

New
format

UNESCO the Courier

September 1998



Higher education... and after?

Jeremy Rifkin
against
a brave
new world

Prowling
cybersnoopers

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September 1998

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Fax: (33) (0) 1 45 68 57 45 - (33) (0) 1 45 68 57 47
e-mail: unesco.courier@unesco.org
Internet: http://www.unesco.org
Director: René Lefort
Editor in chief: Sophie Bessis
Secretary, Director's Office/Braille editions:
Annie Brachet (Tel: (33) (0) 1 45 68 47 15)

Editorial staff (Paris)
English edition: Roy Malkin
Spanish edition: Araceli Ortiz de Urbina

Sophie Boukhari
Lucía Iglesias Kuntz
Amy Otchet
Seydou Amadou Oumarou
Jasmina Sopova

Translation
Miguel Labarca
Glenn Naumovitz

Art and production unit: Georges Servat
Page layout and design: Eric Froge
Illustrations: Ariane Bailey (Tel: (33) (0) 1 45 68 46 90)
Documentation: José Banaag (Tel: (33) (0) 1 45 68 46 85)
Liaison with non-Headquarters editions and press:
Solange Belin (Tel: (33) (0) 1 45 68 46 87)
Administrative Assistant: Theresa Pinck
(Tel: (33) (0) 1 45 68 45 86)

Editorial Committee
René Lefort (moderator), Jérôme Binde, Milagros del Corral,
Aldino Da Costa, Babacar Fall, Sue Williams

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Galician: Xabier Senín Fernández
(Santiago de Compostela)

Circulation and promotion
Fax: (33) (0) 1 45 68 57 45

Subscriptions and customer service
Michel Ravassard (Tel: (33) (0) 1 45 68 45 91)
Sales and subscription agents
Mohamed Salai El Din (Tel: (33) (0) 1 45 68 49 19)
Stock management and shipping
Pham Van Dung (Tel: (33) (0) 1 45 68 45 94)

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Cover: a student demonstration in Djakarta in May 1998
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Hopes and dreams of Algeria's youth

by Dalila Taleb*



© Nadia Bendhalil/Contact, Paris

How can the new generation of Algerians afford the luxury of a carefree youth?

It isn't easy to be young in Algeria, a country where five years of violence have claimed nearly 100,000 lives and economic upheavals are having drastic social consequences. In spite of everything, today's young Algerians refuse to abandon their hopes and dreams

* Member of the National People's Assembly

In Algeria today, even the most basic aspirations are no more than dreams. Working, travelling, planning for the future, making a home—even the simple things of life are beyond the reach of young people whose world has been mangled by violence. And yet they refuse to abandon their dreams and this impels many of them to leave the country, even if it means becoming illegal immigrants in Europe.

Like everyone else, young people suffer from the political violence and ►





© Michael von Graffenried, Paris

Because of a longstanding housing crisis, young Algerians escape from crowded apartments into the streets where they wait hopefully for a job to turn up.

A knot of bystanders in rue Didouche Mourad, one of the main thoroughfares of Algiers.



© Nadia Berchadsky, Contact, Paris

More and more Algerians live in the street, either to keep clear of violent areas or simply because they are too poor to afford lodging.



Dalila the militant

Thirty-two-year-old Dalila Taleb already has a long career of political activism behind her. The October 1988 riots in Algiers, in which more than 500 young people died, filled her with passion to defend her country's youth, tragically left to fend for itself. In 1993, with a group of friends, she founded the Youth Action Movement (RAJ) which was an overnight success. Dalila, its president, quickly became one the most popular

figures among the youth in the poorer sections of the capital. The RAJ's members range from girls wearing the veil to pop music fans, from Islamist supporters to modernizers. And the movement works, despite the constraints and problems confronting voluntary organizations in Algeria. Without losing touch with the grassroots, Dalila went into politics and in the 1997 parliamentary elections became an opposition FFS

(Front of Socialist Groups) member of the National People's Assembly representing her home town of Bejaia. In the Assembly, where she is a member of the youth, sports and voluntary work commission, she has made a name for herself as an orator who speaks out against all kinds of violence and arbitrary behaviour— whoever its perpetrators may be. ■

Students leave the campus of Bab Ezzouar university, in the suburbs of Algiers. Their clothing indicates the different paths they have chosen.

Opposite page:
for these young people in an Algiers street
an evening concert provides a rare
entertainment opportunity.
Girls usually choose to stay at home.



© Nadia Berchall/Kontact, Paris

from insecurity. Many now cannot even study—hundreds of schools have closed in the worst affected areas such as Blida, Medea and Chlef. Social violence is also soaring. The government is in many ways ineffective and daily life has become so difficult that parents can no longer minister to their children's needs. Some 300,000 young people come onto the job market every year in a country where there are already more than two million unemployed. The middle class is shrinking, the poor are getting poorer and the rich are getting richer. The streets of the capital teem with young children selling newspapers or cleaning car windows—scenes which would have been inconceivable a few years ago.

If they can't live normal lives, young Algerians can at least dream about easing their frustrations through freedom of expression. The curfew has been lifted in Algiers, but the state of emergency is still in force and public gatherings are banned. Tickets for the few concerts staged these days are expensive. A black-market ticket costs 800 dinars* when the minimum wage is about 5,000 dinars, and only about one young person in twenty can afford to go. Cinemas are closing. Film clubs have disappeared. Young people don't bother with youth and cultural centres any more because they are suspicious of anything to do with the authorities and because the courses on offer cost

money. The government pleads security reasons for restricting the activities of civil society. But preventing young people from expressing themselves peacefully can only push them towards violent forms of self-expression or even to extremism.

They dream of escaping a "sick life" which weighs even more heavily on girls than boys. In big towns, coeducation has survived the recent years of troubles fairly well. But everything is harder for girls. It's hard for them to go out in an evening with boys, unless they belong to a very restricted social circle. As a result of a profoundly sexist education system, it's hard for them to learn anything at youth centres except sewing or embroidery, whereas boys can study computer science. And it's hard to escape the conservatism of most Algerian families, who keep a tight rein on the lives of their daughters.

Young people dream of peace. They feel alienated by the violence that confronts them. Talk to them about peace and their enthusiasm is immediately aroused. Young musicians have written some amazing songs about peace. Others express themselves through theatre or painting. In the Youth Action Movement, by teaching them to help one another and show solidarity, we have managed to get teenagers to work together, to overcome their differences and break down the invisible wall that education and tradi- ▶

**If they can't
live normal lives, young
Algerians can
at least dream
of expressing
themselves freely**



© Pascal Parrot/Sygnia, Paris



© Corbis/Cornes, Paris

tions have built between boys and girls. All that needs to be done is to bring them together and involve them in a common project. For many young people feel frustrated that there is nothing they can do to bring about change.

They dream of peace, but like the rest of the population they are caught between the violence of Islamist extremists and that of the government. In Algeria, sadly, difference is synonymous with intolerance. Hatred between the sexes, between different ways of looking at things, between regions, between Arabs and Berbers has been boiling for decades, turning Algeria's magnificent diversity into an endless source of conflict. Algerians have barely had time to develop democratic practices.

Without jobs, without being able to envisage a better life and without hope, young people lounge idly in the streets—"hugging the walls," as Algerians put it, nicknaming them "hittists" (from the Arabic word *hit*, meaning "wall"). The young dream, but their dreams turn into nightmares because their elders either do not know how or do not want to talk to them. ■

Baseball hats, anoraks and world music. The dreams of young Algerians are like those of many other young people the world over. But only a wealthy minority can afford modern consumer goods.

1 Algerian dinar = 30,017 in August 1998

On a bench in Bab El Oued. . . . Will Algeria, with all its contradictions, dreams and temptations, ever become reconciled with itself?



© AFP/STR/AG, Paris

Progress for whom?



Federico Mayor

It is too often forgotten that the Universal Declaration of Human Rights is not only concerned with civil and political rights but also with what are known as economic and social rights. In the preamble to the Declaration, it is stipulated that "Freedom from fear and want" is "the highest aspiration of the common people." It is no coincidence that the Declaration dates from the period when the foundations of the United Nations system were laid and the Marshall Plan was launched. At that time it was possible to dream; pain and precarity were conducive to utopia; it was a time when a common horizon could be redrawn.

Today, the civilization and culture of which we are so proud will break down unless we can stabilize and halt population growth, narrow the gap between rich and poor, and create decent living conditions—education, public health, work, housing—for the billions of people who share this beautiful planet.

UNESCO believes that in order to successfully take up the challenge of poverty, four basic principles must be taken into account.

- Development of endogenous capacities. This means giving each country, each people and each person the capacity to decide for themselves, to make their own choices, to exploit on their own account the natural resources around them. This imperative has a name: co-operation. It is something quite different from technical and other forms of assistance, such as they have been implemented hitherto.

- Improvement of the quality of life in rural areas. If, in peacetime, we manage to mobilize all resources, including those of the armed forces, then this quality of life will reach the point at which immigration, primarily to the poverty belts around the big cities and then towards foreign countries, will disappear or at least diminish.

- Citizenship and participation, especially at the local level. This is where democracy is cemented and where the guidelines traced by governments should be implemented by all citizens. It is here too that UNESCO envisages an extraordinary development of new jobs, new ways of taking part in working life, especially in environmental management.

- Continuing and out-of-school education. This is important for its own sake, of course, but also for the global nexus of information and communication that is indispensable in today's world. No one should be able

to say that the train has left without them. Everyone must have an opportunity, in the course of their lives, to climb back onto the train of education, dignity, training and democracy. This possibility is one of the basic principles of the culture of peace.

But if the rich countries have been incapable of devoting 0.7 per cent of their GNP to the development of the most disadvantaged countries, how can we hope to bring to fruition the common enterprise known as sustainable development? How can this be done when, until not so long ago, development was regarded as little more than economic growth, when the idea prevailed that a country would become modern and its people would have a better life if it increased its industrial output or its rate of electricity consumption? The inevitable corollary of that mistake is to impose models of development from the outside on the peoples who must apply them, taking no account of their specific historical, cultural or psychological background. The most immediate consequence of this approach is the gigantic moral and material cost paid by many countries subjected to measures of macro-economic adjustment. Paradoxically, this sometimes leads to the bolstering of military regimes, the weakening of civil society and the retreat of democracy because the problems which it causes extend the repressive apparatus of the state.

Of course the development process includes a quantitative and economic component. But, as the Spanish philosopher Julián Marías once said, "nothing that is human is purely quantitative". Progress does not consist of the accumulation of objects, nuclear missiles, automobiles or computers. It is indissociable from morality, from a teleological dimension of existence. When we ask questions about progress, the first question is not "how much or how many?" but "for whom?" ■

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Mutants on

Genetically modified plants are being developed so quickly that they could become the backbone of tomorrow's agriculture. For better or for worse?

Feeding the world is one of the big challenges of the next century. Paradoxically, whereas the planet's farmers actually produce more food than world population needs, about 800 million people are chronically undernourished and two billion suffer from malnutrition, nearly all of them in the poor countries of the South.

The number of mouths to feed is expected to increase by almost 100 million annually in the next thirty years. A worldwide shortfall in production is not yet the main cause of hunger, but output will have to be stepped up in the first half of the next century.

The area of cropland will certainly have to be expanded, but a limit will quickly be reached. Biodiversity is already under threat; deforestation causes erosion and impoverishes soil, irrigation leads to salinization and water resources are shrinking. Today farmers are also required to respect the environment and the health of consumers. In the 1960s, the "green revolution" was about maximizing production by using massive quantities of fertilizers, pesticides and other inputs. The downside of this race to boost output was that it generated pollution.

Massive inputs did not eliminate crop losses, which are still considerable, running in the early 1990s to 42 per cent of all the wheat, rice and maize harvested worldwide. Would it not be best to enable plants to fight diseases and pests by themselves? This is the proposal of the transgenic revolution which is currently sweeping the world of agriculture.

In 1953 James Watson (USA) and Francis Crick (UK) discovered the spiral structure of deoxyribonucleic acid (DNA), but it was not until thirty years later that the first gene transfer was made, in the laboratory, on a tobacco plant. The first field tests were conducted in 1987 and the technique then took off. A decade later, genetically modified crops were growing on 15 million hectares of land around the globe. In 1998,



Cloning plants in sterile conditions in the Dominican Republic.

United States farmers alone sowed 20 million hectares of genetically modified maize, soya and cotton. Argentina and Brazil have accepted genetically modified organisms (GMOs), and so have China and Australia. By the year 2000, genetically modified crops are expected to be growing on 60 million hectares worldwide—81 per cent of them in North America, 10 per cent in Asia and one per cent in Europe. In the United States alone, they will comprise a \$100-billion market over the next decade.

Why this spectacular expansion? Farmers have crossed different varieties and species from time immemorial. But, says European Ecology Institute Chairman Jean-Marie Pelt, "this painstaking work by agronomists has always taken place within the barriers between species. . . . Barriers strictly delimiting a given species, without the chance of hybridization with others, except, possibly, closely related

species." Genetic modification makes light of all these barriers. Theoretically gene transfer makes all kinds of things possible. Plants are already capable of producing haemoglobin, a growth hormone, and human insulin.

The supporters of transgenic agriculture point to other advantages. If a plant has a gene which resists certain pests, there

is no need for it to be treated with a chemical which threatens the health of the person who applies it and pollutes soil and water. It can also be given a gene to make it resistant to a herbicide, enable it to survive cold or drought, and even change its taste or nutritional qualities.

So are GMOs the key to the future of agriculture? Certainly

not, say its detractors. First, because genetically modified crops favour large-scale industrial agriculture to the detriment of small farmers and the countries of the South. If small farmers opt for genetically modified seeds, their costs

**In 1998,
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the menu

rise and they will have to sign contracts with transnational firms like Monsanto, Novartis, AgrEvo, Dupont, Pioneer or Rhône-Poulenc and buy seeds from them every year, as well as the herbicides the plants are treated to resist. One example is Round-Up Ready, the genetically modified rapeseed produced by Monsanto, which is resistant to Round-Up, a herbicide made by the same firm.

In addition, if we become capable of producing substances tasting like, vanilla or cocoa from plants which can stand up to the climates of the northern hemisphere, farmers in poverty-stricken countries may lose their meagre source of income. Yet according to the American Bio-

technology Industry Organization, things are less alarming. It gives examples of technology transfers such as the passing on to a research institute in Indonesia of material to produce insect-resistant potatoes by tissue culture, and the insertion of a fungicidal gene into African bananas.

Since research in this field is very costly, genetically modified plants are usually privatized through patenting. Monsanto, with an annual turnover of more than \$6.6 billion, says it spent \$166 million last year on GMO research, but refuses to say how many patents it

applied for. Small companies and the countries of the South stand no chance against the big transnational firms.

Taking out a patent is highly expensive. For it to be valid in all the rich countries, an initial deposit of about \$84,000 is required, plus a tax which increases exponentially during the life of the patent. By the end of last year, 1,377 patents for genetically modified plants had been applied for at the European Patent Office. Several hundred of them are currently awaiting examination.

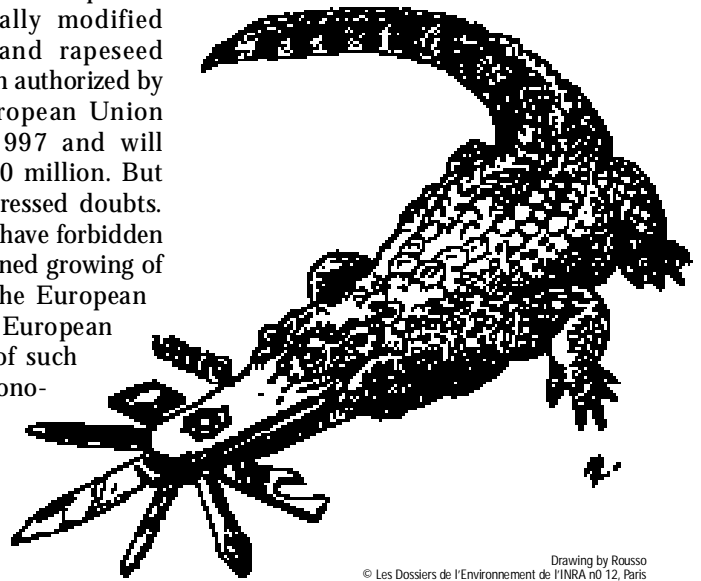
Does this mean that Europe has not been won over by GMOs? The import of genetically modified maize and rapeseed has been authorized by the European Union since 1997 and will

this year amount to \$200 million. But some countries have expressed doubts. Austria and Luxembourg have forbidden imports and Italy has banned growing of GMOs. In April 1997, the European Parliament opposed the European Commission's approval of such crops, declaring that "economic and social pressures have overridden health and environmental considerations".

The introduction of antibiotic-resistant genes

The introduction of antibiotic-resistant genes into plants is causing concern

into plants is also causing concern, but there is no proof that such genes are passed from plants to animals and then to humans. In this case the gene acts as a marker in a gene transfer process. To find out whether the transferred gene is present in the cells, they are soaked in an antibiotic solution. Only the cells which have not accepted the resistant gene are destroyed. For example, the Flavr Savr tomato produced in the United States in 1994 contains a gene to keep it firm and slow the rotting process, along with a gene resistant to kanamycin, which is used to fight respiratory ailments. A single mutation of this gene also makes it resistant to other antibiotics used to treat meningitis and serious lung diseases. The resistant gene ►



Drawing by Rouso
© Les Dossiers de l'Environnement de l'INRA n° 12, Paris

Genetic modification: how it works

The nucleus of each cell contains chromosomes made up of genes which govern heredity. Genes are sequences of long molecules arranged in the form of a double helix and known as DNA (deoxyribonucleic acid). DNA sees that the cell functions in a way specific to the species to which it belongs. A single gene can determine several characteristics, but sometimes several genes are needed to determine a

single characteristic. Molecular biologists cut up the genome (the genetic endowment) of a given species, increase the number of genes and insert them into another species to obtain a new hereditary characteristic coded by the transferred DNA. This is how genetically modified organisms (GMOs) are obtained.

In the laboratory, though not yet on our plates, maize has been

given a scorpion's gene so that it can resist insects and a petunia gene to enable it to resist herbicides. Potatoes have been endowed with a gene from a chicken or a moth to fight disease, as well as a human gene to digest heavy metals. A fish gene can be added to tomatoes to help them resist the cold, and rice and sunflower seeds can be protein-enriched with genes taken from beans and brazil nuts

respectively. Cucumbers fight disease with the help of a tobacco gene. All kinds of things are imaginable, if not immediately feasible: a gene from a bird with black feathers to colour roses, a lettuce gene to camouflage cows in green meadows. But beware of the hybrids that might escape from the lab. Truth may turn out to be stranger than science fiction! ■

Appeal for the Amazon

Can Brazilian President Fernando Henrique Cardoso keep his promise to save 25 million more hectares of Amazonian forest by the year 2000? The World Bank and the World Wide Fund for Nature (WWF) see his pledge, made at the end of April 1998, as one of the first fruits of their June 1997 agreement to strengthen measures to protect "natural" forests, i.e. those largely untouched by human activity.

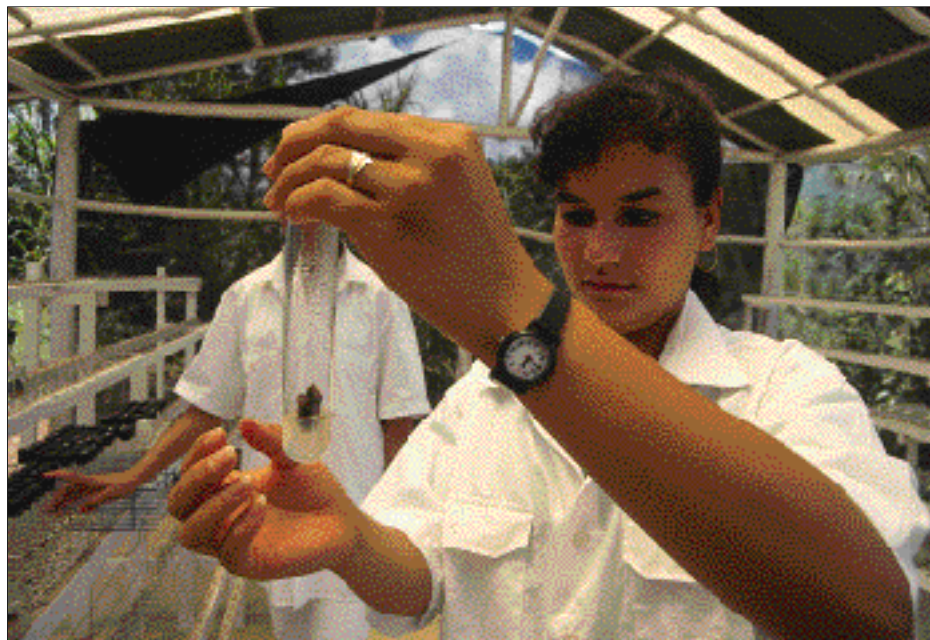
The accord aims to set up a worldwide network of protected areas totalling 50 million hectares by 2005. It is an extension of WWF's campaign to bring, by the end of the century, 10% of every type of forest (tropical, Boreal, temperate, dry, humid) under protection from the pillage which is slowly eating away at the planet's biodiversity.

Only 6% of the world's natural forests are legally protected at the moment, with wide regional variations—from 9% in Latin America to 2% in Europe. But often this protection only exists on paper. Many forests are being damaged by pollution from oilfields or mining (legal protection does not extend underground) and by continuing illegal activities. Eighty per cent of Brazil's mahogany, for example, comes from protected forest areas.

By promising to extend protected areas, Brazil, which contains a third of all the world's tropical forests, has declared its determination to break with policies which have paid little heed to sustainable management.

Now the money has to be found. Brazil has very few means of enforcing protection and "there are only 300 people to monitor all of Amazonia," notes WWF's Jean-Paul Jeanrenaud, who reckons that the project requires about \$75 million immediately and \$10 million a year thereafter.

The World Bank is expected to help Brazil obtain contributions from the rich countries and the private sector. Without them, President Cardoso's promise may be an empty one. ■



Technicians examine cloned plants (Dominican Republic).

will always remain in the genetically modified plants and risks transmitting such resistance to the consumer.

Another problem is how someone allergic to brazil nuts, for example, can know whether such a gene has been introduced into sunflower seeds to make them more protein-rich. Arnaud Apoteker, of Greenpeace, raises another issue. "Is it wise," he asks, "to insert into bananas a gene with the hepatitis B vaccine designed for humans, as is being done in Mexico? Can we say what the effect of such a vaccine will be on the animals, birds and insects which eat them?"

Bearing in mind that zero risk does not exist, what impact will GMOs have on the

environment? The pollen of genetically modified rapeseed can be blown as far as 2.5 km, which means it can become crossed with wild species like mustard. What's more, in rotating

crops, strict care must be taken before switching from rapeseed in the rotation that seeds do not fall on the ground during harvesting. Should the seed pods be genetically altered so that seeds do not spill out? In the same way, genetic-engineered resistance to certain insects can lead to the emergence of new

insects resistant to the artificial poisons produced by these plants. How can they be dealt with? Science does not yet have enough data to answer these questions satisfactorily.

Another unknown is the reaction to genetically modified bacteria of bacteria and fungi which act in myriad ways in the soil, e.g. to help plants with growth and to fight parasites, frost and anti-pollution products. A gram of surface soil contains between 100 million and one billion bacteria and between 1,000 and 10,000 different species—and scientists say they have only investigated a tenth of those. Noëlle Amarger of the French National Agronomic Research Institute (INRA) has written that "data are lacking about the ways and circumstances in which a micro-organism introduces itself successfully into the ground, stays there and performs its function." So we cannot yet predict what will happen when a GMO is introduced, either to it or to its genetic heritage in the field in

**Have we not
cast a basic
precautionary
principle to
the winds and gone
ahead too fast?**



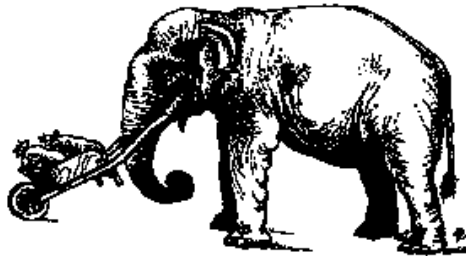
Drawing by Rouso © Les Dossiers de l'Environnement de l'INRA n° 12, Paris

which it is put. Amarger concludes that "once they are introduced, micro-organisms can linger for many years, even indefinitely, with no possibility of removing them, so we should be cautious."

Have we gone ahead too fast and cast a basic precautionary principle to the winds? Fierce debate is going on between supporters and opponents of genetic modification. To give consumers a choice between consuming or rejecting food containing GMOs, clear labelling is necessary. This is easier said than done. Shipments of imported farm produce often contain mixtures. Unless they are sure of their suppliers, the big food firms will have to carry out costly and elaborate tests. But the customer should be

able to make a free and informed choice. For this, we need to wait until more is known. But as so often, the profit motive is overriding all other considerations. ■

France Bequette



The world's top ten seed corporations
Ranked according to 1996 seed sales

| Company | Estimated 1996 seed sales (US) millions | Comment |
|--|---|---|
| Pioneer Hi-Bred Intl.(USA) | \$1,721 | Dupont now owns 20% share in Pioneer Formerly Ciba Geigy and Sandoz |
| Novartis (Switzerland) | \$991 | French co-operative; claims to be the world's largest vegetable seed company |
| Limagrain (France) | \$552 | Zeneca and Royal VanderHave established this joint venture in 1996 |
| Advanta-joint venture of Zeneca/Van der Have (The Netherlands) | \$493 | Pulsar (a giant agro-industrial corporation) owns Empresas La Moderna (Mexico), which is majority shareholder of Seminis Inc. |
| Grupo Pulsar (Mexico) | approx. \$400 | Vegetables/flowers/turfgrass |
| Sakata (Japan) | \$403 | Privately-held. Vegetables/flowers/turfgrass |
| Takii (Japan) | \$396 | Monsanto is a large shareholder (approx. 40%) |
| Dekalb Plant Genetics (USA) | \$388 | World's largest supplier of sugar-beet seeds (25% market share) |
| KWS (Germany) | \$377 | Privately-held. Will not disclose financial information |
| Cargill (USA) | +\$300 (estimate) | |

The top 10 companies control approximately 40% of the global commercial seed market, valued at approximately \$15 billion.
Source: Rural Advancement Foundation International (RAFI)

Corrections

The caption on page 27 of the July-August 1998 issue should have read as follows: Satellite image of sea surface height due to ocean currents. Strongest currents are where there are large colour changes, e.g. around Antarctica.

As a result of an editing error, Brice Lalonde was wrongly described as France's first Environment Minister in Rémi Parmentier's article on page 56 of the same issue. As the author has pointed out to us, France's first Environment Minister was Robert Poujade. Apologies to Mr. Parmentier and to readers.

SOS whales

Half a century ago, whales nearly died out as a species as a result of being indiscriminately hunted. Then, in 1946, the International Convention for the Regulation of Whaling was signed and its management put in the hands of the International Whaling Commission (IWC), which recently celebrated its fiftieth birthday.

Today whale hunting has virtually ceased, except by the Japanese and the Norwegians, who kill about 1,200 minke whales each year out of a population of about a million. But although hunting may have been sharply curbed, whales are still in danger—from pollution.

The IWC has not been able to enforce totally the moratorium on whaling it introduced in 1986, but the measure has enabled the population of great whales to increase. Now the Commission has taken on a new task—protecting the environment to safeguard whales, and by so doing to ensure its own survival.

The commission's 40 Member States, dominated by English-speaking countries, especially the United States, have realized that passing resolutions which were mostly ignored was not enough. Despite their infringements of the moratorium, Japan and Norway refuse to leave the commission and have obstructed its work, helped by several small Caribbean states.

But all agreed at the IWC's meeting in Muscat (Oman) in May 1998 that a deteriorating environment was now "the biggest threat" to whales. The Commission's scientific committee will give "the highest priority" to research into the impact of pollutants and chemical contamination on whales, as well as the effect of climate change on the biological and physical habitat of whales and their prey.

The Arctic, where whale meat is now so contaminated it has become dangerous for human consumption, will be studied first. In recent years, scientists have found that whales, as animals at the end of a food chain, have absorbed large quantities of poisonous pollutants of all kinds, including pesticides, chlorine compounds and heavy metals. ■

Colombia's

UNICEF/Ellen Tschene



A group of needy children enjoy a trip to the beach.

For years 'community mothers' have been helping to bring up children in Colombia, a country plagued by violence and poverty

In the mid-1980s, the Colombian government, alarmed by very high rates of infant mortality and malnutrition, launched a far-reaching programme to protect pre-school-age children, with the help of the United Nations and the Inter-American Development Bank.

The first "welfare centres", also known as *hobis*, opened in the slums of Cali, an industrial city of almost two million people, in Cartagena, whose 550,000 inhabitants live mainly off the petrochemical industry, and Guspi, a small town in the southwest of the country. They were run by volunteers known as "community mothers" who organized, on their own or with the help of NGOs, education and care facilities for about 3,000 children. The programme initially reached only 7 per cent of the population concerned.

Kindergartens for the children of working mothers appeared in Colombia in 1974. But a new educational model arrived in 1977 with "neighbourhood centres" based on parental and community participation. These centres soon opened their doors to very poor children, with the help of UNICEF and the Colombian Institute for Family Welfare (ICBF), an official body with ministerial

powers in charge of policy concerning the family and the protection of minors. In 1987, the ICBF funneled 8 per cent of its funds to the community mothers and offered them an institutional framework. Today, the figure is 40 per cent.

The \$55 million ICBF programme now reaches 60 per cent of very needy children in 1,042 towns in a country where, according to figures provided by the United Nations Development Programme (UNDP), one person in five gets by on less than two dollars a day. It won particular support with its *Bienestarina*, a powdered mix of milk, protein, iron, and flour made from soybeans, wheat, maize or rice supplied free by the government through the community mothers network.

The "mothers", who now number 82,000, are becoming increasingly important and are in great demand by families disrupted by the violence, which as of January 1998 had forcibly driven 1.1 million people (42,000 families) from their homes.

Each mother takes about fifteen children into her home and gets the equivalent of about half the legal minimum

wage (about \$130 a month) and the right to social security and a pension. Apart from food for her group (which she can also give to her own children), the ICBF provides utensils and a few staple items. It also grants a small loan to install separate washing and toilet facilities for the children and to improve hygiene in the kitchen, the eating areas, the bedrooms and the courtyard, where the children spend most of their time. About a mil-

lion and a half children, aged from two to seven, are looked after and socialized in this way before they go to school, while their real mothers are out at work.

The community mothers do their best to adapt their hours to

those of the working parents, but as a rule they look after the children between eight in the morning and four in the afternoon from Monday to Friday. They organize their day themselves, guided by the ICBF's educational aims, which focus on making the children aware of values such as solidarity, friendship and respect for differences. Activities are divided into three main categories—conveying general knowledge to chil-

**There are
82,000 community
mothers and
their importance
is growing**

community mothers

dren through games, with an emphasis on social skills; using role-playing to familiarize them in groups with real-life situations, like going shopping or visiting the doctor; and allowing the children to express themselves by talking about their personal experiences or even describing their dreams.

An apprenticeship in social skills

The activities vary according to the age of the child, with the older ones being introduced to the main school subjects if the community mother is capable of doing this. Over the past twenty years, the mothers have managed, often with support of NGOs, to acquire more skills and undeniable social recognition, but many have not managed to finish their schooling, and some cannot even read. "There is no official certificate which says you can be a community mother," says Lilia Labrador, the ICBF's head of pre-school education, "but they have a chance to study to secondary school graduation level through coaching schemes recognized by the education ministry."

Before being hired, the "mothers" go on a short course to prepare for their

future role and take a self-assessment test. Such workshops are held at intervals, allowing the participants to discuss their experiences and work out together any problems. These courses give some community mothers a chance to take up other work and skills or be chosen for other ICBF programmes such as family

education or education for pregnant women.

Substantial funds are needed to run all these activities. Apart from contributions from international organizations, companies are obliged by law to chip in with three per cent of their total wage bill. Keeping tabs on that is not easy



Many community mothers are recruited from among the very poor.

Fighting for recognition

Though officially recruited by school parents' associations, community mothers are in fact drawn from the ranks of very needy women who offer their services to regional ICBF offices which are eager to expand their network quickly, even if it means dealing later with problems of quality. Several hobis (welfare centres) are required to make up a parents' association. The mothers can legally stand for election to an association's committee but ICBF officials usually frown on this. In the early years in some regions, they even openly opposed it and refused to hire some women who were elected. It took many years of

struggle before the mothers won recognition from ICBF officials.

Parents and mothers often argue about how to use available resources. Some mothers have accused heads of parents' associations of dipping their fingers in the kitty, not replacing worn-out utensils, being unwilling to guarantee loans to improve their premises, and charging a new recruit an entrance fee when her predecessor has left without paying back her loan.

At first there was a big turnover among the poorest mothers. They were drawn more by the chance of a house improvement loan than by the job itself, which proved more

thankless than they imagined, and many left soon after being recruited. Eventually, things settled down, after the mothers won battles for social security coverage and for better training and working conditions.

The mothers were quick to set up their own organizations to press for improvements in the programme. The ICBF was cautious at first about this unionization and stressed publicly that the mothers were volunteers or employees of the parents' associations and that their salary was a bonus.

The mothers retorted that the ICBF could not duck its responsibilities, since it has chosen to

define even the smallest details of the rules, closely monitoring timetables, meal menus, working methods, punctuality, numbers present, hygiene and budgetary matters, leaving very little to the mothers and parents.

So a union soon sprung up, along with an association called Amcolombia. Gradually, regional associations grew up and dialogue developed between the two sides. This is how the mothers won the rights they enjoy today. ■

Marie-Dominique
de Suremain

however and evasion is widespread. So money has to be scraped together wherever it can be found. For example, public law 333 of December 1996 stipulates that the proceeds of money, houses and vehicles seized from drug smugglers by the national narcotics authority must go to support street children.

But things are not so simple. Sylviane Bourgeteau, representative in Bogota of a French watchdog on drugs, the Observatoire Geopolitique des Drogues, says the law has "never been applied." Apart from the inheritance tangles that arise after drug seizures, the new occupants of houses confiscated from drug smugglers often get threatened or are burgled. The then Colombian government even admitted on its official website last 24 March that despite the seizure of about 20,000 items of property, only one such confiscation had been legally confirmed.

Also, seized property does not always

fit the practical needs of the welfare organizations. The houses are very luxurious and need costly refurbishing. Sometimes when a bus is needed to take some children somewhere, the only vehicle available is a Rolls Royce Gucci.

So the measure has its limits, but they are not insuperable. Just before public law 333 was passed, the ICBF managed to convert a former disco seized from drug smugglers in the chic Zona Rosa area of Bogota into a centre for haemophiliacs. And more recently, the latest anti-drugs publicity campaign directed at young people was financed by money seized by the national narcotics authority.

Antoine de Tournemire



A community centre at Cartagena.

Learning to Be

In 1972, a report by UNESCO's International Commission on the Development of Education adopted a new approach to the idea of education, long regarded solely as a school-centred activity. The report, whose title was *Learning to Be*, said that education should no longer be defined as a specific body of knowledge that had to be digested, but as a process whereby people, through the variety

of their experiences, learn to express themselves, to communicate, to question the world and to become themselves. This approach formed the basis of an agreement between governments and funding agencies when the Declaration on Education for All was adopted in 1990 at the World Conference on Education for All, at Jomtien, in Thailand.

The traditional distinction

between formal and non-formal education was thus superseded. Informal learning, comprising activities outside established systems, bridges the gap between institution-centred education and the socio-economic and cultural environment. It has proved its worth over the last 30 years and is now expanding rapidly.

From brain drain to brain gain

The flow of thousands of experts and technicians from developing countries to rich ones is increasingly seen as a source of potential for the former, rather than a loss. Thanks to new technologies, knowledge now moves around the world very quickly.

Over the past decade, many countries, especially in Latin America, have set up programmes to put the knowledge of these "lost" experts to good use. Examples include:

- The Inter-Regional Network of Latin American and Caribbean Scientists. Its database, created in 1994, keeps details of trained citizens who have gone abroad. It responds to the technological and scientific needs of member countries by inviting these international experts to conferences. It will, for example, be represented at the regional governmental conference on science which will be held in October in Bariloche, Argentina.

- Caldas, set up in 1991, encourages Colombian experts around the world to contribute to scientific and technological progress by publicizing the results of their research. It includes joint projects involving experts at home and abroad. E-mail communication is one of its main activities.

- Talven (Venezuelan Talent Abroad), launched in 1994. It targets not only scientists and high-tech experts but also Venezuelans active in the arts and the humanities. Talven attempts to persuade them to return home not permanently, but from time to time. With financial backing from private firms and institutions, more than 120 Venezuelans have been able to return and make contact with colleagues by taking part in seminars and workshops. This exchange of experiences is contributing to the country's development in areas as diverse as Aids, computers, economics and, in recent months, parasitology, molecular biology, waste recycling and biotechnology.

For more information, contact:

alas@unesco.org

talven@zcc.net



Higher education . . . and after?

Once upon a time students belonged to a small elite for whom a university degree was the passport into an educated caste which held the keys to knowledge. Today they number millions. Nearly every country in the world is offering higher education to more and more young people each year. But for what purpose? What are these students looking for? A stairway to higher social status? The guarantee of a good job? Universities and other higher education institutions must be tuned in to the demands of the job market and changing societies. Faced with new challenges, higher education still has a long way to go before it can offer students the opportunities they are seeking and which the world's economies, in North and South alike, seem less and less able to provide.

Shaking the ivory tower

Universities have changed radically to keep pace with modern life.
Now where are they heading in this high-speed age?

by Peter Scott*

In the past half century higher education has been transformed from a privilege conferred on social and political elites to a mass activity available to whole populations. This process began in the United States in the 1940s and 1950s, spread to most of Western Europe and many other developed countries during the 1960s and 1970s and in the past two decades has become a global phenomenon. In the next half century it will accelerate, leading perhaps to the replacement of "higher education" (still an elite-ish category despite its expansion) by extended systems of "lifelong learning".

The key to this transformation has been the expansion of secondary education. For example, in all but two countries of the OECD (Organization for Economic Co-operation and Development) at least two-thirds of young people now complete upper secondary education, and so are eligible to enter higher education. The result has been a dramatic increase in enrolment rates in higher education. In Chile the total number of students has grown from 131,000 in 1978 to 235,000 in 1988 and to 343,000 in the mid-1990s. Even in the United States, the pioneer of mass-access higher education where very high secondary education completion rates had already been achieved before 1970, the student population has continued to grow, from 11 million in 1978 to 13 million in 1988 and now to more than 14 million.

Two forces have driven up completion rates in upper secondary education and enrolment rates in higher education. The first has been democratization. As late as 1945 high levels of social, and hence educational, inequality persisted even in democratic countries, and much of the world remained in the grip of colonial and totalitarian powers. In North America, Western Europe and Australasia democratization typically took the form of the development of "welfare states", in which there was an increase in public expenditure on education, housing, health and social security that was sustained over more than three decades after the end of the Second World War.

More recently, as renewed emphasis has been placed on the market even in social policy, the rise of consumerism has continued to fuel demands for increased higher education opportunities. The older idea of education as a civic entitlement has been compounded by newer notions of free access to the edu-

cation marketplace. Far from arresting the advance to mass higher education, consumerism has accelerated it in most developed countries. As traditional forms of social differentiation based on class, gender and ethnic origin have been eroded by democratization and by market forces, new forms based on educational certification have become more important. In many developed countries the middle class and the "graduate class" have tended to coalesce.

In much of Asia and Africa democratization took the form of decolonization. In newly independent countries the energy originally generated in liberation struggles against the colonial powers was directed into a wider struggle to create fairer and more equal successor societies. Education was central to this struggle. The result has been a rapid increase in higher education enrolment—for example, in Tunisia from barely 2,000 students at the time of independence to more than 100,000 today. That process continues.

However, the relationship between democratization and the development of higher education has been less straightforward in developing countries. Despite very rapid rates of expansion the "metropolitan" influences of the former colonial powers have lingered more stubbornly in higher education than at other levels of education. This is partly due to the continued influence of associations between universities in the British Commonwealth as well as those between francophone universities.

Partly because of these lingering "metropolitan" models and partly because levels of participation are still lower than in developed countries, many African or Asian universities have remained more elite institutions than higher education institutions in North America and Europe. Also, as economic conditions have worsened in some developing countries, the competition between primary and higher education sharpened in the post-independence years as both were seen as equally important priorities. This competition was often reinforced by the intervention of the World Bank.

The second force driving up higher education enrolments has been the changing nature of the labour market. Traditional occupations have become comparatively less significant, while new service occupations, which often require graduate-level

* Vice-Chancellor,
Kingston University, UK

'Even while they teach,
men learn'

Seneca ('the Younger')
c.4BC-65 AD



© Sean Sprague/Hanos Pictures, London

A mechanical training institute
in Port au Prince, Haiti.

skills, have become more important.

Skill requirements have become more sophisticated. Jobs once done by unskilled or semi-skilled workers are now undertaken by technicians; and those which as recently as the 1980s were taken by technicians are now likely to be filled by graduates. The capital invested for every worker has more than doubled in the past 20 years. Even in occupations where there is less evidence that skills contents have changed significantly, university graduates are now employed in much larger numbers, partly to enhance the social status of these occupations and partly to compete in a graduate-dominated labour market. Healthcare is a good example. Once doctors were the only graduates; today, many para-medical workers are also trained in higher education.

The second form taken by the economic driver has been the growing conviction that national success now depends on economic competitiveness which, in the context of a knowledge-based economy, depends in turn on an adequate supply of human capital. Knowledge is now seen as the key economic resource.

This analysis may be exaggerated; raw materials are still very important in national economies and the global economy. But it has become pervasive—and persuasive. The naïve and linear theories of human capital popular a generation ago which postulated a direct link between investment in education and economic growth may have been challenged; some forms of higher education are now as likely to be labelled consumption as investment goods. Nevertheless, the discourse of the “Knowledge Society” has

become even more powerful.

The impact of democratization and economic competitiveness on higher education has been immense. First, the expansion of student numbers has made the cost of higher education a significant element within national budgets for the first time. A number of important consequences has flowed from this—the opportunity, and incentive, to compare the value of investing in different levels of education; increasing demands that universities are run as efficiently as possible (compromising their traditional autonomy from the state—and the market); lower unit costs as budgets have been trimmed (which may have undermined higher education’s claim to represent academic excellence). Second, higher education systems have emerged that embrace not only traditional universities but also non-university institutions. Two effects have been produced. One is that the ethos of the traditional university has been eroded; it no longer stands in glorious isolation. The other is that institutional differentiation has been encouraged, whether through active state planning or in response to markets for teaching and research.

The prospects for the next half century are for an acceleration of both drivers—to include access to higher education among the basic entitlements enjoyed by citizens in democratic societies; and to “put knowledge to work” in order to generate wealth and to improve the quality of life. The prospects for higher education during the same period are also relatively easy to predict—increased efficiency (which is likely to include growing pressure to make students contribute more to the cost of their higher education); greater accounta-

On the labour market, demand for traditional occupations has become less significant and that for new service occupations requiring graduate-level skills has risen

bility, although more probably in a “market” than a “planning” mode as even the state redefines its role as the purchaser of higher education services; more differentiation, both between and within higher education institutions, as they struggle to identify market niches; and—possibly—growing demands that higher education become more relevant as instrumental considerations triumph over idealistic ones.

However, the future may be more complex than the past. In the second half of the 20th century the encounter between higher education and society has been comparatively straightforward. Although dynamic, society has presented a familiar enough face. It was characterized by a combination of bureaucratic rationality and secular (and liberal) individualism. The beneficence of science and technology was uncontested. The dominant economic model was of large-scale industry, or analogous organizations in the corporate and public sectors. Although rapidly evolving, concepts and categories like “career” and “profession” remained valid. Higher education too was familiar enough. Despite the great expansion of student numbers and its adoption of novel roles, the university continued to be recognizable as such. Other types of higher education institution have been deeply influenced by university values and practices.

In the first half of the 21st century both society and higher education may become problematical and so contested categories. Some of these uncertainties are already emerging. Once firm demarcations between public and private domains, whether in terms of the balance between the state and the market or between social “spaces” and individual desires; between producers and users; between investment and consumption; between work and leisure are becoming increasingly fuzzy in the emerging post-industrial society. Wealth is being generated by the production of “symbolic” as well as—or more than—material goods. Value is created by design, sales, marketing, service rather than by primary production. Institutions of all kinds, civic and corporate, are being challenged by the rise of adaptable and flexible organizations, made possible by advances in communications and information technology.

The force of globalization amounts to much more than round-the-clock round-the-world financial markets or an emerging international division of labour; it is not only undermining nation states but also reconfiguring time and space to produce global intimacies, again with the help of the information revolution. Social identities are no longer moulded by the “givens” of religion, class and gender, or by positions within the occupational structure, as they have been since the advent of the industrial revolution in Europe two centuries ago. Instead they are being subsumed by a process of individualization in which life-styles rather than life-chances predominate.

The superiority of science is now being undermined by the growth of what the German sociologist Ulrich Beck has called the “risk society”, in which risks, especially environmental threats, seem to be accumulating faster than the benefits produced by social improvements and technological advances. The instrumental rationality on which Western notions of

modernization depend is being challenged by what Beck’s French colleague Alain Touraine has termed “new modernity” in which Reason and Subject are recombined in the form of new social movements.

Higher education will have not only to continue to satisfy the predictable demands for democratic entitlement and socio-economic utility with which it is familiar, but also to cope with the consequences of these new uncertainties. These may include: new curricula that emphasize style and images at the expense of skills and information; recategorization of higher education as a playful, even selfish, activity; a tighter link between experience of higher education and social esteem; submergence of the universal, but also particular, values characteristic of the traditional university by anomic globalization; threats to the scientific tradition and methods, from the “risk society”, from subjectivization and from demands that other knowledge traditions are accorded equal respect.

The universities of the 21st century, therefore, may have to face two ways. They will have to continue to pay attention to the democratization and the “knowledge society” agendas, which are likely both to be subsumed in a larger “lifelong learning” agenda. Their ability to sustain current levels of public funding and to satisfy their student-customers will depend on their success in this respect. It will not be easy. There is a danger that the essence of higher education will be lost if it succumbs to unconstrained populism. If this happens, the “quality” of the university will disappear—and with it perhaps its distinctiveness and so its utility and marketability. Similarly in the Knowledge Society of the future the university will face new rivals because all organizations will need to become “learning organizations”. These rivals’ strength will be increased if the superiority of universal science is successfully challenged.

But universities will also have to address the new agendas—of the “death” of work (and graduate careers?), of new social movements (and the erosion of individual enlightenment?), of globalization and virtualization (and the undermining of academic community?); of “alternative” knowledge traditions and,

‘They teach in academies far too many things, and far too much that is useless’

Johann Wolfgang
von Goethe,
Germany, 1749-1832

Public current expenditure on tertiary education, expressed as a percentage of total public expenditure on education:

| | 1970 | 1985 | 1995 |
|-----------------------------------|------|------|------|
| <i>Europe</i> | | | |
| France | 17.4 | 12.9 | 16.5 |
| Italy | 8.8 | 10.2 | 15.0 |
| Poland | 18.0 | 18.2 | 12.7 |
| <i>South America</i> | | | |
| Argentina | 21.0 | 19.2 | 16.5 |
| Brazil | ... | 19.6 | ... |
| <i>Africa and the Middle East</i> | | | |
| Côte d’Ivoire | 13.8 | 17.1 | 16.1 |
| Egypt | 20.4 | ... | 35.4 |
| Kenya | 13.6 | 12.4 | 13.7 |
| Tunisia | ... | 18.2 | 18.8 |
| <i>Asia</i> | | | |
| China | ... | 21.8 | 15.1 |
| India | 24.5 | 15.5 | 13.6 |
| Iran | 12.9 | 10.7 | 22.9 |

Source: UNESCO Division of Statistics, 1998

Four pillars of wisdom

by Guy Neave*

Four countries have left their mark on the world's higher education systems. What contributions have they made?



© Michael Abraham/Network/Repro, Paris

Countries with a long university tradition, like the United Kingdom, have exported their model of higher education.

For more than 900 years, the university has been remarkably active in “exporting itself”. The great medieval universities of Paris, Oxford and Prague drew on the experience of Bologna, sometimes held to be the earliest university of them all. So it is hardly surprising if the inspiration of some forms the basis of others. But no higher education system is exactly the same as its neighbours.

For all their variety, the way most systems of higher education have developed harks back to what may be seen as four referential and historical models of the university: the Napoleonic model (France), the Humboldtian (Germany), the “market-driven” model (the United States) and the model of higher education equated with the United Kingdom. Until recently, the so-called “Soviet model” and its derivatives from a command economy might well have figured amongst the ranks of these “system shaping” models.

The Napoleonic model is one of the earliest examples of the state harnessing the university to the modernization of society. It did this by maintaining close control over financing, over academic appointments and the use of legal instruments to ensure that national provision was similar across the national territory. In its classic form, the “Napoleonic” university is a powerful lever in asserting a singular national identity, based on the principles of formal equality and merit which are themselves both defined and upheld by a powerful national administration. In addition to France, this pattern ranged over such countries as Spain and Italy, and is also to be

seen in Argentina and many of the French-speaking African nations.

The Humboldtian model of university, so called after Wilhelm von Humboldt, a radical reformer of the Prussian higher education system in the early 19th century, is often seen as being at the origins of the present-day “research university” committed to “advancing the frontiers of knowledge”. Humboldt attached special importance to the freedom of senior members of the university to pursue enquiry without interference from government. And more to the point, government should, he argued, ensure the freedom of teaching and learning. Most important of all, the Humboldtian interpretation placed on the university the duty to conduct both teaching and research.

The third model is that of the “market-driven” university, best represented by the various systems of higher education in the United States. Though deeply influenced by the Humboldtian ethic, the United States system contained three features which set it off from its European counterparts. The first was the emphasis upon “useful knowledge”; the second, its close ties with the local community; the third, and perhaps the source of its most powerful appeal today, its close ties with the economy. The United States was the first to develop a mass higher education system, more than half a century ago.

The fourth referential system is that of the United Kingdom. It is often cited as an outstanding example of a university system enjoying immense institutional autonomy. University independence was once ensured by a unique system of funding by which governments left the responsibility for distributing public money to the universities themselves. British universities were well known for their attention to student personal development in addition to intellectual prowess. Important too was the idea of residentiality as the basis of an academic community. Students lived on campus. A system long devoted to an elite education, the United Kingdom was relatively late in reaching massification, doing so only in the course of the 1980s.

These models, in their different ways, have shaped the world's universities, especially in the post-1950 period, when most of them were founded. But the “archetypes” themselves have also changed. Many of them look to developments in the world's largest higher education system—the United States—as a source of inspiration. Whether this will alter as today's version of globalization sets a premium on rapid change, and which will be the “referential” systems in two decades, time alone will tell. ■

* International Association of Universities

What do students

Germany:



A student demonstration in Bonn, November 1997.

© H. Bossard/Agence, Paris

Thirty years ago, from Dakar to Mexico City, from Paris to Berkeley, students took to the streets to announce the coming of a new world. Students have often been in the forefront of revolutions, and in several countries have brought down seemingly invincible regimes. But what do they want today? This is not an easy question to answer, if only because their status is by definition temporary, because the student population never forms a stable and homogeneous social group and student demands vary according to their context. The dreams of the students of 1968 in many countries have given way to a realism arising from the constraints of the late twentieth century. Today's students want job opportunities more than anything else. But they have not all turned their back on the struggle for ideals. On this double page, we present reports on the student situation in Germany and Indonesia.

German students took to the streets thirty years ago in a bid to overturn the "bourgeois" social order. Nowadays the mood could not be more different. Germany's 1.8 million-plus students are learning to live in an era of high unemployment and dwindling subsidies.

"Many students are under the illusion that if they work hard enough they'll get a job," says Carola Schmidt, a fourth year history student at Berlin's Humboldt University. "But it's not like that. Often there are just no jobs."

In the autumn of 1997, students staged a series of strikes and protests to try and focus national attention on their plight and the crisis overwhelming Germany's institutes of higher education. They called for more money to be spent on upgrading teaching and laboratory equipment, a comprehensive review of government support for students as well as reform of the country's higher education system and moves to cut class sizes. Claudia Boege, a student representative at Frankfurt's University of Applied Science, believes that public universities are facing the same difficulties as other parts of the country's social system. The problem is, she says, "The politicians don't have any new funding ideas."

Indonesia:

The future of a nation lies in the hands of the young. For Indonesia, that is no overstatement.

In May 1998, it was the students who caught the world's attention by spearheading the drive to unseat the nearly godlike figure of President Suharto from his more than thirty-two-year presidency. But after the jubilation, the students woke up to find the original problems still there, with the economy collapsing and politics getting murkier by the day.

"What is the next move? Is this what you want?" a street vendor asks a student activist. Yet without a larger-than-life common enemy like the Suharto regime, students have too many wants and too few resources to continue their movement, in the absence of either a nationwide organization or a shared agenda.

For the more radical students from the Jakarta City Forum, a loose gathering of students from about 100 Jakarta universities, a complete dismissal of the parliament and government is in order. They want a so-called Indonesian People's Committee to replace the establishment and set up elections as soon as possible. Why? "Because we don't trust all of the old institutions," yells a student leader.

Watching divergent desires polarize student leaders and interest-led politicians lure student support

want?

Lost illusions

The movement largely ran out of steam, leaving behind a trail of frustration and anxiety about the future. "The mood among students today is, 'well we can't change the process, so we had better make the most of it'," says Herbert Dieter, a political scientist with the University of Duisenberg.

Despite considerable media coverage of the strikes and widespread public sympathy towards the students' cause, Dieter believes that the problems of education in Germany remain. In particular, he says that underfunded German universities are not offering their students much hope of finding a place on an increasingly competitive job market. With classes so full that there is often just one professor for every 600 undergraduates, students say they have virtually no contact with their teachers.

If finding a job after university is the key issue for German students today, supporting themselves during their years of study has also become a high priority for many of them. Higher education might be free in Germany, but students still have to make ends meet to pay for the rent and other expenses.

Students have also been demanding increased government financial support. The number receiving

income from the state has fallen in recent years and is now down to about 17 per cent in the western part of the country, compared with 37 per cent 15 years ago. A similar picture emerges in the east, where the number of students receiving government support has dropped over the last four years from 55 per cent to about 32 per cent.

As a consequence, the number of students working and studying at the same time has risen in recent years, while the percentage of undergraduates from lower income families has fallen from 23 per cent in 1982 to 13 per cent last year. Working while studying also tends to exacerbate another problem facing German higher education, which is the number of years spent in the halls of academia. This often means that many students do not take their first steps towards a full-time career until they are about thirty years old.

Holding down a job while studying is also important because the lifestyle of today's students is less frugal than that of their predecessors of three decades ago. According to a survey of German undergraduates published in May 1998, six out of ten had a car and four out of ten had their own apartments. "Today's students," says Schmidt, "like to have more fun and to live an easier life than those of 1968." ■

An uncertain future

to their causes, the more down-to-earth students are retreating from the political arena, to regroup and return to their classes. "My students are going back to campus to consolidate while keeping an eye on the new government's moves," says Sudarto, rector of Airlangga University in Surabaya.

But this consolidation is far from a reality. "Spontaneous student unity is close to impossible when there is no political mainstream," says Ismail, a now-apathetic former militant. And while the remaining activists argue over competing agendas, ordinary students have simpler desires. Marijono, a student from Jombang in East Java says: "We do not want to be fooled again, either by the government, by the International Monetary Fund or by self-acclaimed reformists."

He and others like him would prefer to see progress in a field closer to daily life: education. "Educational improvement should not be ignored. It is the way to enhance our quality of life," says Dadang Budiana from the Indonesian Student Association for International Studies.

Less than 10 per cent of the total national budget is allocated to education. Most state university students come from the middle class, which can afford

the preparation courses for the rigorous national university entrance exam. Private universities are expensive. Lower-income youths are essentially left out in the cold, without access to higher education. "Poor students will always feel inferior," says Budiana. "To get a scholarship, they must write a letter, approved by the local government, stating they are 'financially incapable'."

Lower tuition fees are a key demand, according to Budiana. "The government should slash the military budget and reallocate funds from superfluous high-tech development for the sake of educating the people."

Zainal, a student from a poor village in East Java, couldn't agree more. "Poor guys like me can't afford to pay the tuition anymore." But even the rich students now are feeling the crunch. The fall of the rupiah has tripled the prices of foreign textbooks. "I can't buy books any longer. They are unbelievably expensive," says Iwan, a student from privately-run Trisakti University.

For Indonesia's politically puzzled and scholastically troubled students, helping overthrow the previous government now seems a lot easier than forging their nation's—and their own—future. ■

Achmad N. Sukarsono

'I have never let my schooling interfere with my education.'

Mark Twain, United States, 1835-1910

Wanted: a new deal

Higher education must meet new demands in order to turn out well-trained professionals instead of unemployed graduates

We are living through a period of profound historical change, marked by an on-going knowledge revolution. Society is changing far more quickly than the structures it has created and the universities are lagging behind these changes. They, and the educational system in general, continue to teach the use of static processes, forecasting models based on historical experience and the memorizing of solutions to already solved problems.

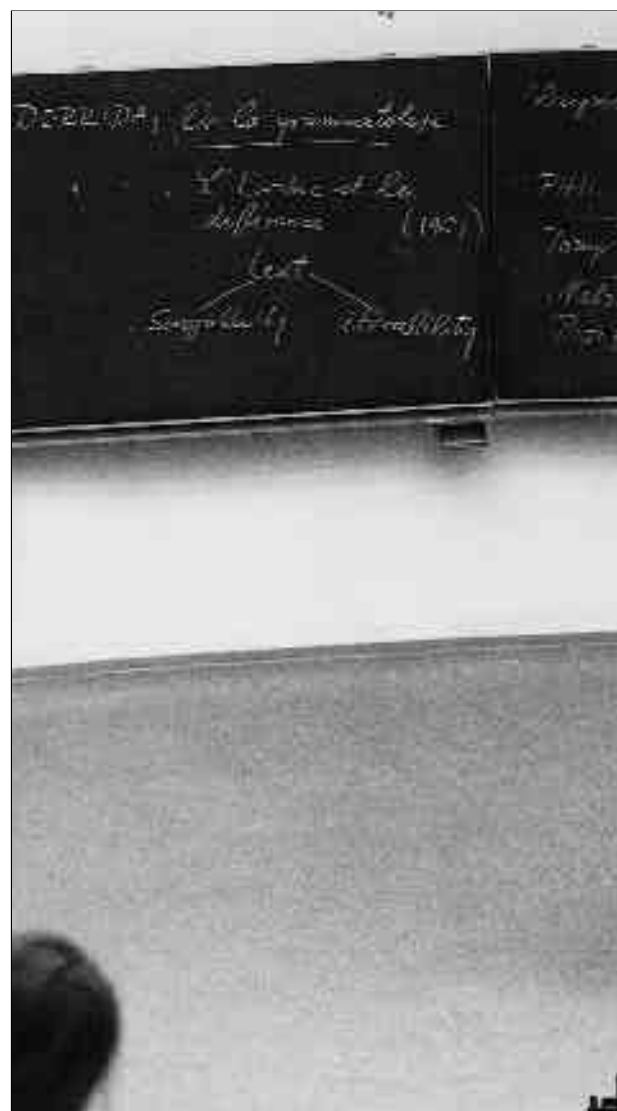
Higher education systems in both North and South are in crisis, both quantitatively and qualitatively. Naturally the developing countries are the hardest hit, both in terms of available resources and levels of student enrolment (see box page 27).

Is the crisis due to a shortage of funds alone? Does the fact that the countries of the North invest ten times more per student than those of the South mean that graduates from the former are ten times better trained? Common sense says yes. But in most cases the answer is no. Generally speaking, university education has failings all over the world, in some cases because it is an offspring of a wasteful society, indifferent to the resources with which that society provides them.

The missing link between education and the world of work

In the United States, for example, many teachers and researchers come from developing societies which should theoretically have given them a less sound training than that provided by the immense academic and financial resources of the United States system. But this is not the case: they compete professionally and scientifically, with no major problems. In many areas the results of university training are comparable.

Professionals move around because they need jobs and want to work in the best possible working conditions. There are, for example, almost 30,000 African Ph.Ds working in Europe and North America, and thousands of Latin American and Asian professionals working in the United States. By the beginning of the 1990s about a million professionals had emigrated to the developed countries over the previous three decades, and the figure has increased considerably in the last five years. While the number of opportunities and access to them are uneven,



there is little difference between North and South as regards quality; nor is the availability of funding the only basis for improving the system.

The problem is that post-secondary training today is diploma-driven. It is based on rigid study programmes and is changing at a rate which takes little or no account of the speed of knowledge accumulation. This is despite the fact that today's graduate professional needs to have followed a flexible curriculum and must be a problem solver, extremely adaptable to new processes and technologies, generously endowed with creativity and firmly inclined towards life-long learning, as is clear from the studies on skilled labour done by industrialized countries and from numerous OECD studies.

A recent study of the relationship between higher education and the labour market observes that there appears to be no connexion between the increase in professionals' level of knowledge and changes on the labour market. Although the

'Just as people take off one garment and put on another, it is necessary to put the old university in the wardrobe and then take out the new one.'

José Martí, Cuba,
1853-1895

for the universities

by Miguel Angel Escotet*



© Marcel van den Boght/WU, Paris

The university should not be a teacher-centred institution.

market undoubtedly demands basic skills and knowledge, it is attaching increasing importance to the emotional and psychological attitudes of future employees. In Belgium and Sweden, two of the countries with the lowest graduate unemployment levels (2.2 per cent and 2.1 per cent respectively), potential employers consider that although university graduates are very hardworking and possess an excellent knowledge of their specialization, they are ill prepared for conditions in the real world and show few signs of creativity, adaptability and flexibility. This view has been expressed in other countries, including Germany, Japan, New Zealand, Norway and the United Kingdom.

Although post-secondary education is clearly associated with higher personal incomes, lower unemployment and greater opportunities to climb the social ladder, unemployment rates for people with higher education qualifications

continue to be high in both North and South. Graduate unemployment in Europe, for example, varies between 1.4 per cent and 16.6 per cent depending on the country. What's more, many graduates are working in jobs outside their field of training. The increase in graduate unemployment in the developing countries is largely due to the drastic fall in demand from the major employer of graduates—the state—as a result of international competition and new political and economic approaches. The private sector is in no position to absorb the supply of surplus graduates. World Bank studies carried out in Asia, the Middle East, North Africa and certain Latin American countries show that graduate unemployment is increasing: in Egypt it rose in barely five years from 9.6 per cent to 16 per cent; in Venezuela it went from 4 per cent to 10.3 per cent between 1981 and 1990. The picture is similar in many of the former countries of the communist bloc as a result of rapid privatization.

All the same, higher education cannot be held wholly responsible for graduate unemployment nor for the correlation that should exist between training, ▶

*International Institute of Educational Development, Florida International University

The North-South gap

In the last decade alone, the gap in higher education enrolment rates has widened by 6.7% in favour of the most developed countries. Africa, the region with the highest annual increase in university student numbers (7.5%), has a very low enrolment rate (2.5%), while North America, which has the lowest growth in student numbers (1.6%) has the highest enrolment rate (77.3%).

Perhaps the most marked disparities are in student costs. A student in the North costs far less in relation to Gross Domestic

Product (GDP) than a student in the South. In absolute terms, however, the latter costs only \$651, as opposed to \$6,520 for the former.

On average, an investment by a poor country of \$651 in higher education requires twice as big a sacrifice as an investment of \$6,520 by a rich country. In other words, the poorer the country, the higher the relative cost per student and the greater the national budgetary effort. ■

**Higher education cannot
be held wholly responsible
for graduate unemployment
nor for the gap between
training and market
expectations**

study programmes and demand for labour. It is often said that higher education is failing to provide training in the activities required by the market, but the market is often incapable of adequately anticipating the type of professionals it is going to need.

A survey conducted in Florida (USA) among multinationals in the high-tech and services sectors revealed companies that were unable to identify the professional qualities that would be required within ten years and, in many cases, within five years. This is not surprising, in view of the spectacular rise of the Internet between 1994 and 1998 which caught many hardware and software firms unawares. It is in information technology that redundancies and high unemployment levels are occurring, because systems are constantly changing and because of strategic mergers between the major companies.

Another example of the difficulty of making reliable predictions concerns those made by the European Community and the US Government regarding the types of jobs that would be needed at

the beginning of the new century. These predictions were inaccurate: what had been forecast to occur after 2001 actually came about in the late 1980s and early 1990s.

It can be said, however, that professional training over the coming years will focus on areas such as high-tech electronics, information technology, aquaculture, agro-energy, biotechnology and energy physics. Jobs in information and communication systems will require new qualifications which will have to be continually updated. The service sector will experience spectacular growth in the field of leisure and recreation because of the reduction in working hours. New professions in the human sciences such as "ludicadology", incorporating psychology, pedagogy, information science and the technology of education, play and creativity programmes, will replace the old single-discipline approach.

In short, the great occupational change looming ahead will call for increased interdisciplinarity, revitalization of the disciplines related to ethics and aesthetics and sweeping changes in the attitudes of teachers and students: for the professional of the future, education will be a lifelong process, and education and work will go hand in hand.

The great challenge will thus be to create a stable relationship between higher education and society

Vision and action for the next century

Challenges await a World Conference on
Higher Education in the 21st century,
convened by UNESCO in Paris from 5 to 9 October

'I am beginning to suspect all elaborate and special systems of education. They seem to me to be built upon the supposition that every child is a kind of idiot who must be taught to think.'

Anne Sullivan Macy, United States, 1866-1936

Is world mobilization in favour of higher education justified while millions of adults and children are illiterate and lack access to basic education? Is it reasonable to be concerned with the development of universities in regions where poverty, sickness and hunger are rife? These questions need to be asked since organizations such as the World Bank are urging developing countries to invest in primary and secondary education on the grounds that they offer a better return and contribute more to social equality than higher education. UNESCO believes, however, that neglect of higher education could deprive the countries of the South of an essential tool for their development and for strengthening their autonomy.

UNESCO has therefore decided to convene a world conference on higher education. By doing so it is inviting countries to regard higher education

not as a burden on state budgets, but as a long-term investment that is beneficial to economic competitiveness, cultural development and social cohesion, as well as playing a major role in training primary and secondary school teachers.

The World Bank and other institutions cast doubt on the economic cost-effectiveness of universities and their efficiency as vehicles of social change. This criticism is not totally unfounded. The goal of the world conference is to put forward substantial measures of university reform (redefinition of their mission, operations and funding) via action plans designed to enable higher education to play a central role in contemporary society.

The conference is the result of a long process of international consultation and reflexion. Between November 1996 and April 1998, Havana, Dakar, Tokyo, Palermo and Beirut hosted regio-

through strategic alliances with the production system designed to promote participation by all sectors of the economy in the university's basic and applied research programmes and by production-sector specialists in university teaching.

The problems of the university are also those of society, and so are the responsibilities. This raises the question of the university's specific culture, especially the teacher-student relationship. Planning is currently based above all on the teaching staff, which is more corporatist than academic. Physical spaces, salary scales, curricula, structures and timetables are more closely geared to the needs of the teacher than of teaching. This is the case all over the world.

More serious still, this teacher-centred culture is giving way to one that is even more dangerous for the survival of university education: an administration-centred culture. This would mean an education system dominated by bureaucrats and the kind of management structures which would place an institution whose function is to produce and disseminate knowledge on the same footing as a detergent factory or a multinational travel agency.

But no strategy for change can work unless higher education adapts to the challenge of the knowledge explosion. It is vital that course

nal conferences which examined trends in higher education worldwide and defined local needs. During the same period a wide range of nongovernmental organizations active in education took part in debates on specific themes. Their purpose was to gather the opinions of all concerned in order to prepare a declaration and a plan of action focusing on four key areas: relevance, quality, international co-operation, and management and funding.

Accountable to society

A framework for priority action proposes, through concrete means, a "new university compact" to redefine the relations between higher education and the state, civil society and the economy. It insists on the democratic nature of higher learning and its critical and future-oriented function, and the need for it to be accountable to society. It opens for discussion questions of funding and notes the importance of public support for higher education, as well as relations with the state including institutional autonomy and academic freedom. Such a pact should help transform the higher education institutions of the twenty-first century into centres of excellence and of the advance of knowledge which respond to growing student demand and the specific economic and cultural needs of each region. In short it sees higher education as playing a key role in measures designed to promote sustainable and equitable development. ■

Araceli Ortiz de Urbina

content should be geared to what learners "must know" and not to what teachers "know" or "think they know". This will force teachers into a permanent renewal of theories, techniques and processes, keeping up with knowledge produced both inside and outside the university. Higher education is evolving towards a model in which lecturers and students will be permanent learners and where curricula will be drawn up on the basis of innovation, fresh knowledge and the latest teaching and learning technologies. Above all the university must teach people to think, to use common sense and to give free rein to the creative imagination. ■

Tertiary education :gross enrolment ratio* (%)

| | 1970 | 1985 | 1995 |
|-------------------------------|------|------|---------|
| <i>Europe</i> | | | |
| France | 18.8 | 29.8 | 51 |
| Italy | 16.7 | 25.5 | 41.4 |
| Poland | 13.2 | 17.1 | 24.9 |
| <i>South America</i> | | | |
| Argentina | 13.4 | 35.7 | 41.8** |
| Brazil | 4.7 | 10.5 | 11.5*** |
| <i>Africa and Middle East</i> | | | |
| Côte d'Ivoire | 1.0 | 2.6 | 4.6*** |
| Egypt | 6.9 | 18.1 | 20.3 |
| Kenya | 0.8 | 1.2 | ... |
| Tunisia | 2.6 | 5.5 | 12.9 |
| <i>Asia</i> | | | |
| China | 0.1 | 2.9 | 5.3 |
| India | 4.9 | 6.0 | 6.5 |
| Iran | 2.9 | 4.1 | 16.6 |

*Total enrolment in tertiary education regardless of age, expressed as a percentage of the population in the five-year age-group following on from the secondary-school leaving age

**1996

***Estimation

Source: UNESCO Division of Statistics, 1998

Unemployment and higher education

| Country | Economically active population | Unemployment rate (%) | Graduates among the unemployed (%) |
|-----------------------------------|--------------------------------|-----------------------|------------------------------------|
| <i>Europe</i> | | | |
| Austria | 3 870 200 | 4.1 | 3.8 |
| Ireland | 1 494 400 | 11.9 | 3.9 |
| Italy | 22 849 000 | 12.1 | 6 |
| Poland | 17 076 000 | 12.3 | 2.4 |
| Portugal | 4 811 169 | 7.2 | 5.2 |
| United Kingdom | 28 552 360 | 8.2 | 10.7 |
| <i>Latin America</i> | | | |
| Colombia | 6 190 206 | 11.9 | 17.8 |
| Mexico | 35 580 746 | 3.7 | 17.8 |
| Peru | 6 561 004 | 7 | 7 |
| <i>North America</i> | | | |
| Canada | 15 145 400 | 9.7 | 10.2 |
| United States | 133 943 000 | 5.4 | 18 |
| <i>Africa and the Middle East</i> | | | |
| Tunisia | 2 360 600 | 16.2 | 1.3 |
| <i>Asia</i> | | | |
| Bangladesh | 56 014 000 | 2.5 | 11 |
| Japan | 67 110 000 | 3.4 | 14.3 |
| Korea, Republic of | 21 188 000 | 2.0 | 35 |

All figures from 1996, except Tunisia (1989).

Source: Yearbook of Labour Statistics 1997, ILO, Geneva

Turkey: a course for

Specialization, proliferating courses, regionalization and privatization are key trends in Turkey's changing university system



The University of Istanbul became a modern institution in 1933.

Change is in the air as the 1998-1999 Turkish academic year begins. The focus is on the entrance exams, reputedly so tough that students often have to retake them two or three times before passing, or else give up, with the luckiest going off to study abroad.

The selection process up to now has been in two stages. In the first exam, with a more than 50 per cent failure rate, candidates had to get 20 points before they could go on to the second, which determined which university they went to. Students who got 105 of the 120 possible points in this exam won the right to take an extra-mural degree. So they had to stick at it. It was also well

nigh impossible to pass the exams without private tuition, which became a big part of the education system, draining candidates' resources and swallowing up every year the equivalent of 40 per cent of the national higher education budget.

The "survivors" of this rigorous selection process have no problem getting jobs afterwards, but the fact remains that of 100 children entering primary school, only 11 reach university and only 17 per cent of them leave with a degree. This year, however, things will be much easier due to a switch from a two-stage exam to a single one. But no one is expecting any miracles. Turkey has a long way to go before it reaches its goal of a 35 per cent enrolment rate in higher education.

Yet Turkish higher education has come a long way since 1923, when the republic was proclaimed. Then the country had only 5,000 schools, with 360,000 pupils and 12,000 teachers. Western-style schools had begun to appear in the eighteenth century, but education had remained largely in the hands of clerical and Koranic institutions which refused to train students to be open-minded and think for themselves. Indeed they were one of the reasons for the collapse of the Ottoman Empire. When the modern-minded Kemal Atatürk came to power, the education system was drastically reformed. The country's

Turkey in figures

| | |
|--|-----------------|
| Area: | 780,576 sq.km. |
| Population (1990 census): | 61.8 million |
| Urban population: | 70.9% |
| Economically active population (1996): | 29 million |
| GDP (1996): | \$187.4 billion |
| Government education budget (1994): | 3.3% of GDP |
| Illiteracy (1995): | 17.7% |
| Children in school-aged 12 to 17 (1991): | 43.1% |
| Children in post-secondary education (1993): | 19.6% |

(Source: L'Etat du Monde, 1998)

the future

by Necla Arat*

oldest university, Istanbul Darülfünun, a bastion of conservatism which shied away from the sciences, was turned into a modern secular institute of higher education in 1933 and renamed Istanbul University.

It openly welcomed Jewish academics fleeing the Nazi extermination and completely transformed itself. Atatürk's passion for science encouraged the founding of other universities along the same lines, notably the Istanbul Technical University (ITU) in 1944 and the University of Ankara two years later. The second big educational reform came in 1946, when universities won an independence which, despite poor working conditions, made them the envy of many universities in the West. Two other major reforms followed, in 1961 and 1981.

The number of universities had meanwhile grown to twenty-seven, each with its own statutes and way of operating. This hasty and ill-thought-out expansion caused many problems, especially in harmonizing courses. The army cited the chaotic situation in education to justify its seizure of power in 1980 and cut back university autonomy, causing many lecturers to flee abroad. The higher education law of 1981 involved co-ordinating and standardizing the structures, duties and responsibilities of all institutes of higher education and linking them to each other. All were to be attached to universities and a new council for higher education (YOK) was put in charge of planning and co-ordinating the reforms. The YOK was very controversial at the beginning, but it still exists today, though with different powers since the mid-1990s.

Some schools, known as "other educational institutions", do not come under YOK but various government ministries. For example, one which teaches "health sciences" is attached to the health ministry. Another teaches "internal security services" involving military colleges and the police academy.

More and more higher education institutions are springing up, largely due to privatization. The first private universities were founded in the 1960s but closed a decade later because of poorly-constructed courses and degrees of little value. The 1981 reform law allowed only charitable foundations to set up private universities. By 1988, 32 of the 33 existing universities were state-run. Today there are 72 universities, 18 of them privately-operated. In Istanbul, there are six state universities, but 12 private ones.

The private institutions, which generally have

a good reputation, help the government avoid the outflow of currency caused by a wholesale departure of young people to study abroad. They are also a ray of light for hundreds of thousands of high-school graduates who cannot get into state-run universities. The snag is that tuition fees are very high, even though the government subsidizes up to 40 per cent of the cost for some students.

As well as being privatized, higher education has also been regionalized. In Atatürk's day, the goal was to set up a secondary school in each province. The aim today is a university in each one. This has produced many institutions whose existence owes more to electoral politics than academic considerations, along with abnormalities like faculties with only one teacher. Graduates from these universities find jobs, but not the best ones.

The labour market is increasingly demanding. Although education is divided up into four stages—undergraduate, graduate and masters (each requiring from two to four years of study), and then a doctorate—the only qualifications employers are really interested in are master's degrees or doctorates.

But the number of subjects on offer at each stage is growing all the time. More than a dozen new degree courses were offered in 1997 alone and drew a large number of students, though this gives no real indication of whether the courses teach skills which enable students to get jobs afterwards. They may be more of a fallback for students who failed to get into the university of their choice because they did not score well enough in the entry exam. University places are in demand, so exam results determine which students go where.

Specialization and the proliferation of courses are the broad trends. This is particularly true of private courses at master's level, where no fewer than 16 new subjects have been created in the past academic year, including women's studies, robotics, aerospace studies, seismology, family medicine and gerontology.

At this rate, Turkey will have plenty of experts at the start of the new millennium. But there are still big problems to sort out. More than two-thirds of the country's 1,400,000 students are male, which is not surprising since a fifth of Turkish women are illiterate. Also, the average time a Turk spends in school is still only between three and six years. ■

with Abbas Güçlü

More and more higher education institutions are springing up

* University of Istanbul

'Wanting to change the university is like trying to shake up a cemetery.'

José Ortega y Gasset,
Spain, 1883-1955

Bulgaria's overdose of Russian profs

Since the Soviet collapse, the demand for Russian courses in Bulgarian schools has plummeted, leaving many teachers jobless

In the early 1990s, after the fall of the Berlin wall and communist regimes, Bulgarians could hardly imagine what lay round the corner. Apart from the need for economic reform, they had to face sweeping changes in ways of thinking and learning. "We had to rewrite all our textbooks, from primary school to university level," says a history teacher at the university of Sofia. The first thing to be done was to purge the national education system of the dead weight of ideology and of compulsory Russian classes.

The history of Russian language teaching in Bulgaria goes back to 1878, when the Czar's armies freed the country from the Ottoman yoke. As a token of gratitude to the "liberating brothers" from Russia, it was decided that Russian would be taught in secondary schools. Under the communist regime, Russian became compulsory in primary schools, and was even taught in kindergartens. By the late 1980s, courses were being taught entirely in Russian in twenty secondary schools, and Bulgaria had 4,000 Russian teachers.

In 1992, the wind of democratic reform swept through the education system. Marxism and compulsory Russian disappeared from curricula. But the decision was taken without much thought for the consequences, especially for teachers.

School number 133 in Sofia, where 1,300 students start learning Russian in the first year of the primary level, is the only holdover from the old system. It receives so many requests for admission that only one in four applicants can be enrolled. "We have sixteen Russian teachers, but many colleagues had to be retrained. I know of quite a few who went back to university to learn English or to become primary school teachers. Others left to sell books on the sidewalk," explains the principal, Lyubov Micheva.

Two thousand Russian teachers found themselves without a job after the reform, says Letelina Krumova, a specialist on the issue at the ministry of education. In 1993 she started a programme to retrain "high-risk groups", including jobless Russian teachers. "But the amount of money required turned out to be exorbitant, so we soon gave up on the idea and asked the people concerned to manage on their own," says Krumova. At the university of

Sofia, a sound two-year curriculum has nevertheless helped many of them earn an English teaching degree. One expert says, "in the end it was the right choice, because nowadays the Russian-English combination is one of the most highly sought-after."

That was then. Four years ago the Bulgarian Socialist party was voted back into power and the retraining courses were abolished. The succeeding government, which has been in power for a year, is having a hard time managing a cumbersome legacy.

Hostages to the education system reform, which itself has been buffeted by political squabbles and changing governments, many teachers have left teaching altogether for business careers.

Svetla Djivreteva has started raising silkworms. "It wasn't exactly my calling in life," she says, "but I had to make a living somehow." A graduate of the university of Veliko Tarnovo near her home village of Draganovo in Bulgaria's heartland, she started out studying to be a Russian teacher. But by the time she finished the reforms had been implemented. Svetla decided to follow her husband to Ruse, a town near the northern border, but failed to find a job there. "I had to teach Bulgarian literature in a village twenty-five kilometres from home," she says. "I got up at five-thirty in the morning to catch the bus. In winter there wasn't any wood to heat the school and the children tried to write with their gloves on."

After a year, Svetla was sacked and replaced by a friend of the principal. She moved back into her parents' home near her alma mater, where she enrolled on a primary school teacher training course. With her new diploma in her pocket, she is currently unemployed but has her eye on a job in the village school.

In the meantime, Svetla survives by going each month to the nearby silk mill where she is given a large jar of silkworms. This thankless job brings in 100,000 leva (slightly over \$50) a month. She wants to go back to teaching, but in the meantime all she can do is wait and raise worms.



In Sofia, many former Russian teachers have become booksellers.

© Rumiana Ugarchinska

In 1992, the wind of democratic reform swept through the education system

'Education is not merely a means for earning a living or an instrument for the acquisition of wealth. It is an initiation into the life of the spirit, a training of the human soul in the pursuit of truth and the practice of virtue.'

Vijaya Lakshmi Pandit,
India, 1900-1990

Rumiana Ugarchinska

Graduates for hire

Mobile, talented students are increasingly numerous and sought-after players on the international job market

Business follows graduates. For the countries that host them, today's high-flying foreign students hold the keys to tomorrow's successful deals, because when they return home they will probably become influential decision makers in politics and business.

Meanwhile, they provide the countries where they study with hefty tuition and lodging fees. According to the non-governmental organization Education International (EI), each year foreign students bring in \$7 billion to the US economy, between \$1.7 and \$2 billion to the United Kingdom, \$750 million to Australia and \$730 million to Canada. "In Australia, the Royal Melbourne Institute of Technology and Monash University are considered among the top 500 service exporters."

1.5 million students abroad

International student flows have increased at the same pace as worldwide demand for higher education in the past few years. In 1980, approximately 900,000 young people left home to study abroad. Today the figure is 1.5 million, and, experts say, the upward trend is likely to continue. Ninety-five per cent of students studying outside their home countries head for the industrially developed nations. Three-quarters of them go to eight countries, and the trend is moving towards still greater concentration. By far the most popular destination is the United States, where the number of foreign students has increased almost six-fold in thirty years, rising from 82,000 in 1964-65 to 458,000 in 1996-97. "It's never been so high," although the number has flattened out in the past five years, says Todd M. Davis, director of research at the Institute of International Education (IIE) in New York. The figures may be impressive, but foreign students account for only 3.2 per cent of the total in the United States—three times less than in Germany, France and the United Kingdom.



A university library in Beijing. More and more Chinese are leaving their country to study.

© Parca Pictures, London

The second most frequented host country is France, with 140,000 foreign students in 1996. Although France has a strong, long-standing tradition of welcoming foreigners, its market share is dropping, according to a 1996 study by SFERE, a French organization which monitors the export of educational resources. In Germany, Australia, Japan and the United Kingdom, on the other hand, foreign student enrolment has increased.

Africa south of the Sahara and a number of Asian countries send the highest proportion of their student populations abroad: over 10 per cent. In terms of numbers, however, China is the biggest "exporter", with 130,000 expatriate students, twice as many as Japan and the Republic of Korea, which come next. Young people from Asia account for nearly half of all students abroad.

Why do more and more young people, usually acting on advice from their families, decide to study outside their home countries? First of all, because rightly (the usual case) or wrongly (sometimes for snobbish reasons), they believe that the quality of higher education is better abroad. Other, more specific factors may also come into play. Flows between European countries account for a quarter of worldwide student flows. They are part of a growing trend and a political movement towards regional integration which are reflected in university student exchange programmes such as the European Union's Erasmus scheme. In other parts of the world, restrictive measures encourage some communities to look elsewhere. For example, "the Malaysian government has quotas on the number of eth-

Young people believe that studying abroad is almost always a passport to employment

The 10 countries with the highest number of foreign students enrolled in institutions of higher education:

| Host country | Year | Total number of foreign students |
|--------------------|---------|----------------------------------|
| United States | 1995/96 | 453 787 |
| France | 1993/94 | 170 574 |
| Germany | 1993/94 | 146 126 |
| United Kingdom | 1993/94 | 128 550 |
| Russian Federation | 1994/95 | 73 172 |
| Japan | 1993/94 | 50 801 |
| Australia | 1993 | 42 215 |
| Canada | 1993/94 | 35 451 |
| Belgium | 1993/94 | 35 236 |
| Switzerland | 1993/94 | 25 307 |

The largest number of foreign students by country of origin, in the 50 major host countries:

| | |
|--------------------|---------|
| China | 115 871 |
| Korea, Republic of | 69 736 |
| Japan | 62 324 |
| Germany | 45 432 |
| Greece | 43 941 |
| Malaysia | 41 159 |
| India | 39 626 |
| Turkey | 37 629 |
| Italy | 36 515 |
| Morocco | 34 908 |
| France | 32 411 |
| Canada | 28 280 |
| United States | 27 749 |

Source: UNESCO Statistical Yearbook 1997.

nic Chinese allowed in its universities," explains Robert Lawrence, director of LD & A, an Australian company which carried out a survey on Asian student movements in 1997. In poor countries, candidates for emigration regard the university as an open door to an Eldorado in the West. Everywhere, the brightest hopefuls apply to elite institutions which have fiercely competitive selection procedures, such as Yale, Harvard and Columbia on the east coast of the United States, Stanford and Berkeley in California, Oxford and Cambridge in England, the Ecole Polytechnique and the School of Advanced Commercial Studies (HEC) in France, and McGill University in Canada.

American universities are a powerful magnet for several reasons, including the use of English as a world language, the persistence of the American dream and, above all, quality of education. "That's where you find the most four-star programmes," says Denis Lévy, honorary president of the International Association of University Professors and Lecturers. "For example, Stanford is the best place to study European law. Schools like that have unlimited material resources. They subscribe to everything, use the latest information technology to the full and offer outstanding working conditions." Universities in the developing countries cannot measure up.

Often ill-equipped or transformed into battle-grounds during political conflicts, they are deserted by the best teachers.

Young people believe that studying abroad is almost always a passport to employment. "That's especially true when the recruiter has also studied outside his or her country. When he or she perceives the international student as equal to the domestic one, the overseas degree still makes the applicant stand out," says Lawrence. Families, which usually foot the bill for their children's education, do not hesitate to make the investment. In the English-speaking world, tuition fees can run as high as \$27,000 in the United States and \$15,000 in the United Kingdom. Unlike the situation in European countries such as France, where access to most institutions of higher learning is inexpensive, the poorest applicants are automatically screened out on financial grounds. They have access only if they are outstanding, in which case they obtain grants and scholarships from their governments, from international organizations and private foundations.

A valuable export

The outflow of students is a serious loss for the "exporting" countries. According to UNESCO, 30,000 African graduates, as well as many Asian and Latin American ones, may have settled outside their home continents. Among the reasons which make them hesitate to return home are their fears of saying goodbye to a high standard of living in the host country (including access to health care, quality education for their children and high salaries) and of running into a professional dead-end at home. "The conditions of scientific work are difficult in developing countries," say Jacques and Anne-Marie Gaillard of France's ORSTOM research centre. "The research is not original, bureaucratic controls put a brake on initiative, equipment is hard to acquire and maintain, access to information is limited. . . ." There may also be political obstacles. In the late 1980s, China began to realize that expatriate students were not returning. Despite measures to lure young graduates back home, such as the allocation of housing and research budgets and the freedom to travel, between 1978 and 1994 only 70,000 out of

Asians in demand

Most expatriate students are from Asian countries. In spite of the crisis, they are also the most sought-after. Europe and North America are vying to attract them but Canada and, especially, the United States win the competition hands down. A 1997 study by Australia's LD & A company shows that 88% of Asian students believe the US offers the best educational services, followed by the UK. In non-English-speaking Europe, they regard the quality of the German system

as higher than that of the French. According to the Institute of International Education (USA), Asia provides 57% of all foreign students in the US, ahead of Europe (15%) and Latin America (11%). Most are from Japan (45,531), followed by China (42,503), the Republic of Korea (37,130), India (30,641) and Taiwan (30,487). Business is the Asians' favourite major, followed by engineering and the sciences. ■

230,000 students who had left China to study abroad returned, according to official figures.

The example of the Republic of Korea shows that an authoritarian regime is no obstacle if the economy is thriving. In the early 1960s, many Koreans remained abroad after graduation, 80 per cent of them in the United States. But in the 1980s, two-thirds of those who had earned doctorates from American universities went back home within three years of receiving their degrees. Generally speaking, the “little dragons” of southeast Asia boast the highest percentages of returning students—at least until the recent economic crisis blew up.

Whether they return home or not, foreign students are a profitable investment for the host country. When they become decision makers in their home countries, they control access to markets. If they settle down where they studied, they often provide energy and fresh ideas.

That lesson has not been lost on the United States, where the Immigration and Nationality Act Amendment, which entered into force in 1968, facilitates the immigration of qualified personnel and where several foundations offer grants to the most promising students. Today, private companies even pay some foreign students' tuition fees to make up for the shortage of skilled personnel, especially in the field of information technology. Most of the scientists living in the United States were born abroad and over one-third of Silicon Valley's engineers and researchers are immigrants from Taiwan, say Jacques and Anne-Marie Gaillard.

But Australia probably has the most aggressive policy for attracting foreign students, espe-

cially Asians. It has opened information offices in some forty countries and makes it easy for foreign students to obtain a visa. According to EI, Canada and the United Kingdom have done the same. Japan's ministry of education has decided to accept 100,000 foreign students by 2000, but in 1996 such students only numbered 52,000 and numbers may fall, according to Akira Ninomiya, a professor at the university of Hiroshima. Reasons include the high cost of living in Japan, the language barrier, the rigorous admissions process and the near-impossibility for foreigners of finding work on the local market.

For host countries, a profitable import

France has a very ambiguous policy. According to a recent study, “the current paradox consists of a drop in the percentage of foreign students and growing difficulties in hosting them and, at the same time, a desire to be more present on the international education market.” The French are uneasy about the structure of the foreign student population, which reflects their country's history. Over half come from former colonies in Africa, countries with “limited economic potential,” according to SFERE. But the French are also aware that they cannot afford to give up too much ground on the international student market, especially in a world where, according to EI, “employers seek qualified employees who thrive in foreign environments and understand multicultural contexts.” ■

Sophie Boukhari

The talent spotters

In search of that precious raw material—intelligence—multinationals are skimming the cream of the student crop

Without by-passing their own departments of human resources, big companies are increasingly recruiting employees through international head-hunting agencies. Lafarge, a French multinational specializing in the manufacture of construction materials, spent months looking for an engineer to supervise quality control, the organization and management of laboratory staff and customer relations for its Cameroonian subsidiary. Eventually it contacted AfricSearch, which specializes in spotting talented Africans trained in the West and putting them in touch with firms established in Africa.

One of their recent recruits is a young Cameroonian, Gabriel Bekemen, was hired in Paris just after graduating. Today he is a quality-

control engineer in a laboratory in the town where he was born. “I studied engineering in Paris at the Ecole Polytechnique,” he says. “Then I did a master's degree in quality-control management at the Centre for Higher Industrial Studies, and later obtained a diploma in finance at the National Arts and Crafts Centre. I answered a press advertisement and shortly afterwards was contacted by AfricSearch, where I was selected from among twenty other candidates after a number of tests and interviews. I think that what most helped me to get the job was the fact that I had worked to pay my way while I was a student.”

“When multinational companies operating in Africa want someone with technical qualifica- ▶

‘The teacher who can be replaced by a machine deserves to be.’

Burrhus Frederic Skinner,
United States, 1904-1990

tions that are unavailable locally, they look elsewhere," explains Jean-Pierre Kwedi, a consultant and partner at AfricSearch. "They are looking for sound training as provided by the universities and higher education institutes, but they also want candidates to originate from the country in question or at least be African, since they will adapt more easily to a social, economic and cultural context which they know well."

Diplomas aren't everything

For other companies, nationality or experience make little difference. Guido Tommei is responsible for staff recruitment for Africa at Schlumberger, a multinational company which offers services and knowhow to major oil companies. "We primarily recruit recent young graduates," he says, "regardless of nationality and or experience, who are prepared to work in tough conditions and adapt to different situations."

Pascal Devoulon of Alexandre Tic, a French employment agency which forms part of an international network, sets a high priority on personal initiative. "Unsolicited job applications receive more attention than many people think," he says. "In our company we place such applications on file and summon candidates when we receive a request that matches their qualifications."

Besides the usual methods like press advertisements, unsolicited applications and contact over the Internet, many firms find that traineeships for students or recent graduates are the

best way of getting to know an individual's abilities. If trainees' profiles match the firm's requirements, they are hired more or less on the spot.

This explains why big firms are tending to make exchange agreements with universities and other higher education institutions. Philips, a Dutch multinational with 250,000 staff spread out over five continents, takes on 20,000 new employees every year. Of these, 20 per cent are young graduates who will work mainly in research, technical development, information technology or electronics and product marketing and sales. "Many of our staff come from the training forums and programmes we organize with leading universities in all world regions where we do business, for example IMD University in Switzerland, the London Business School in Britain, Supelec in France and the Rotterdam School of Advanced Studies in the Netherlands," explains Yan Lavenan, Philips' General Manager for Human Resources.

But diplomas aren't everything. Charles-Henri Dumond, president of Michel Page, a leading European employment agency, which recruits 2,000 employees every year, is convinced that initial experience is extremely important in recruiting a young person. "Academic knowledge is very important," he says, "but so is general background. Technical skills or diplomas from prestigious schools have their place but we also take into account the candidate's personality, adaptability, knowledge of languages and work as a trainee."

Jany Lesseur

India's loss, West's gain

For many in India, a diploma from the North represents a passport to financial and social success

It is a familiar sight to the residents of Madras and other big Indian cities. Oblivious of the scorching sun, scores of young people stand in long queues outside the United States consulate waiting for their turn to be interviewed. Many of them are students wishing to go to their dreamland for higher studies, if possible for a bright future too. While some of them manage to get visas, others fail to convince the consulate officials.

Three decades ago it was regarded as an exceptional achievement for an Indian to study abroad. Today, the phenomenon is much more widespread and hundreds of students leave India looking for higher qualifications and greener pastures in North America and in Europe. "Every year the US consulates in India give visas to nearly 1,500 students to pursue higher studies

in American universities," says an official at the United States Embassy in New Delhi.

Though India has more than 260 universities, comprising nearly 8,200 colleges, it has often been claimed that the standard of higher education has not kept pace with change. "There is no point in doing research in India. The lack of up-to-date facilities and funding forces students to come to the United States," says Virul Acharya, a researcher at New York University. Academics point out that the educational system in India was set up during the British era and only minor changes have been made to it since then. Moreover, in the post-independence period, emphasis was laid on the humanities at the expense of other disciplines. Educational institutions, most of them state-aided, suffered heavily from federal budget cutbacks over the years, and

according to Acharya there has been complete stagnation in higher research since the 1970s. “Most Indian colleges do not even have the Internet,” he says.

Helped by their predecessors, Indian students carefully select which institution to apply to, for a place in a reputed college or university assures them of a lucrative job after their course. Many of them are recruited at campus interviews conducted by multinational companies. For those who decide to return home, a well-paid job could be hard to find, as few companies in India offer high salaries. “I came here to do my studies in computers and I got a job the day after the course was over,” says Raj Lokaiyan, a computer-professional turned businessman living in New York. “I am sure in India I would have had to wait for months, maybe years, to find a suitable job.”

A golden highway to Silicon Valley

Whereas in the early 1970s large numbers of Indian students went to the United States to study medicine, the most popular subject today is information technology, followed by business administration. According to *India Abroad*, an ethnic Indian weekly published in the United States, there are nearly 35,000 Indian computer professionals in California’s Silicon Valley alone. “Some of them have started their own companies and are doing very well,” says Niraj Trivedi, a journalist working with the magazine.

Indian students who go to the US and Europe are not necessarily rich. Most hail from middle-class families, which seek higher social status by sending their children abroad. It is impossible for a middle-income group family with a yearly income of \$3,600 to send their children abroad for studies which cost at least \$5,000 a year. Here, the low-interest educational loans (up to \$15,000) offered by Indian banks come in handy. Studies in India cost very little, since most of the institutions are government-funded, causing some to denounce the brain drain caused when students use the nation’s resources for their initial studies and then migrate to other countries later.

In the past, British universities attracted many Indian students because of historical links between the two countries. American universities took over in the early 1970s following a dras-



An Indian student at Oxford.

© Brooke Colvill/Corbis Paris

tic cut in the number of scholarships in Britain. They were the obvious alternative because of the language and the higher level of education. All the same, a 1997 UNESCO study noted that India only ranked seventh among the countries sending students abroad, well behind such smaller countries as the Republic of Korea and Malaysia.

Indian students wishing to study abroad face many hurdles since visa restrictions have been tightened by the US and Europe since the early 1990s. Some of them opt for less expensive universities in Australia or Russia. “The number of students coming to the US has dropped in the last few years,” says Virul Acharya. “However, if they want higher qualifications they have to come to the US or Europe as Indian universities lag far behind.” ■

Ethirajan Anbarasan

‘Life at university, with its intellectual and inconclusive discussions at a postgraduate level is on the whole a bad training for the real world. Only men of very strong character surmount this handicap.’

Paul Chambers, United Kingdom, 1904-1982

Full heads but empty pockets

Thousands of young Moroccan graduates are jobless.
So far their protests have got them nowhere



Unemployed graduates demonstrate in Rabat on 22 April 1998.

At the end of the academic year in June 1998, some 4,000 people with postgraduate degrees and 18,000 other university graduates arrived on Morocco's labour market. Many of them are likely to join the 200,000 graduates of institutions of higher learning who are already looking for work and have beleaguered every government in Rabat since the early 1990s. The problem actually dates back to the eighties. The structural adjustment programme implemented then at the urging of international financial institutions helped restore financial stability, but at the cost of severe belt-tightening measures by the state.

The result has been that the number of government-created jobs has plummeted from 28,000 a year in the early 1980s to 12,000 a year in the past decade. The private sector, which employs 90 per cent of Morocco's workforce, creates only 100,000 to 200,000 jobs a year, while the unemployment rate stands at 18 per cent, according to official figures.

As early as 1990, the casualties of budget cut-backs began fighting back. In 1991 they decided to put pressure on the authorities by forming an Unemployed University Graduates' Association, which now has 120 branches throughout the country. Jobless university graduates know how to make their voices heard better than other unemployed people, and the response was not long in coming. The King

of Morocco set up a National Council of Youth and the Future (CNJA), on which all the country's economic players are represented, and asked the new body to find solutions to the thorny problem. In 1993 the council's diagnosis of the situation led to the passage of a law that exempts companies from paying employers' social security contributions if they hire graduates as trainees at a modest salary ranging from 1,600 to 2,600 dirhams (\$166 to \$270). In 1994, a job promotion fund was set up to help young graduates start their own companies and obtain loans.

These measures were unsuccessful, so a "youth training and employment" programme was set up in October 1997. The goal is to place 20,000 recent university graduates in private companies every year. The firms that hire them are entitled to all the advantages granted by the laws of 1993 and 1994, and in addition, half the salaries paid to the new recruits are reimbursed. The programme has a 1,710-million-dirham (\$176-million) budget spread out over four years. Furthermore, ten "job information and orientation centres" have opened where employers and prospective employers can meet, and soon there will be twice as many. But in 1997 they helped only a thousand or so graduates find work.

None of these measures has solved the problem. Is it because liberal arts and law school graduates account for 60 to 70 per cent of the association's

membership while science graduates make up only 20 per cent? In any case, jobless graduates were on the move again when a new government was formed in May 1998. During his first television appearance, the government spokesman and minister of employment announced that the new team's priority was to bring down unemployment, and that his department alone was going to create 187 jobs. Much to his surprise, unemployed graduates immediately held a sit-in in front of his ministry's headquarters. Since then, they have besieged the employment and finance

ministry by turns, while jobless agronomists have turned their attention to the agriculture ministry. Unemployed graduates also blocked the gates of parliament while the deputies inside discussed the 1999 finance law.

The government is counting on economic recovery to settle the problem, at least partially. In theory, each additional point of growth represents 20,000 new jobs, so graduates still have reason to hope. ■

Bahia Amrani

**In June 1998,
4,000 people with
postgraduate
degrees and
18,000 graduates
with first degrees
arrived on
Morocco's labour
market**

'The essential thing in teaching is to teach what it is to know.'

Simone Weil, 1909-1943,
France.

Jacques Attali:

Tomorrow's world elite

After reporting on the state of his country's university system, the French expert fears the rise of a two-tier system, with quality higher education reserved exclusively for the elite

► Is there really a crisis in higher education?

I dislike the word "crisis". Although the problems differ from country to country, higher education all over the world is going through a period characterized by the growth of the student population, an increase in unit costs, and the difficulty of gearing courses to the graduates' need to find jobs that match their training. The entire world is facing a hard choice between pure market logic, where universities would compete with each other like businesses, and the current system dominated by the public university bureaucracy. Lastly, the planetary development of the university system has not reduced inequalities as it was supposed to do, but has actually helped to exacerbate them.

► In what way?

There are two mechanisms at work that attract the best students, regardless of their nationality, to the best universities, primarily American ones. Not only will the elites of the South continue streaming to the countries of the North, especially English-speaking ones, but universities are going to create "nomad campuses" in the client countries. Like companies, brands such as Harvard and Stanford will be exported with their standards of quality to Singapore and New Delhi. Because of this privatization, we will no longer be able to speak of the North as such, but of autonomous university systems. Harvard and Oxford will lend their labels to the universities of the South. The major universities will function like vacuum pumps, sucking up the best students.

► Is this trend unavoidable?

It must be resisted by creating transnational institutions capable of combating the introduction of market logic into higher education. The price to pay for that is the setting up of mechanisms to monitor the quality of public service. Public universities must agree to submit to assessments made by outside bodies. Europe should set up an assessment agency that would make universities permanently open to scrutiny and have them sanctioned if they do not comply with the standards set for them.

► What criteria would those assessments be based on? Should the aim of higher education be to train producers or citizens?

It has to do both, of course. The ties between universities and business must be strengthened so that

companies more readily agree to accept training programmes that lead to diplomas. At the same time, every university graduate should have learned at least four things there: how to be a good citizen, how to communicate, create and criticize. In a country like France, there is still room for improvement in that regard. Education does not stress the importance of those four concepts enough. Communicating means knowing how to use a computer, but it also means knowing how to speak at least two foreign languages, which is rare. The skills needed for critical discussion are also far from widespread.

► What does it mean to be a citizen?

First of all, it means knowing the law, one's duties and one's rights. But it also means learning how to live in society, to make decisions, to participate. Student life itself should be a first-hand experience in learning about democracy.

► Your comments suggest that democracy is having rather a rough time worldwide, with inequalities increasing. But is higher education becoming more democratic in the wealthy countries?

It is becoming a mass phenomenon without becoming more democratic. In the rich countries there is what might be called "cultural insider dealing". This means that children whose parents are university graduates not only possess what the French sociologist Pierre Bourdieu calls "cultural capital", but have another essential advantage as well: access to networks enabling them to find out how to acquire the best education. This phenomenon is worsening in societies that are increasingly fragmented into communities living side by side but cut off from each other. Today only a small number of people have access to genuine higher education. In many parts of the world we are witnessing a lengthening of the primary education period and the virtual disappearance of secondary education; primary and higher education meet up with each other. And higher education is splitting in two: "lower higher" education, available to everyone, goes more or less from the last years of high school to the master's degree. Access to true higher education—postgraduate studies—requires membership of certain social and cultural circles. That is how inequalities persist behind a semblance of democracy. ■

Interview by Sophie Bessis



Jacques Attali

© Sophie Bessis/Sygnia, Paris

Higher education is becoming a mass phenomenon without becoming more democratic

The web, the spider

Will censorship on the Internet forbid the unacceptable or just silence troublesome voices? What grip can be held on a communications tool designed to be free from control?

A skull rotates on the black screen. The picture of a baby flanked by Hitler's moustache or a photo-montage of Arnold Schwarzenegger wielding a sword with Ingrid Bergman at his feet, both of them naked, file past. This sort of thing may amuse some people, but it is no laughing matter when sites on bomb-making, child prostitution and the superiority of the white race appear. The Internet, the outcome of a successful marriage between telecommunications and information technology, is posing unprecedented information control problems which governments, service providers, educators and families are finding hard to solve.

Messages travel without leaving a trace

A newspaper has an editorial team and a printing plant, a television network has newscasters, studios and transmitters. In other words, traditional media are identifiable and have a physical or material component that the authorities can call to account when they consider that the law has been broken. They can prosecute a journalist, shut down a newspaper or confiscate a transmitter. The media are also attached to a territory. Their messages may cross borders, but their activities come under the jurisdiction of at least one country.

The Internet is another matter altogether. First of all, there are countless transmitters of information. A hundred million people have access to the Internet, and any one of them can not only send electronic mail and take part in chat forums but, with a little electronic tinkering, turn their personal computer into a service provider that others can tap into. In a way, that person then becomes "virtual". His or her message can travel along so many routes that when it reaches its destination, the original source can no longer be traced.

Legitimate or not, the monitoring of contents must take this new situation into



How can we prevent children from accessing violent sites, without restricting freedom of expression?

account. That would require a universal agreement based on a common set of ethics, or at least a lowest common denominator. But that is far from the case. The Netherlands, China, Zambia, the United States, Cuba and France, to name just a few countries, have radically different and even irreconcilable views on what is and what is not permissible on the Internet.

Internet service providers and some organizations campaigning to "clean up the Web" point to an assault on morality. The fierce competition among service providers has led many of them to cultivate a wholesome image on issues such as paedophilia, which strikes a chord in public opinion, out of fear of being considered purveyors of "smut".

In The Netherlands, the authorities have no intention of passing repressive laws. Instead they are encouraging service providers to clean up their act by eliminating paedophile and racist sites from their servers. In January 1996 Dutch Internet service providers created a foundation in charge of tracking down undesirable sites. Law enforcement officials step in only when the author of the incriminating pages refuses to comply. But Renee Zwart, a member of the foundation who believes censorship is a "medieval instrument", says her organization does not attack freedom of expression.

Many companies supply their clients with tools to screen out pornographic and racist sites. Several such programs are on the market, including Cyber

and the fly



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rights. The experiment is "inconclusive". Moreover, "it is relatively easy to outsmart these programs, even for a beginner," says Jean-Paul Cloutier, an independent World Wide Web pioneer in Quebec and editor of *Chroniques de Cybérie*, an on-line information and commentary magazine about the information highways.

Government restrictions can be enforced in the name of morality, but above all they are used to prevent the use of the Internet for "subversive" ends. In China, for example, Internet users must register with the police and agree not to use the medium for "anti-government activities". What's more, the government, which has every modem-owner on file, has monitored all traffic since 1996. "For example, it is now against the law for a businessman to use the Internet to obtain stock market information considered strategic," says Christophe Tronche, a member of the French section of Citadel, an organization that campaigns for the upholding of individual freedom on the Internet. In Cuba, the regulation commission, which approves requests for Internet access, is entirely made up of representatives of the justice, interior and armed forces ministries.

In countries like China and Cuba, monitoring cyberspace is easier because "the telecommunications operators belong to the state," Cloutier explains. But monitoring is less straightforward when the site is offered by a server located outside the country. That is the case, for example, in Algeria, where Internet users have access to a site created by "dissident officers" in the armed forces. "The Algerian government doesn't like our site's content. . . . We use the Web as an opportunity," says the site's anonymous webmaster.

The Internet can be used as an alternative to censored traditional media, especially the printed word. In November 1997 the French organization Reporters without Frontiers, which defends freedom of the press, tried using the Internet to give a new lease of life to the Mauritanian newspaper *Mauritanie Nouvelle*, whose publication had been suspended for seven months, by putting

some of the publication's articles on line. Today, opponents of monolithic regimes can use the Internet to set up areas of freedom that are forbidden in their own countries and can reach an international audience that would be difficult to obtain otherwise. Censors around the world are coming up against this phenomenon because "right now the Internet is the only area of freedom outside all political control," says Lyonnel Thouvenot of Reporters without Frontiers.

In liberal democracies, where most efforts to ban material on the Internet are focused on sites with paedophile and racist content, the first attempt to control the Web dates back to 1995. That is when the US Congress passed the Communication Decency Act, which aimed to severely punish the transmission of "shocking" and "indecent" material through computer networks in the name of the protection of children. Under the terms of the law, violators could face fines of up to \$250,000 and two-year pri-

son sentences. A year later the act was ruled unconstitutional and struck down by the Supreme Court. In the name of freedom of expression, neo-nazi sites have also been allowed to continue in the United States and to flourish in Denmark.

In Germany last May, a Munich court convicted Felix Somm, the former local manager of the service provider CompuServe, of spreading pornographic material over the Internet through newsgroups, handing down a suspended two-year prison sentence and fining him 100,000 marks. The conviction has been appealed. The judicial authorities in Germany are also uncompromising when it comes to neo-nazi propaganda or far-left on-line magazines such as *Radikal*, which is accused of being an apologist for violence. A Dutch server offers the periodical, which is also banned from newsstands. However, Cloutier says, "few states have laws specifically pertaining to the Internet.... Everything depends on how existing laws on freedom of expression are applied, on the margin of manoeuvre one has to criticize the government, on the national defini-

**Government
restrictions are
used above all
to prevent the use
of the Internet for
"subversive" ends**

Patrol, CYBERSitter, NetNanny and Surfwatch. They offer a list of websites or forums with a reputation for containing material considered offensive and a list of key words that are judged obscene. The connexion is interrupted whenever a user tries to log on to one of these sites or as soon as a forbidden word appears on screen. The Electronic Frontier Foundation, an American organization dedicated to a radical defence of freedom of speech on the Internet, is totally in line with its country's laws and tradition. The foundation argues that although these programs screen out indecent content, they also block access to many political and social sites, including pages devoted to fighting Aids and promoting women's

Putting a price on life

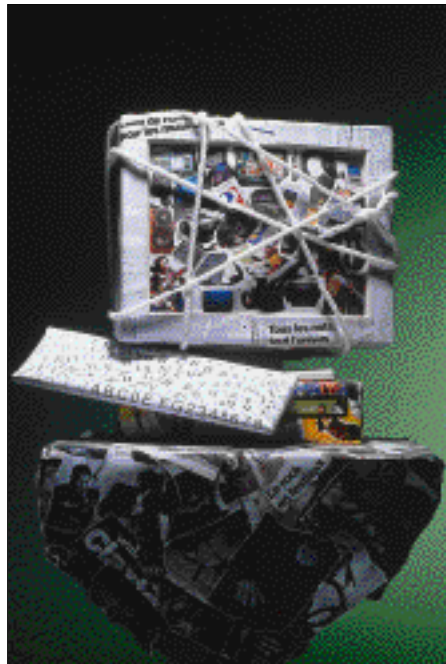
The current spate of lawsuits brought by cancer-stricken smokers or their relatives in the United States has taken the debate on smoking onto new ethical grounds. As lawyers for incriminated tobacco companies point out, the decision to smoke is an individual choice. It becomes a matter of public interest, say their opponents, when governments have to foot the medical bills for treating tobacco evils.

In the US legal system, it is not enough to prove a wrong. You have to "quantify" the damages. This is where the law gets tricky, according to Tom Pursell, senior counsel for the Attorney General of Minnesota, which on 8 May 1998 settled one of the biggest tobacco lawsuits, involving 11 American and British companies.

"With epidemiologists testifying as to which diseases and conditions are caused by smoking," says Pursell. "we went through Medicaid [public medical system for the poor] payment files from 1976 to 1996 to calculate what we consider a conservative figure—\$1.3 billion."

"Junk science! Bad data!" roared the defence lawyers, quick to find holes in the accounting. For example, what about the money the state had raised in excise taxes on cigarette packs? More importantly, the industry was prepared to argue that it had, in fact, saved the medical system \$2 billion in nursing home costs, as smokers die prematurely and need less long-term care.

The court found it "abhorrent and horrendously contrary to public policy that a party should, in whatever guise, claim that the killing of individuals should be used as a defence or a factor in mitigating damages," and rejected the so-called "death benefit" defence on 24 January 1998. "The judge was hopelessly biased," says Michael York, who represented tobacco giant Philip Morris, "and made it a point to disregard the facts." All the same, the defence agreed to settle out of court for more than \$6 billion. ■



States remain attached to their privileges. . . .

tions of content that could endanger state security. . . ."

The matter becomes even more complicated if encryption is taken into account. The main way in which the flow of information on the Internet is controlled is by states refusing to make encryption technology totally available. Encryption technology is based on a kind of lock that can be opened by a key known only to the two correspondents and makes it possible to read messages that were sent in code. Ending that monopoly would technically mean ending censorship on the Internet because anyone would be able to send or receive an encrypted message that no unauthorized person

The matter becomes even more complicated if encryption is taken into account

would be able to read. In fact, every state fears that these massive, repeated, cross-border electronic exchanges, which escape all control, will limit their powers and privileges in the age of globalization. Some of these powers are legitimate if they help combat money-laundering or the spread of paedophilia. Others are obsolete. The growth of electronic trade requires total protection of payment methods, which themselves depend on secure encryption. But most experts agree that the Internet must move out of its present primitive stage, in which scholars and "plugged-in" individuals exchange information, and become an instrument of mass commercial communication, whether it is used by companies between themselves, by producers, or by consumers.

Organizations that defend freedom of expression on the Internet, such as the American Civil Liberties Union (ACLU) and the Electronic Frontier Foundation (EFF), are fighting for the total availability of encryption technology, especially Pretty Good Privacy (PGP). This software may be available to all Internet users in the United States, but only in a version that is also in the pos-

session of law enforcement officials. In France, encryption is done with special permission from the government so that the police can read the information.

There's no escaping one's roots. The military designed the Internet because they wanted a communications network with so many ramifications that the system wouldn't be paralysed by destroying one of its parts. Just try keeping tabs on that. ■

Seydou Amadou Oumarou
and René Lefort

Dubious servers

Internet service providers have proliferated at a breathtaking pace. There were 213 in 1981, 1,000 in 1984, 100,000 in 1989, a million in 1992 and 9.5 million in 1996. Between mid-1995 and mid-1996, five million servers were created.

The European Union has identified the following areas where the Internet can be abused by the transmission of harmful or

illegal information or even by criminals:

- national security (terrorism or instructions for making bombs or illegal drugs);
- protection of minors (violence and pornography);
- protection of human dignity (racial discrimination and incitement to racial hatred);
- economic security (fraud, instructions on credit card piracy);

- protection of information;
- protection of privacy (unauthorized communication of personal data, e-mail harassment);
- protection of one's good name (libel, illegal comparative advertising);
- protection of intellectual property (unauthorized distribution of copyright material, such as software and music). ■

Bilbao: the Guggenheim effect



The Guggenheim Museum has become Bilbao's leading tourist attraction.

Life looked grim as the industrial heart of this Basque city ground to a halt. But an ambitious new cultural policy may be just what the doctor ordered

Bilbao's Guggenheim Museum celebrates its first anniversary in October. In the year since the doors first opened, the gigantic glass and titanium building designed by Californian architect Frank O. Gehry has attracted more visitors than the population of the city which it has helped to place firmly on the world cultural map.

In the early 1990s, following the decline of its heavy industry and the shut-down of

steelworks and shipyards, Bilbao might have become a backward-looking city immersed in nostalgia. Instead, at a time when Seville was inaugurating Spain's first high-speed train and smartening itself up to celebrate its Universal Exposition, Barcelona was staging its Olympic Games and Madrid was chosen as the Council of Europe's "Cultural Capital of Europe", this port on the Atlantic coast of northern Spain decided to look to the future and discard its traditional

image as a grey city with nothing to offer but its financial status as the headquarters of Spain's leading banks and the country's second biggest stock market in terms of turnover. In short, it embarked on a revolution which is still only in its early stages.

With support from the European Union, the Spanish and Basque governments, the regional council and private enterprise, a wide range of initiatives were launched to transform industrial Bilbao into a city of culture and services with the aid of noted architects from all over the world. Façades were cleaned, port facilities were renovated, the airport was modernized, an eighteen-year motorway construction plan got under way and drainage schemes were drawn up to enable the river Nervión to be used for ►

The tomb that lost its head

On 27 November 1996, thieves beheaded a stone statue from a tomb of the Song Dynasty (960-1279) in Gongyi, a city in China's central Henan Province. Sold by a peddler to a Hong Kong businessman for 6,500 yuan (\$812), the head changed hands three more times before fetching 25,000 yuan in Hong Kong.

It looked like just another case of cultural trafficking, a plague for developing countries rich in antiquities but lacking the means to protect them. In China, tomb-raiding is on the rise, with gangs smuggling relics from the mainland to Hong Kong, where middlemen spirit them off mostly to the US and UK. While the trade's extent remains a mystery, Chinese police and customs officers uncovered more than 14,000 smuggled relics in 1997.

The story of the Gongyi head took an unexpected turn. The Hong Kong police were on the track of the object, when it suddenly disappeared—leading the Chinese to turn to Interpol for the first time.

"This is one more aspect of China's openness to the international community," says Lyndel Prott of UNESCO's Cultural Heritage Division, "and it couldn't have ended better."

While only about 12% of stolen relics reported to Interpol are recovered, the Gongyi piece was found in July 1997. It was about to come under the hammer of a San Francisco auction house for \$600,000.

But before a stolen relic can be recovered, the international conventions require the claimants to prove that it has actually been stolen. This is not always easy. In this case, the Chinese proved their point with photographs of the intact statue originally taken to classify the tomb as a monument. Today, the relic is safe in Chinese hands, on its way back to the shoulders of the now famous Song statue. ■

recreational sailing. The whole operation will cost around \$1,500 million.

One major project was to provide Bilbao with a metro. This idea, in abeyance since the 1970s, was executed by the British architect Norman Foster, whose futuristic semi-circular fan-shaped entrances to the first line were immediately dubbed "*fosteritos*"— "little Fosters"—by the Bilbainos. The metro has helped soak up the traffic snarls that plagued this city of 370,000 inhabitants—a million counting the suburbs.

The Guggenheim Museum is the keystone of this vast programme. It was given the go-ahead after a marathon series of meetings at the Solomon R. Guggenheim Foundation in New York with the Basque authorities, represented at the highest level by the head of the autonomous government. The foundation's administrators, who wanted to create a new European museum, in addition to those in Berlin and Venice, to show their celebrated collection of modern and contemporary art, chose Bilbao after Seville, Madrid, Vienna and Salzburg turned the opportunity down. The project has been totally funded by the Basques. The city authorities provided the land—a disused industrial site in the port district, the autonomous government and the provincial authorities coughed up \$154 million, and eighty private companies pledged to make a contribution of one kind or another. In return, the foundation promised to put its collections at the museum's disposal, to handle management and administration and to organize exhibitions. The Bilbao Guggenheim has also assembled its own

collection of works, largely by contemporary artists. Paintings by Willem De Kooning, Andy Warhol and Robert Rauschenberg can be seen alongside works by important Basque artists such as Txomin Badiola, Eduardo Chillida and Prudencio Irazabal.

The museum was inaugurated on 18 October 1997 in the presence of King Juan Carlos and a 10,000-strong crowd. In the first month, it attracted 100,000 visitors, becoming Spain's third most popular museum, after the Prado and the Reina Sofia in Madrid. After eight months, 700,000 entries had been registered (the most optimistic forecasts had predicted 400,000 visitors in the first twelve months), a quarter of whom were visitors to Spain. According to data collected by the museum, 86 per cent of the

visitors said they wanted to come again. The Guggenheim effect was born.

The last great museum built in the twentieth century stands in what was once a waterfront area littered with empty containers. It is currently hosting (until 22 October) an exhibition of 5,000 years of Chinese art, from neolithic times to the modern era. Bilbao is the only European city to hold the show. On its 10,000 square metres of exhibition space—nineteen galleries on three floors—sculptures and serigraphs by the Basque artist Cristina Iglesias are also on view (until January 1999). One of the rooms, 130 metres long and 30 metres wide, is easily spacious enough to accommodate a football match. The museum also comprises an auditorium, a library, a restaurant serving regional specialities and a bookshop containing the latest books on contemporary painting.

But the Bilbao Guggenheim is something more than an art museum. Its characteristic silhouette has been a backdrop for TV commercials and pop groups—Smashing Pumpkins launched their latest disc there, and Simple Minds used the gallery as a setting for their videoclip *Glitterball*. Couturiers Carolina Herrera and Paco Rabanne have transformed the central atrium into a catwalk to present their collections. For the

first time in years, damp, grey Bilbao is becoming known to the world for something other than terrorist violence and kidnapping.

How are the Bilbainos, whose city once only received a brief write-up in the tourist guides, reacting to this newly acquired reputation? At first they were sceptical about the

whole thing, remembers journalist Felix Linares. Then they gradually realized that it was serious and today they are delighted. "A familiar sight elsewhere, such as a Japanese tourist taking photos, was something quite new here!" says Linares, who notes that it's still virtually impossible to find a restaurant open on a Sunday evening.

Angel Gago, Secretary-General of the Biscay Hotels Association, thinks that there has definitely been a boost to tourism. "Until not so long ago the province mainly attracted business people," he says. "They came during the week for trade exhibitions. From Monday to Friday there was a decent rate of room occupation, but on Saturday and Sunday the place was deserted"—especially since many locals leave the city during wee-

The Museum was inaugurated on 18 October 1997 in the presence of King Juan Carlos and a 10,000-strong crowd

kends for nearby beaches. Today the annual rate of hotel-room occupation is around 42 per cent. "We are worried by talk of building four or five new hotels which could not be absorbed in the immediate future, and increased capacity would force us to lower prices, something we want to avoid," says Gago. The tourists who visit Bilbao today are relatively well off, and Gago points out that "the hotels and restaurants which have benefited most are the fifteen or twenty featured in the tourist guides, whereas all told the city has 8,000 catering establishments."

Gago believes that anyone who drops in on Bilbao today is a candidate for a return visit. "Don't forget," he says. "We have the Gehry Museum, Foster's metro, Santiago Calatrava's bridge, the area around the Palace of Congresses designed by César Pelli, an Argentinian architect living in New York, in other words works by five or six world-famous architects within a few kilometres of each other."

In her book *Txoriburu* ("Linnet Head") the Bilbao writer and illustrator Asun Balzola describes her city as it was in the 1940s. "These were years of iron and we lived at Bilbao, also a city of iron, always wet, gleaming and black because it was always raining. . . . The green shadows of umbrellas stained the streets and houses blackened by smoke from the factories. . . . Bilbao was a replica of Coketown, the imaginary industrial town described by Dickens in *Hard Times*." Today Balzola smiles as she describes her city's new image. "The district where I spent my childhood has changed beyond belief. Then it was a noisy industrial area, today

it's a very peaceful place. Bilbao was a grey city like . . . well . . . Manchester perhaps. Now it's white, luminous." What surprises her most is that "people have adopted the Guggenheim Museum, they don't see it as the property of gentlemen in New York but as something of their own. The most encouraging thing is that young people are the chief admirers." And she adds: "When you're inside the building, the light, and the spirals of the architecture almost make you forget its contents. You would almost be willing to visit it if it was empty. The Guggenheim has made Bilbao a much more attractive city. You can see it from many parts of town. You walk along a street and suddenly there is this great titanium-clad mountain in front of you. It plays tricks on you."

Meanwhile other projects are fuelling the on-going Bilbao revolution. "In the next three or four years the city will totally change," says Guillermo Fernandez, a Bilbao city official. In a few months' time the Euskalduna Palace of Congresses and Music will be inaugurated. Likened by its architects, Federico Soriano and Maria Dolores Palacios, to a ship under construction; its role will be to put Bilbao on the international opera, concert and congress circuits.

Meanwhile the Gehry Museum, the younger brother of Frank Lloyd Wright's building on New York's Fifth Avenue, has already taken its place in the annals of twentieth-century architecture. Outside the building, beside the lines of visitors, the people of Bilbao look on with a mixture of astonishment and incredulity. ■

Lucia Iglesias

**'Suddenly there is
this great titanium-clad
mountain
in front of you'**



10,000 square metres of exhibition space.

© Jacques Palosky/Sygma, Paris

Sixty years of art-loving

The Guggenheim Foundation was set up in New York in 1937 to promote contemporary art and manage the collection belonging to the Swiss-born patron of the arts Solomon R. Guggenheim. It administers two museums in New York, one in Venice, one in Berlin, and now one in Bilbao.

In 1943 the foundation commissioned architect Frank Lloyd Wright to design its spiral-shaped first New York museum, which was opened in 1958 on Fifth Avenue, a sto-

ne's throw from Central Park. In Venice, the Venier dei Leoni palace is the home of the collection of Peggy Guggenheim, Solomon's niece, who by the time of her death in 1979 had assembled an outstanding collection of abstract and surrealist art.

The Guggenheim collection has regularly been enriched by fresh acquisitions and donations. With some 10,000 works, it is the world's most important private collec-

tion of modern and contemporary art, comprising expressionist, cubist, futurist, dadaist, neoplastic and surrealist works signed by artists including Vasily Kandinsky, Pablo Picasso, Fernand Léger, Salvador Dalí, Alberto Giacometti, Marc Chagall and René Magritte.

What makes the Guggenheim Foundation special is its desire to form a network of museums and exhibition centres in different parts of the world. Although its head-

quarters is in New York, the deliberate absence of a nerve-centre helps it to save costs when mounting temporary exhibitions, to increase its income from sponsorship and to keep its works moving around. The Guggenheim system has been described, by some admiringly, by others grudgingly, as a "franchise" museum. ■

Cybersnoopers on the prowl

In the digital age, how can privacy be protected without infringing people's freedom to trade via Internet?

No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence... Everyone has the right to the protection of the law against such interference or attacks." This may not be the best-known article of the Universal Declaration of Human Rights, but the growing invasion of privacy by digital technology and the Internet is bringing it to the fore.

A number of opinion polls among Internet users show that protection of data about their personal lives has become a major concern. The inventor of the World Wide Web himself, Tim Berners-Lee, said recently he was worried about the consequences for private life of use of the Internet. Cyberspace experts, consumer advocates and human rights defenders all warn that the "big-brotherization" of society is steadily advancing. And the political police are no longer the only ones involved, nor even the main perpetrators of it, at least in the Western democracies.

These days, the most skilful manipulators of new information and communications technology to build up files on indi-

viduals are private companies collecting personal data on tens of millions of people. Simon Davies, the British head of Privacy International, a human rights watchdog group, says every citizen of an industrialized country appears today in about 200 different data bases. Such mines of information are centralized, sifted through and correlated to produce very detailed profiles of consu-

Protection of personal data has become a major concern among Internet users

mers. The files are then resold to all kinds of firms, which use them to sharpen their marketing strategies, assess the economic reliability of customers and adjust to specific commercial demands.

The Internet is an ideal tool for this meticulous task of categorizing the population. It is an extraordinary source of data as well as a practical way to handle

such information and circulate it. Canada's commissioner for the Protection of Private Life, Bruce Phillips, noted in 1996 that surfing the Web was a bit like playing strip-poker: you start by taking off your tie and before you know where you are, your trousers have disappeared.

In other words, "anonymity is not the rule on the Internet, still less is the idea that you don't leave any traces behind you." This warning by France's Commission on Data Processing and Freedoms (CNIL) applies to a broad range of practices designed to tap into the secrets of Internet users. Most websites include some kind of questionnaire to fill in. The US Federal Trade Commission says 85 per cent of 1,400 commercial sites it looked at in March 1998 gathered personal information in this way. A medical clinic, for example, invited consumers to submit their name, postal and e-mail addresses and insurance company and to make comments about their health problems. Some on-line services require such details before they will give access to their site.

Internet users can lie to get past these

UNESCO calls Infoethics meeting

The worldwide spread of new information technologies and the emergence of an associated invisible economy which ignores national frontiers and laws underline the urgency of political regulation and an ethical vision of the "global information society." With this in mind, UNESCO is organizing the second Info-Ethics congress, bringing together

several hundred people, including some 30 leading international experts, in Monte Carlo from October 1-3.

"Cybersociety" has made the world a single country of which we are all destined to be citizens, as long as we have effective access to information. As economic, financial and technological globalization

proceeds, we need to develop world citizenship and governance which guarantee access to quality public information and call for new tools of government. Factors in a fairer and more democratic information society include free access to public and government information, serious study of how privacy can be protected in the face of new

ways of using personal data, encouragement of "free" software and open ("non-proprietary") standards to foster intellectual innovation and cooperation, and development of the World Wide Web's cultural and linguistic diversity. These topics will be the focus of discussions in Monte Carlo. ■

<http://www.unesco.org/webworld>



© Peter Merrell/Cosmos Paris

Professor Philip Agre of the University of California at San Diego has sounded the alarm about systems that threaten private life.

questions. A study by the University of Georgia, in the United States, showed that 40 per cent did so when the questions got too detailed. But "most people are very naïve," says Alain Weber, an Internet expert with the French League for Human Rights. "They wouldn't be so free with the information if they knew how it could be used." A US banker in Maryland, for example, recently obtained a list of cancer patients, matched them with his customers and then automatically rejected loan applications from those who were ill.

Data seekers on the Internet stop at nothing. The US Federal Trade Commission is concerned about the "troubling" practices of commercial websites aimed at children: nine out of 10 of them extract information from these young people and fewer than a quarter suggest asking permission from their parents before providing it.

Meanwhile, cybersleuths use many tools and monitoring programmes to record people's movements around cyberspace. Data banks like DejaNews index all messages in on-line discussion groups. Anyone can type in the name of a person, click on "profile" and get their e-mail address and all the messages they have sent to the group, which will provide information about their tastes, about how they spend their leisure time and what

their opinions are. The CNIL also notes that the gathering and use of e-mail for commercial ends is a basic problem.

To make matters worse, the Internet is a world of invisible tracks. You get the impression when you surf the web that you

leave no traces behind you. The truth is rather different. Some sites place spying devices, or "cookies", on your computer's hard drive the moment you log on to them, so they can tell which pages of the site you have looked at, when you looked, and for ▶

Website of the month

<http://www.fao.org>

From its Headquarters in the Eternal City comes the Food and Agriculture Organization (FAO) website. Rated "exceptional" by the Encyclopaedia Britannica, which placed it among the top 1% of 65,000 sites profiled, it is available in English, French, Spanish and Arabic, and provides answers to everything you always wanted to know about food (as well as agriculture, fisheries, forestry and more) but were unable to ask.

As well as extensive statistical data covering 210 countries and territories, it provides access to early warning systems on food and agriculture emergencies and prevention systems for animal and plant pests and diseases. A mapping system for information on food insecurity and vulnerability is in the pipeline.

Participate in a number of ongoing e-mail conferences or in this year's Food for all fund-raising campaign. Search or browse through more than 3,000 of the most recent and relevant pictures in FAO's photo library. Currently featured: tropical fruit. Did you know that the 4 most traded fruits are pineapples, mangoes, avocados and papayas, imports of which totalled \$2.2 billion in 1996 alone?

If you live in an area where the Internet is not yet available, do not despair: FAO distributes CD-ROMS with similar information. ■

how long. If you visit a site devoted to sado-masochism, for example, you reveal aspects of your character you would not admit to your closest friend. A survey last year by an American NGO, the Electronic Privacy Information Centre (EPIC), showed that a quarter of the 100 most popular sites on the Web use cookies to obtain profiles of their users. When you next visit them, they can present you with advertising tailored to your interests, or even send you without your knowledge programmes like Java Applets, which can reconfigure a site according to each visitor's tastes.

The range and power of new technologies are creating a formidable "surveillance economy," says Davies. So strengthening protection of the right to privacy is an urgent matter. The European Union directive on "the protection of individuals with regard to the processing of personal data and on the free movement of such data" is a step in this direction.

Under the directive, which comes into effect on 25 October 1998, the processing of data about ethnic origins, political opinions, religious and philosophical beliefs, trade union membership, health and sex life, is prohibited except where there are special exemptions or derogations. Moreover, in each of the European Union's fifteen Member States, a special authority is to protect individual's rights and freedoms with regard to the processing of personal data. It is to guarantee citizens the right to be informed, to have access to data concerning them and the right to correct it, and to erase data whose processing does not comply with the provisions of the directive. Article 25 states the principle that the transfer of personal data to third countries may only take place if the receiving countries offer a level of protection that is "adequate" within the meaning of EU legislation. "If the European plan succeeds," says Davies in the American monthly magazine *Wired*, "every country on earth will soon adhere to a global privacy code. If it fails, the United States and Europe could end up in the throes of an ugly trade war over the international transfer of personal information."

In a globalized economy where information about consumers is the new gold mine, the stakes are huge, involving no more and no less than the future of all banking and trade transactions, especially electronic. The United States has already gone on the offensive by accusing Europe of using privacy protection laws to erect barriers around the valuable European market of 370 million people. White House techno-

logy adviser Ira Magaziner has even threatened to go to the World Trade Organization (WTO) about it. At the same time, he insists that the US is just as concerned to protect the privacy of its citizens as European governments are. And all studies show that Internet commerce cannot succeed unless consumers can count on information about themselves being kept confidential.

Behind such skirmishing lies the familiar difference of approach between the US and Europe. The former trusts the market to solve the trickiest problems, while the latter prefers to set up public-sector bodies to do so. Though the American authorities are well aware of the need to reassure Internet users, they are also sympathetic to the arguments of direct marketing and financial lobbyists, who think the solution lies less in imposed regulation than professional self-regulation through codes of conduct and the development of encryption technology and ways of erasing individual tracks left in cyberspace.

EPIC assessed the effectiveness of self-regulation by looking at the websites of firms which were members of the Direct Marketing Association (DMA), which opposes any legislative interference. It concluded that "the DMA's efforts to promote privacy practices is having little impact on its new members, even after repeated assurances from the DMA that this approach is effective."

The Federal Trade Commission came to the same conclusion after a wide-ranging survey published in June 1998. It said that "the industry's efforts to encourage voluntary adoption of the most basic fair information practice principle—notice—have fallen far short of what is needed to protect consumers."

Pressure from consumers and from Europe may force firms to change their mode of operation. If it does not, we may lose not only the freedom to buy and sell but also our personal freedom. "The advent of the surveillance society will bring with it a new era of social control," warns Davies. "The two have always existed hand in hand."

Sophie Boukhari

The power of new technologies is creating a formidable 'surveillance economy'

Websites

<http://www.privacy.org>
<http://www.epic.org>
<http://www.cnil.fr>
<http://www2.echo.lu:legal/en/dataprot/directiv/directiv.html>

The battle of the bug

As the third millennium draws near, the entire world is threatened by the millennium bug, an unprecedented computer phenomenon that could have effects as wide-ranging as erasing maps to minefields and a recession more severe than the one caused by the 1973 oil price hike.

Computers were programmed to indicate dates with just two characters—98 for 1998—to save memory. At zero hour on 1 January 2000 their clocks could turn back a century to the year 1900. The consequences could be unfortunate—an elevator could abruptly come to a halt between floors—or disastrous—the computers that help operate a nuclear power plant's cooling system or manage air traffic could stop running.

To avoid such scenarios, programs must be modified, tested and harmonized. Those operations are technically simple, but they require an exhaustive review of hundreds of millions of applications in every area from banking to manufacturing and health-care.

This painstaking task requires implementing major projects, hiring highly skilled workers and purchasing new hardware, leading the world's largest companies to make substantial investments. But for many businesses, especially small- and medium-sized firms, it is apparently already too late to tackle the problem.

According to upper-end estimates, on a planetary scale the operation will cost one trillion dollars, but the tab could soar even higher as the deadline nears and unexpected snags crop up, especially since the corrections made to programs themselves cause new problems.

The millennium bug has mobilized armies of computer programmers in the United States, Canada and the United Kingdom, but the problem has drawn scant attention in other industrialized countries, such as France. Meanwhile, Asia is crippled by its banking crisis and the developing countries are too poor to afford to modify their computer systems.

Jeremy Rifkin: fears of a brave new world

Will wars be fought for the control of genes in the 21st century? Jeremy Rifkin fears the worst and explains why

■ What is the Biotech Century?

Our futurists have too narrowly defined the twenty-first century as the information age. In fact, a far more profound shift is taking place in the global economy. Computers and genes are beginning to fuse into a single powerful technological and economic force that is laying the foundation for the biotech century. Computers are increasingly being used to decipher, manage and organize the vast genetic information that is the raw resource of the new global economy. Already multinational corporations are creating giant life-science complexes from which to fashion a bio-industrial world.

There are tremendous short-term benefits—new plants and animals, new pharmaceuticals and energy sources. But it is naive to believe that these benefits come with no costs. The environmental, social and ethical implications of this science are chilling. Will the creation of cloned, chimeric and transgenic species mean the end of nature? Will the mass release of genetically engineered organisms into our biosphere mean genetic pollution and irreversible damage to the biosphere in the twenty-first century? What are the risks of making a “perfect” baby?

■ But how does this differ from our long-standing struggle to redesign nature?

It is true that we have been engineering nature since the dawn of the Neolithic revolution in agriculture, but the new gene-splicing technologies are qualitatively different. In classical breeding, it is only possible to cross close relatives in the biological kingdom. Today, however, we are no longer constrained by these biological boundaries. For example, scientists have taken the gene that emits light in a firefly and injected it into the genetic code of a tobacco plant, which when fully grown, glows twenty-four hours a day. We have not seen that in evolution. Genetically engineered plants, micro-organisms and animals bring greater risks.

■ In discussions surrounding the use of

gene therapy to cure or prevent human disease, you raise the question as to who should decide what is a “good” or “bad” gene. Are we heading into a new age of eugenics?

Yes, but it doesn't bear any resemblance to what we saw in Nazi Germany. The new eugenics is not social eugenics. It is banal and friendly. It is commercial and market-driven. Soon, prospective parents will be able to programme the biological future of their unborn children. They will feel pressure to rid their children of “undesirable traits”. If you knew you were going to pass on a gene for leukemia, wouldn't you like to eliminate that from the sperm or the egg? And what about obesity or near-sightedness? Once we begin this journey, there is really no place to stop. Chilling eugenics issues will arise as we begin to see our children as the ultimate shopping experience.

We already see this happening. In the 1980s, the Genetech and Eli Lilly companies were awarded patents to market a new genetically engineered growth hormone to the few thousand children suffering from dwarfism in the United States. By 1991, the hormone had become one of the best selling pharmaceutical drugs in the country. Clearly, doctors were prescribing the drug to children who were just shorter than their peers. The companies are now pushing doctors to redefine normal shortness as an “illness”.

■ Some critics have branded you as an alarmist—they consider your views to be anti-science. These critics go too far, but at some level, do you feel that we should restrain this new genetic science?

I believe that genetic science is invaluable; the question is not the science but the technological application of that science. We must choose between a hard path and a soft path to the twenty-first century. In the case of agriculture, for example, the hard path would lead to genetically engineered plants, environmental risks and health problems.



Jeremy Rifkin, economist and activist.

In contrast, the soft path would mean using the same genetic sciences to create a sophisticated and sustainable organic agriculture. The rule of thumb we ought to apply is clear: do no harm. Secondly, always choose the path that is least likely to foreclose opportunities for those not yet here and the one that is most able to sustain relationships instead of draining them.

■ Who is behind this new age of genetic commerce?

Giant life-science companies are maneuvering to control genetic commerce in the twenty-first century. The mergers and acquisitions going on in the life science industry rival those in the telecommunications, computer and entertainment sectors. The giant chemical companies are beginning to sell off their chemical divisions to concentrate solely on the life sciences. They are making the shift from the petrochemical age to the age of genetic commerce. Genes will be the primary raw material of the coming century just as oil, metals and minerals were in the colonial and industrial era.

The name of the game is patents. In the next ten years, we will have isolated virtually all 60,000 genes that make up the blueprint for the human race. Virtually every one of ▶

those genes will be the intellectual property of these life science companies for at least twenty years.

The whole idea of patenting genes is a scam. Under US and European statutes, you have to prove that you have invented something that is novel, non-obvious and useful. So consider the example of a chemist in the nineteenth century isolating helium which is not obvious and certainly useful. Now that chemist can patent the technique used to isolate helium but not the element. That's because helium is not an invention but rather a discovery of nature.

But in 1987, the US Patent Office issued a simple paragraph saying that it was possible to patent any genetically modified life form except a human being after birth. The only reason for excluding patents on humans is that the US Constitution forbids slavery.

■ But aren't you oversimplifying the issue. The patents don't really cover the genes. They are awarded to companies and researchers to legally protect the methods invented to isolate or use them. They are actually patenting the genes. There are patents on thousands of human and animal genes. For example, Myriad Genetics has isolated a gene that causes breast cancer, especially in Ashkenazi women (of Eastern European Jewish origin). The company has a patent on that gene—it is their invention. If any woman in the world goes for a screening for that breast cancer gene, part of the fee that she pays is in the form of a royalty to

the company.

Imagine the case of a chimpanzee with one human gene in its genetic code. The patent office would now consider that entire chimpanzee to be an invention. This is a gross violation of the mandate of the US Patent Office and its statutes. We are now challenging this in the US patent system.

■ How can you effectively try to counter this trend given the tremendous financial stakes involved?

I have joined with the distinguished cell biologist Dr. Stuart Newman of New York Medical College. We have submitted a patent to the US Patent Office containing thirty claims covering all the human-animal chimeras (human-chimpanzee chimeras, human-pig and other combinations) for medical purposes. As of now, there are no existing patents on this kind of chimera.

If we are granted this patent, we will claim a "genetic conservancy" to forbid any researcher from crossing human-animal boundaries with embryonic cells for twenty years so that countries can have the time to debate this issue and hopefully pass the appropriate legislation to outlaw all transgenic organisms. We are also seriously considering whether to test the patent statutes in the European Union.

■ The US and the World Trade Organization in particular have been pressuring developing countries like India into adopting the US model of patent laws to protect



A biologist shows a genetically altered mouse which emits green light in the dark.

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their natural resources from exploitation. How would you advise them?

Two positions are being championed. I think both are inappropriate. One position is that of the life-science companies. The other is that of many of the developing countries who are saying, "Look, these are our resources, just as oil is in the Middle East. We should be compensated. Otherwise, it is biopiracy."

But how do you ever compensate for the blueprints of life? Secondly, who do you compensate? Indigenous knowledge and resources cross all tribal and national boundaries. For example Merck and Company have an absurd relationship with Costa Rica. They give a local non-profit institute a million dollars for access to all the country's rich genetic diversity. Who does this institute represent?

The gene pool should not be reduced to commercial exploitation by either governments or companies. I am hoping that genetically-rich countries like India will take the lead in developing a third way in which we keep the gene pool open—as we did with Antarctica—by covenant and treaty. If this doesn't happen, we are going to have gene wars in the twenty-first century as we had wars over oil, metals and minerals in the industrial era. This commercial competition and conflict over ownership and control of the gene pool will further divide the haves and the have-nots.

■ If this is such an important issue, why has there been so little public debate? Is the media to blame?

For the most part, the science and business

Alarmist or seer?

Activism has been a way of life for Jeremy Rifkin, born in the US state of Colorado in 1943. The founder and president of the Foundation on Economic Trends in Washington, D.C., he has testified before numerous congressional committees on subjects ranging from germ warfare threats to the labeling of genetically engineered foods. He has also been a consultant to numerous heads of state and officials, and has lectured at more than 300 universities in a dozen countries. Rifkin is perhaps best known for writing 14 books examining the impact of scientific and technological changes on the economy, the

workforce, society and the environment. One of his international bestsellers *The End of Work* (Putnam, 1995), is widely credited for shaping today's debate on corporate downsizing and technology's role in displacing the workforce.

In his latest book, *The Biotech Century: Harnessing the Gene and Remaking the World* (Tarcher/Putnam, 1998), Rifkin focuses on the negative implications of new genetic technologies which he feels have been largely ignored in public debates. The result is a frightening view of a "bio-industrial world" and an explanation of genetic commerce which has been criticized as an unfounded back-

lash against science.

"I was raised as a reformed Jew," Rifkin says. "I culturally identify with that but I am not religious. For me, visiting the Nazi concentration camp at Dachau as a young man proved to be a defining experience. . . . We all want to make sure that such things never happen again. But we also have to understand that they can and do happen in ways we don't suspect. That is why I have spent so much time focusing on how eugenicism is now becoming commercial and market-driven. If there is an enemy, it is all of us who, for good reasons, want healthy babies." ■

journalists have treated the issue anecdotally, reporting on a new food crop here or a medical breakthrough there. Some of the science writers have a cozy relationship with the molecular biologists and the biotech companies which they don't want to jeopardize. They also don't feel confident in challenging the scientists. But more importantly, the media have not yet understood the larger context because they have focused so closely on the information revolution. But once the context shifts to the broader economic arena of genetic commerce, all of the issues we have discussed will be on the public agenda.

■ Is the industry trying to hinder this debate?

There is no conspiracy. It's just that the commercial floodgates are opening very quickly and the biotech business leaders are just trying to make as much money as they can and advance their portfolios as fast as possible. They don't even see the broader context. The last thing they want is to be slowed down by debate. They want to believe there will be no problems.

At a deeper level, there is a new libertarian streak which insists that the market should be the final arbitrator. This way you can avoid a debate and just assume that the marketplace will decide as to what kind of technology should be used and how. To me, the most chilling prospect of all is letting the marketplace and consumers decide the future evolution of our species and other creatures.

■ But how do you explain the vehemence with which scientists respond to anyone questioning their work?

There is a certain arrogance in science, especially when a particular science is coming of age. We saw this with the chemists and physicists and now we see it with the biologists. This arrogance is rooted in the old Baconian science which is based on power. Bacon called nature a "common little harlot. She is wild. We must tame, squeeze, mould and shape her," he said. "Knowledge is power. We can be the masters of our destiny."

Many microbiologists—but not all of them—find it exciting to be able to control destiny, to be able to be God. They are the only ones who can not only decipher the code of life, but administer it. They believe that if we were capable of understanding their work, we would be in favour of it. But for them being informed means knowing it as they do and accepting their moral view of it. These scientists

do not really believe in the democratic process. We saw the same thing with petrochemical pollution and nuclear energy.

■ Is there a link between this arrogance and the growing disregard for the idea that a species has an essential nature or an intrinsic value?

Yes, this is critical. Living beings are no longer perceived as birds and bees but as bundles of genetic information. All living beings are drained of their substance and life becomes a code to be deciphered. There is no longer any question of sacredness or specialness. How could there be when there are no longer any recognizable biological boundaries to respect? In this new way of thinking about evolution, structure is abandoned. Everything is pure process. So you can mix and match, and cross anything you want in the biological kingdom.

The laws of nature are being rewritten to conform with our latest manipulation of the natural world. The old Darwinian notion of the "survival of the fittest" is being replaced by the "survival of the best informed". Human beings, the best "information processors" in the biological kingdom, are now advancing the evolutionary process by reprogramming nature using genetic engineering tools.

This new cosmology offers the ultimate justification for a hard-path science. It assures us that we are following the natural order of things and simply moving in the same direction as nature has already set out for us. In the next step on this path, molecular biologists won't speak of genetic engineering, which is too cold. Instead they will consider humans and other creatures as unfinished works of art. Biotechnology will be seen as powerful "artistic tools" allowing us to finish the canvas.

■ After a frightening outlook for the next century, your book ends with "the rest is up to us". This is frustrating. What can we do?

It would be absurd to lay out blueprints as to what should be done. Instead, I have made a diagnosis of two different paths for the next century. It is up to the public and the next generation in particular to politicize and argue, challenge and express their views in the streets, in the courts, the media, and so on.

When great technological and commercial revolutions sweep over civilizations, there is always a window of opportunity

Glossary

Biotechnology: any technique that uses living organisms or substances from those organisms to make or modify products, plants or animals, or to develop micro-organisms for specific uses, such as fermentation and waste treatment.

Chimera: an organism comprising cells of two or more distinct genomes, resulting from experimental manipulation.

Clone: a group of organisms of identical genetic make-up, produced by some kind of asexual reproduction.

Eugenics: study of the possibility of improving the human gene pool. Historically associated with some extreme political tendencies and with encouragement of breeding by those presumed to have favourable genes and discouragement of breeding by those presumed to have unfavourable genes.

Genetic engineering: technologies used to isolate genes from an organism, manipulate them and insert them in another organism.

Genome: the total genetic material within a cell or individual.

Germ-line therapy: attempts to prevent genetic disease by transplanting genes into human sperm, egg or embryonic cells. The resulting changes would be passed on to the patient's offspring.

Recombinant DNA: the product resulting from genetic engineering techniques to combine pieces of DNA from different individuals or species.

Transgenic: describing an organism whose normal genome has been altered by introduction of a gene by a manipulative technique, often involving introduction of DNA from a different species.

US patent: a grant issued by the US Patent and Trademark Office (a federal government entity within the Department of Commerce) that gives the patent owner the right to exclude all others from making, using or selling a patented invention within the US for a specified term (generally 17 years). Laws of nature, physical phenomena and abstract ideas cannot be patented.

Scientific reference: The Penguin Dictionary of Biology (Penguin Books, 1996).

tunity to deal with the changing power relationships and ask what we want.

We have to see past the myths that science is value-free and technology is neutral. If you start with the idea that the life science corporate agenda is simply the next stage in evolution—that just because we can do something means that we should or will do it—then there is no point in having a debate.

By recognizing the power of the new technologies, we should ask: is that application an appropriate use of power? Is that power manageable or uncontrollable? Is that power going to potentially foreclose our options or the options of those not yet born?

■ Aren't you being rather optimistic? Don't you think that the lack of debate reflects a serious flaw in society's institutions?

I am neither an optimist nor a pessimist. I don't know if this generation will do the right thing. But I am hopeful that it will. It can create different avenues for change instead of relying on the institutions of society which maintain and represent the status quo.

However, activism is not just about shouting from the rooftops. Our passion and intuition have to be built into an intellectual framework. We must not only have a basis for discussion but an alternative vision.

■ Do you believe that public opinion will

have the sway needed for a soft path to the biotech century?

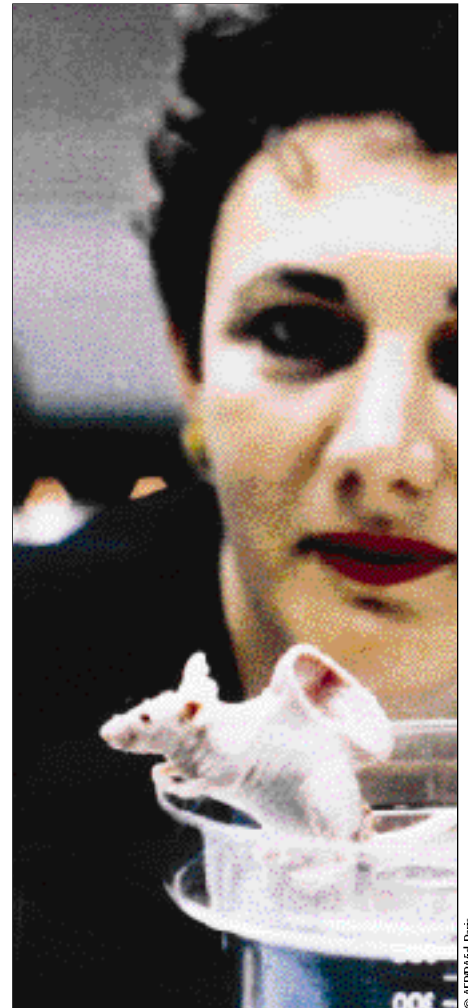
I am saying that there is no public opinion yet. Once the focus shifts to genetic commerce, debate will escalate exponentially—not just on the part of activists but also within industry. This is not just big corporations against the citizens—there will be a push and pull in the marketplace.

In agriculture, for example, there will be a major battle between organic producers and distributors and the biotech companies for consumers. The same will be seen with medicine and health. The pharmaceutical companies are going to push hard path drugs (which I don't necessarily oppose) and further down the line somatic and germ-line therapy. On the other side, the insurance companies will push to use the same science to produce sophisticated preventive health care rather than paying for expensive drugs and therapies to heal the sick.

■ Does UNESCO have a role to play in the debate?

It would be interesting if UNESCO could provide a galvanizing place so that the non-governmental organizations could have more sway. UNESCO doesn't necessarily have to take a position but through the International Bioethics Committee it could offer a forum to debate the complexities of these issues.

Interview by Amy Otchet



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"This complete disregard for life angers me, but nothing shocks me," Rifkin exclaimed when he saw a photo of this mouse with a human ear.

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