberg presents all aspects of e-learning from the process of learning to technical deployment, and gives the providers a good set of resources to deliver knowledge electronically.

CALENDAR

OCTOBER 2001

- 15-19 IWA 2001- Berlin World Water Congress
www.environmental-center.com
- 17-19 2nd World Knowledge Forum, Seoul, Korea
www.wkforum.org
- 22-23 The Stop TB Partners' Forum Washington, DC
www.stoptb.org
- 24-27 World Education Forum Porto Alegre, Brazil
www.forummundialdeeducacao.com.br
- 25-27 Fourth Water Information Summit Panama City,
Panama www.waterweb.org
- 27-31 10th International Conference for People
Living with HIV/AIDS Port of Spain, Trinidad
www.gnp-plus.net
- 29-31 World Economic Forum East Asia Economic
Summit 2001 Hong Kong, China
www.weforum.org

NOVEMBER 2001

- 1-3 ILO Global Employment Forum
Geneva, Switzerland

geforum@ilo.org, www.ilo.org

- 4-6 International Youth Conference
Tigertops, Chitwan, Nepal
www.iycnepal.org, Chauyen Lai Shrestha,
Secretary-General chauyen@col.com.np,
iycen@hotmail.com, samrat@col.com.np
- 5-9 World Food Summit Rome, Italy
food-summit@fao.org, www.fao.org
- 7-9 EDventure's 12th Annual High-Tech Forum, Berlin
www.edventure.com/htforum
- 9-13 Fourth WTO Ministerial Conference Doha, Qatar
www.wtodoha.org

DECEMBER 2001

- 1 World AIDS Day, Geneva, Switzerland.
Andrew Doupe doupea@unaids.org, www.unaids.org
- 9-12 GDNET Third Annual Global Development
Network Conference Rio de Janeiro
www.gdnet.org, info@gdnet.org.
- 9-13 12th International Conference on AIDS and STDs
in Africa Ouagadougou, Bourkina Faso
cisma2001@cenatrin.bf

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1st International Workshop on
**Enhancing Training Quality Through Customer Service (QCS-1):
Caring for Clients Before, During and After Training**
Bali, Indonesia: June 5-11, 2002



EXCEED YOUR CLIENTS' EXPECTATIONS:
SATISFIED CUSTOMERS WILL BECOME
YOUR REPEAT CLIENTS & BEST SALES AGENTS



World Bank Institute (WBI)/the World Bank in partnership with the University of Surabaya, Indonesia will jointly organize this QCS-1 Workshop as collaborative learning opportunity for training executives, managers & practitioners to discuss concepts/methods for creative customer care and personalized client service applicable to training institutions and services/products.

In a competitive global training market of the 21st century, it is not enough for training institutions to only provide high quality instruction or technical contents delivery. Poorly managed training institutions which do not provide quality and personalized customer service before, during, and after training, are unlikely to survive. Only by providing training clients and their employers with a memorable "total" learning experience which exceeds their expectations, can we expect such satisfied customers to become "repeat" clients and "Knowledge Champions".

For further information on this Workshop and/or to obtain the Application Form, please contact:

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Workshop Website: www.worldbank.org/wbi/qcs-1

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5th International Workshop on
**Strategic Management and Marketing of Training (SMMT-5):
Ensuring Sustainability & Financial Health of Training Institutions**
Manila, the Philippines: April 22-May 3, 2002



**SURVIVING IN A GLOBAL TRAINING MARKET:
NEEDED → TRAINING ENTREPRENEURS and NOT UNDERTAKERS!!**

World Bank Institute (WBI)/The World Bank in partnership with Asian Institute of Management (AIM) and Association of Development Financing Institutions in Asia and the Pacific (ADFIAP) will organize this SMMT-5 Workshop as a collaborative learning opportunity for training executives/managers to discuss and master modern management principles and innovative marketing methods which are applicable to training institutions and their services/products.

In time of organizational downsizing, budget cuts and subsidy removal, training institutions need to do "more with less". To ensure sustainability and financial viability of training programs, improvements in management of the institution's resources and marketing of training programs/services will be required. Training managers must increase efficiency in resources utilization and undertake strategic and innovative marketing to promote and sell training products and services, to ensure the survival of their institutions in a competitive global training market.

For further information on this Workshop and/or to obtain the Application Form, please contact:

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E-mail: sandy@adfiap.org

Workshop Website: www.worldbank.org/wbi/smmt-5

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4th Trainers' Workshop on
**Improving Training Quality (ITQ-4) through
Interactive Learning Technologies and
Distance Mentoring**
February-December 2002



STOP YOUR TRAINING INSTITUTION FROM BECOMING A DINOSAUR

World Bank Institute (WBI)/The World Bank, in partnership with University Science Malaysia (USM), National Center for Supercomputing Applications/University of Illinois, and Asian Institute of Technology (AIT), will organize this ITQ-4 workshop as a collaborative peer learning opportunity for senior trainers to study and work together, through real and virtual group interactions, to improve their mastery of innovative training design, curriculum development, interactive learning methods and technologies applications. This problem-solving and output oriented learning program will be delivered in 5-phases:

Phase-1: Pre-Workshop Internet/Web-based Briefing & Discussion
(4 weeks: starting February 4, 2002 at own institution/home-base)

Phase-2: Peer Learning & Group Training Activity
(2.5 weeks: March 4-20, 2002 in Penang, Malaysia)

Phase-3: Distance Mentoring through Online Coaching
(6 months: April-September 2002 at own institution/home-base)

Phase-4: Peer Review: Results Demonstration and Experience Sharing
(1 week: September 2002 in Bangkok, Thailand)

Phase-5: Institutionalization Process: Free After-Training Consultation Service
(3 months: October-December 2002 at own institution/home-base)

For further information on this Workshop and/or to obtain the
Application Form, please contact:

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