

'Now, Year Ones, this is your life!'

Preparing the present generation of students for a world of shrinking distances

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Conference Theme: 'Dawning of Opportunity: Rural and Distance Education in the new millennium'

Introduction: Looking Back and Looking Forward

Although I am not a specialist in distance education, I am very familiar with the specialist demands of rural schooling through my having been a Regional Director of the huge Western Region (Eyre Peninsula) of South Australia, and then from my being the foundation CEO of the Northern Territory school system. The role carried with it all the complexities of dealing with children on station properties, with two Schools of the Air, and with the education of indigenous people who were still resident on tribal land, and with distance. From this kind of educator background, I shall aim to draw a large picture of the future and on a wide canvas.

'Scrap-booking' is one the most recent, rapidly growing hobbies in America. It has been called the modern equivalent of 'the making of an American quilt', because people are now meeting or forming clubs to do it together. It has been given its stimulus by the welter of nostalgic looking-back-at-the-past which accompanied the last year of the Twentieth Century. People apparently want to look back over their own lives too, and so they are producing scrap-books which assemble the mementoes associated with their high and low points, their achievements and their own life story. *Time* magazine recently reported that there are now consultants in scrap-booking techniques, that one company alone trained and certificated 49,000 of them last year; that there is a growing market for non-fading papers, stickers, and designs; and that the monthly magazine called *Creating Keepsakes* is attracting 5,000 new subscribers every month (*Time*, 12 June 2000: 66-67).

You will also know that in several countries there is a well-established TV program entitled 'This is your life!' It claims to document how other people came to be how they are, the things they coped with, the experiences they lived through, their triumphs and mishaps. The story of anyone's life, we soon understand, is a tapestry woven from many strands.

Could we not also weave together the story of the future from what we already know will happen and from the strands, the trendlines, which are already under way. We can, and, most importantly, teachers must! For the students in their charge are in the process of building a personal history whose story-line we dare not leave to chance. Some are therefore advocating that there should be a subject in the curriculum called The History of the Future.

Some preliminary observations

So let me make four, short, cameo comments at the outset.

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What will become of schools and schooling?

I have just completed the writing of a book about the future of schooling, due for release in September. The publisher and I have had to wrestle with the book's title. It was provisionally called *The Future's School; Coming, Ready or Not*; it then became *Downloading the future for schooling*, and ended up as *Creating the Future's School*. The problematical terms were 'school' and 'schooling'. Using the word 'school' in the title helps to identify a market for the book; and 'school' is less clumsy than 'schooling'. But while I have great confidence that the process of schooling will continue, I have no such confidence that the traditional institution which we call 'school' will survive. Indeed, if we continue to serve up their learning within old and worn-out formats, it will probably severely disadvantage the young learners involved in the process called schooling.

You can predict what aspects of schools must be radically transformed. In the light of the known future, for example, the curriculum itself must be fundamentally re-worked, no longer based on facts to be learnt and upon knowledge neatly parcelled up into pre-arranged packages which are released to children according to how old they are. Rather the curriculum ought to be formulated around big questions which need to be answered. (How did the world come into being? Why is race considered important? Are there better alternatives to international problem-solving than wars? Why do Christians and Muslims fight each other? How does the brain work? Could we do without money?)

Since knowledge changes just by our working on it, searching and analysing and being wise are more important skills than just learning things by heart. It's also an open-ended search, for teachers simply can't know what information is out there to access. Since new material is being generated so fast that every subject is in flux, children will need to know how to access it, how to sift and sort it, how to discriminate about it, how to make judgements about what to believe and what not to believe. These are essential parts of modern schooling.

Accordingly they will build up structures called scaffolding knowledge, the core ideas and skills which allow knowledge to be sorted, cohered and put to good use. Learning like this is being called 'the thinking curriculum', it is greatly assisted (if not actually made possible) by computers, and the best schools around the world are already in the process of developing its techniques.

How will teaching change?

Secondly, in my new book I make a reference to the American saying that the ideal education would be to have Mark Hopkins on one end of a log and the student on the other. My desk editor (obviously much younger than I am!) signalled back, 'Who is Mark Hopkins? This makes no sense to me'.

So I sent her a reply like this. Mark Hopkins was president of Williams College (an Ivy League university) in Massachusetts in the 19th Century. He was a noted philosopher and renowned as a great teacher, and he made no secret of the fact that as a young man, he had deliberately chosen to live in a tent in the wildwoods, much as Henry Thoreau had done at Walden Pond. In a speech in 1877, US President Garfield said that for him the best education he could conceive of was to be in the wide, wild outdoors in the company of such a great, clear-headed, large-hearted man'. Out of this remark has arisen the saying about having 'Mark Hopkins on one end of a log and a student on the other'. My editor mailed back a reply which virtually said, 'Alright, alright, I'm sorry I asked! We'll keep the reference'.

But the point I was making has a worrying aspect to it. We all harbour a concept about teaching like that, and it has remained unshaken for decades, if not centuries. One-to-one learning like that at the feet of a wise elder would also be very costly, of course; it is elitist and an unrealistic hope for all but a minuscule few. Every one of us would like to have our child twinned with the world's best teacher as a class of one. In fact, that is where the term 'pedagogue' came from. He was the slave

who walked the child to school (which explains the reference to feet in the prefix *peda-*) and in whose company the child would learn incidentally hundreds of wise things through informal conversation.

But can that taken-for-granted view about teaching be sustained any more? That view is a liability in a world in which information technology proliferates. Holding to that view about teaching may threaten the struggle for universal schooling across the whole globe; and it may be disastrous for schools to be saddled with it.

Less distance, please, together with a little more humanity

Thirdly, some years ago the Melbourne historian Geoffrey Blainey, looking backwards, wrote a book called *The Tyranny of Distance*, in which he suggested that Australia's huge geographical distances have shaped the psyche of its population. Yet in 1998, Frances Cairncross, a senior editor of the international journal *The Economist*, looking forward, wrote a book entitled *The Death of Distance*, in which she argues that geography matters very little now. Time zones influence communication and human interactions now more deeply than does the physical distance between the communicators. A common language, a shared culture, and similar interests - not geography - determine whom we treat as friends and neighbours. Ideas, news, and information are available almost simultaneously around the world now; and as a determinant of significant behaviours, distance has been virtually killed (and 'virtually' is probably the appropriate word). Everyone uses distance education methods now.

The real world for this generation of students

And fourthly, about ten years ago, following a conference address I gave to Catholic educators on Queensland's Sunshine Coast, I wrote a short monograph which the ACEA published under the title *An educator speaks to his grandchildren*. It became one of the most widely read and quoted essays which I had written up to that time. There are several things we need to note about my grand-daughter who is just on the threshold of starting school.

If she joins Year One next year, 2001, she will complete her formal schooling at the end of 2012. By then, *every* student will be expected, if not required, to undertake some post-school education, some as vocational training, some in the tertiary sector of education. So she is likely to take on her first full-time job (whatever that might mean) in about 2014 or 2015. What will the job market in a digitalised, knowledge-based, internationalized economy be like then? So what kind of education do I want her to have *now* in preparation for it?

She will have her children (if any) in about 2025 to 2030. On present trend lines, she will live until about 2075, and her children will certainly be alive to see the year 2100.

What do I expect educators to encourage her to learn for a life space taking in the hundred years up to 2100?

'Now, Year Ones, this is your world'

Your conference organizers have requested that I do this exercise again, namely to take a journey into the future to see what it is like. The easiest way to do the trip is in the company of the young people for whom this will be familiar country. Look at it through their expectant and confident eyes.

A lot of the information in this section I have drawn from *The State of the World 2000* published by the Worldwatch Institute. Its President has written: There is no middle path. The challenge is to build an economy [a world community] that is sustainable or to stay with our (present)

unsustainable economy until it declines [until the world ends, I suppose]. One way or another, the choice will be made by (this) generation.

And you, I, and they can't afford to despair. Their schooling must train them in the appropriate techniques, using the best available data. Worldwatch's Chris Bright (2000: 38) has said, 'Our best hopes lie in our collective imagination'.

So let me now invite you to sit at the back of the room while I talk with three young Grade Ones about their world. While I talk to them, why don't you attempt two things:

Your first job is to construct an appropriate curriculum for them out of the things we talk about; and your second is to think of the best ways to deliver these appropriate learnings to them.

So I introduce to you Tamsin, Dirk, and Harriet.

Now, Year Ones, this is your world!

I know a lot of things about your world, and so do you, even though they haven't happened yet. There is so much information that I could write a book about it. And I have! And so have many others. There is so much to say that I have been forced to clump a lot of detail under four major headings.

The population of your world

Your world will have a lot of people in it, a lot of people, and they will be sorted out in different ways from what exists at the present. There will have to be urgent international action in your lifetime to limit the size of the world's population

Five hundred years ago (in 1500) the world's total population was half a billion - and it had taken since the dawn of human civilization to build up to that figure. China alone now has three times that population. Keep that in mind when you read History.

We began the Twentieth Century with a world population of 1.6 billion people; we ended it with a population of six billion, a fourfold increase in just a hundred years! By the time you are fifty, it will be 9 billion (estimated to be reached by 2054), six times what the population of the entire world was in 1500. In the first fifty years of your life, the world will increase its population by fifty per cent (Saltau, 1999: 3), and every facet of your life will be changed as a result of that population escalation.

The age distributions are important too. Only three of every hundred babies born this year live in developed countries. So wherever you live or work, you will certainly be mixing in a multi-national, multi-cultural and multi-faith setting and white people could be the ethnic minorities. Think about that, and especially when you prepare for a career.

A billion of the world's population this year are between the ages of 14 and 25. They are the parents of your generation ('Six billion and more' 1999: 48-49) and they are producing what has been called a 'youthquake'. Did you know that a third of the world's population are children, like you. In fact, the kids you are growing up with constitute half the world's people, those under 25. In Africa, 43 per cent of the population is *under 15!*

Half a billion people in Asian countries are middle class like you, and they have the same consumer patterns and the same attitudes as the middle class everywhere else in the world. A Hong Kong bank advertises now, 'There are three billion people in Asia. Half of them are under 25. Consider it a growing market'. Those under-25s are your contemporaries. They will be very aggressive in a number of ways, good and bad, over the next few decades.

On the other hand, a much larger proportion than what your mums and dads have been used to will be old. In 1900, four per cent of the US population was over 65; in the year 2000, the figure is 13 per cent, and another 9 per cent are between 55 and 64 years of age (Rosenblatt, 2000: 43) - twenty one per cent are over 55! They vote, of course, and you don't; they will influence public policy, and where the tax-dollars are spent. And they will be selfish.

This group is being called the woopies (well-off older people), the affluent over-fifties. Since the early 1990s, they have controlled 70 per cent of all household spending. They have fed the tourism industry (through early retirement on superannuation). They aren't really retired. They are employed as money managers; much of the world's corporate affairs are kept buoyant by their investments (Bita, 1991: 3).

And do take note of where the world's people live. By the time you are fifty, India (with a population of 1.529 billion) will have displaced China (1.478 billion) as the world's most populous country. Asia and Africa will account for 80% of the people in your world. You know this already, of course; but by 2050, Pakistan's population will be greater than that of the entire North American continent - USA, Canada, Mexico, Central America; it will be 345 million (Brown 2000: 7). The one Asian city of Shanghai will have more people in it than the entire population of the South Pacific (including Australia, New Zealand, and Papua New Guinea).

On the other hand, Europe and North America combined will be home to only 11 % of the world's people.

Of course, by 2050 the population of some countries (fifty 'developed countries', including Japan, China, and the whole of Europe) will be in decline because their birthrates will fall below 'replacement levels'. This year, Japan became the first modern economy to have more people over 65 than there are under 15; that is, its population is ageing, and fast (Backman, 2000: 1). Japan's birthrate is now far below replacement levels. In fact, Sayles (1998: 13) says that 'childlessness' is almost out of hand. 'Two of every three Japanese women under thirty are unmarried' and live with their parents.

Your generation in developed countries is not keen to have many babies. Only three women in every five between the ages of 25 and 35 have dependent children; ten years ago, about three quarters of that group were mothers. And it is mainly the rich who don't want children. The homes with high incomes average less than one child per household; low-income households have nearly three times as many children as the rich do. You will have to counter the effect that has on the nature of community.

I am uneasy about what all this means for families. There is a forty per cent chance that your Mum and Dad will divorce and remarry while you are still at school. You may not grow up with your natural brothers or sisters or with both natural parents; and you may not get much support from your grandparents because your family will move home so often. A lot of children of your age are growing up in one-parent families.

Education is of course an essential key. As Professor Jack Caldwell of ANU pointed out last year, 'In every country in the world where the majority of girls have at least three years of secondary education, the majority of women work and fertility is at replacement level or below' (quoted by Bone, 1999: 13). For the rest of the world, the population increase canters along at over 6 per cent. The best way to slow population disaster is to educate the world's women beyond age 14.

But there are other factors too. This year, only four countries (China, India, USA, Indonesia) top the 200 million mark. By the time your children finish schooling, there will be eight (India, China, USA, Pakistan, Indonesia, Nigeria, Brazil, Bangladesh). Can they continue to operate as single countries?

Do you want to be able to talk to your generation? Then consider what languages they speak. Mandarin Chinese is already the mother tongue of a sixth of the world's people - nearly three times as many people speak Chinese as speak English, and the number keeps growing. The bottom line is that you *have* to speak more than one language, and preferably more than two. Language learning will be a necessary part of your schooling. Did you know, for example, that one seventh of the enrolment in Australian universities are overseas students, and that a quarter of them are studying at overseas campuses of our universities? (Brydon, 2000: 1)

So don't rely on English, or the English, or English speakers. Although 80 per cent of the world's websites are in English, less than one person in ten speaks English. The use of English as the language of Internet disenfranchises the 95 per cent of the Indian population who do not speak any English (and that means 900 million people).

And it will matter less and less what nationality you have, because your world is smaller, people move about, most workplaces will be internationalized, and your world will be borderless. You will have access to the world economy through credit cards and trans-national banks, and it will be easy to travel overseas. You will spend your holidays in China, visit South America often, and work for periods in Africa, probably be employed in an internationally owned firm, and it is likely that in your home you will speak Japanese, Korean, Spanish, English, or Chinese quite naturally as second or third languages.

Sharing and caring for other people

The demographic changes I have described and the composition of the world's population will make you into a globally aware, globally responsible person.

Beliefs: In a world like this, it is important for you to know what you stand for. You will look to your school to help you form your values and your system of beliefs. Be careful about what you believe and what you take for granted without thinking. I am not sure where your mother and father picked up their beliefs and attitudes. They don't go to church, tabernacle or temple anymore, and there is not much religion in your home. You are religiously almost illiterate, but you'll have to be systematic and deliberate about your beliefs, about what you think is true, more so than Mum or Dad, because of the complex world you will function in.

Cities: In your lifetime, the world's super-cities could become the home of only the chronically poor who do not have the personal resources to move out of them. In the 1950s when your grandmother was born, only two cities in the world, London and New York, had more than 8 million inhabitants, and each was called a megalopolis. In 2015, there will be about 34 such cities, half of them in Asia.

Big cities can produce dysfunctional societies, they are making an inefficient and unequal drain on resources, and they cause some of the world's worst cases of pollution. Your generation will have to do something about all of that, because on present trends by about 2020 approximately ninety percent of the world's population will live in big cities.

Politics: It's obvious, by the way, that political systems are changing. There is a re-aligning of politics and parties across the world, and new political processes and coalitions are forming. Politics, parliaments, and governments will look different from what they are now.

For example, the era of the one-party political system (like kingdoms, dictatorships, military dictatorships, authoritarian rule) and centrally planned economies is over (Brown, 2000: 10).

In fact, something is happening in your world that we adults find strange. Some countries want to be very big; or more precisely, their leaders and politicians want them to be! So we find Indonesia

resentful that East Timor wants to break away from it; but now there are Aceh and West Irian lining up to do the same. China has taken back Tibet, Hong Kong, and now wants to unify Taiwan. India and Pakistan are fighting over who is to own Kashmir. North and South Korea are talking re-unification. Yet there is an equally strong tendency is for people to break away into smaller units. Chechnya is trying to break from Russia, Bougainville from Papua New Guinea, West Fiji from Suva, the Solomon Islands is breaking up along tribal lines, and so is Central Africa. The most spectacular case is that of the former Yugoslavia.

International economy: What you will be party to is a planet-wide economic system, controlled not so much by big nations as by big business networks and by regional centres of trade like Singapore, Bangkok, Mexico City, Los Angeles, Tokyo, Buenos Aires and Sydney. By the time you are thirty, there will be more people living in Shanghai than there are in the whole of the South Pacific, including Australia, New Zealand and Papua New Guinea.

Your world will see the break-up of nation-states (especially the big ones) into small, regional, trading entities interconnected within a global web. Some city-states may be more powerful than central governments. As Michael Backman wrote this year, 'The best thing for Indonesia and its people is for it to break up into a series of manageable Singapores' (Backman, 2000: 1). Watch Singapore; that's the model.

Food and malnutrition: Did you have breakfast this morning? Just remember that 1.6 billion people on the planet live in absolute poverty; and only one billion of the world's people (out of 6 billion) can be confident of having three meals a day.

This year for the first time in the history of the world, the number of people who are sick through overweight and over-eating rivals the number who are underweight, undernourished, or starving - both categories number about 1.2 billion people (Brown, 2000: xviii; Gardner & Halweil, 2000: 59). There is another group of several billion who are called 'the hidden hungry'; they appear adequately fed, but what they eat lacks essential vitamins and minerals. They are eating junk or the wrong foods. In fact, 'the most heavily advertised foods tend to be of dubious nutritional value', say Gardner and Halweil of Worldwatch, because they are laden with additive sugar, sweeteners, and salt. Food advertisers tend to target children.

Your generation can do something about that, can't you? After all, in the 1990s 'nearly 80 per cent of the malnourished children who live in the developing world dwelt in countries that boasted food surpluses' (Garner and Halweil, 2000: 64). But remember that performances at school, the productivity of workers, the size of your brain, the size of the national health bill, the trading capacity of any country or tribe are all dependent on food, on what people regularly eat.

Community welfare: So by the time you are an adult, there will be at least the beginnings of a world-wide social welfare scheme, and your government will be required to make contributions in money, personnel and facilities to it. The 'basic human needs' to be the target for everyone in the world include: access to at least primary schooling; access to health care; clean drinking water; satisfactory sanitation; immunization of all children; access to family planning services; universal adult literacy; elimination of severe malnutrition; and radically reducing maternal mortality (death in child-birth).

Fair distribution of resources: The world's distribution of resources will be addressed by your generation, because you just cannot tolerate a situation where two billion people in the world have no access to electricity (Dunn and Flavin, 2000: 143)

Sixty-five per cent have no guaranteed supply of clean water either, and around 40 per cent struggle to meet *any* kind of water needs. The developed countries have only a fifth of the world's population, but they consume about three quarters of the world's energy, three quarters of the world's metal production, and 85 per cent of the world's wood. While they spend about 15 per cent

of their budgets on social security at home, they spend only about 0.3 per cent of their GDP on overseas aid. It just can't go on like this. What will happen if all the world demands what my family takes for granted as its right?

International Law and Order: By the time you leave school, legitimate military and policing activities for the world community will have been taken over by agencies of international cooperation, and peace-keeping forces will be common.

Living conditions: Self-programming and artificially intelligent computers will shoulder many of the tasks which are now being done by human beings. You will live in a 'smart home' wired to carry out tasks like electronic shopping, preparation (and delivery) of meals, washing and cleaning, and other household chores.

Human beings are starting to build living platforms in orbit around the earth and will create colonies in space, the developments engineered by means of international cooperation and global consortia.

Employment: And jobs or work are changing. All over the world, the work which poor people and the uneducated do is disappearing. It has been estimated that in Europe more than ten per cent of all jobs vanish each year, and are replaced by different jobs (Renner 2000: 163).

Renner argues that that we must move the economy away from the throwaway treadmill that churns out mass-produced items designed to fall apart easily or be rendered passe by fashion cycles. Durability, repairability, and upgradability are key to achieving sustainability. (Renner, 2000: 176)

We used to be (and still are) worried about what to do with all those worn-out tyres, for example. Now we have a problem over what to do with obsolete mobile telephones. Re-manufacturing is now a growing industry in USA, as well as the device of the 'polluter pays' system.

So watch the job market. All trades have been in a ten-year decline except hairdressing. Employment growth, Browne tells us, is concentrated in the services sector and in the skilled occupations. You will change jobs a lot of times in your life, and the greater proportion of people will be self-employed. They (which means you) will be doing contract work, or accepting outsourced work, a lot of it in property services, catering, information technology and maintenance (Browne, 2000: 5, quoting his figures from DEETYA 1995). Elliott of the *Guardian* (UK, 1999: 11) has said that the three growth industries of this new century are biotechnology, information technology and multi-media

It's no wonder there is unemployment around the world, and particularly in developed countries. The jobs are not located where they used to be. The patterns of the industrial economy are disappearing, including the 9-to-5 working day, the five-day working week, salaried employment based upon hours spent at the workplace, and the regular holidays based upon the seasons (a left-over from the old agrarian economy). Your work will be based largely upon contracted labour and fixed-term projects for which you will be paid an agreed fee.

The really prosperous nations have small populations and few physical resources. The 'commodities' they trade are non-material, like technical skills, brainpower, and know-how. The richest people work with problem-solving skills, problem-identifying skills and in strategic brokerage, they talk about 'creating value through people', and they often refer to themselves as knowledge-workers. Try to become skilled in that area.

Because muscular strength is no longer an important factor in employment - there are machines to lift and move things - women, Harriet, will occupy a large number of the new occupations and

senior positions in the world economy. There is already evidence that they can outperform men in these new roles.

So service industries will abound. Tourism and travel collectively are becoming the world's largest industry and globally will employ the largest number of people.

Don't expect to spend all your life in the employment of one company. No company will remain unchanged for that long anyway. Your 'work' will ebb and flow, and will often be done intensively, in large chunks in a short period of time. You will manage your own career, you may have to relocate many times during your working life, and at least three of those changes will be major ones. Your wife, Dirk, and you, will have to juggle jobs, careers, and family perhaps in different locations.

Keeping Planet Earth healthy

The ecosystem of earth: Your views about the planet and the universe are very different from those of Mum and Dad. To you the planet is not a machine. It is alive. It is a single, complex, living organism, and you have to nurture its health and growth. That fact will influence the way your family lives, local and world politics, your system of beliefs and values, what you buy, sell, and eat, and it will be a strong factor in your choice of occupation and where you choose to live.

Interlinked economies: When I was in Japan a year and a half ago, there was concern that the pure white slopes of Mt Fuji are going grey through acid rain and smoke deposits. China gets three quarters of its energy from burning coal, and more than a third of the sulphur deposits in Japan come from China! (Bright, 2000: 34).

Environmentally, then, what happens within the borders of one country is no longer solely that country's business. By the time you start to work, environmental responsibilities will be enforced internationally. In fact, the world could be threatened by 'green wars' unless your generation does something to even up access to clean water, to good topsoil, to electric power, and to food distribution outlets.

Worldwatch 2000 has told us that there are seven well-established environmental trends which you are having to accommodate. One is of course population growth, which we have already dealt with. Let's look briefly at the other six.

The rising temperature of the world's atmosphere: In your schoolwork, you will study the effect on the world's environment of human activity, especially the use of the family car. Every newly developed country wants its own car industry, and every middle class family wants to own at least one vehicle. Yet the emissions from *our* cars are changing other people's weather.

In particular, the warming of the earth's atmosphere is well under way. By the end of this century (Year 2100), the sea levels around the world will have risen a minimum of 17 cms or up to a maximum of a metre. Think about that for a moment. That would alter the world's geography, the shape of countries, and where people will live. A lot of the world's population, your generation, live on land which will go under the sea. A fairly sudden rise like that will kill most of the world's coral reefs, for example.

So the sea will concern your generation. More than half the world's population now lives less than a hundred miles from a seacoast. We can't continue to allow sewage, acid sediment, chemicals, fertilizers and toxic spills to pollute the oceans and to poison the sea's creatures. In fact, Tamsin, you might consider becoming a farmer of the sea, because parts of the sea might be owned in the same way as people in the past have 'bought' land.

The effects of global warming mean that people who now live in low-lying areas - on some Pacific Islands, on large river deltas which are subject to flooding, and on some sea coasts - will try to migrate, often illegally and often in large numbers, to already occupied country above sea level.

Falling water tables across the planet: Put simply, human beings are using too much water, and they are wasting it. You'll have to change those habits. In the US they have a saying, 'Water flows uphill towards money!' (Postel, 2000: 44), and that's a sad comment. Since 1950, the world's water use has tripled. Have we had three times the rainfall? Have rivers carried three times the volume of their normal flow? Obviously not.

One simple example will show you what has happened. A diesel pump can be bought for about US\$350, and they have become available across the world. So those pumps have enabled millions of people to lift water out rivers, lakes, and wells, without giving the water tables, the aquifers, time adequately to replenish themselves. So all around the world water tables are getting lower, or are drying out. Even the great artesian basins which keep the inland of Australia alive are affected. Destroying the aquifers creates salty soil in which nothing will grow.

Shrinking croplands: Combine the rising world population with the way people take over space in which to live, to build dwellings, for example, and you are left with less farmland or cropland per person. In terms of food production alone, your generation will have to think of new and more efficient ways to grow or harvest food. That's why there has been such a controversy about GM (genetically modified) crops. Some people are going to starve (they are already, aren't they?) unless you are particularly clever and innovative about food production and its distribution.

Collapsing fisheries: Worldwatch estimates that a third of all fish species (34 per cent) are in danger of extinction (Brown, 2000: 9). As Brown points out, fisheries or fishing grounds which are put under stress can suddenly collapse; it is not a slow or gradual decline (Ibid: 13).

The sea has been called one of the 'global commons', a sort of park area available for everyone. But we need to be more responsible how the park is kept. According to French, 70 per cent of our major fish species 'are either fully or overexploited'. The FAO estimates that eleven of the world's major fishing grounds are endangered. Many of the sea areas are also under threat from 'bioinvasion', the unwitting introduction of predatory species (French, 2000: 185, 187, 188).

Do we need to be reminded that human beings depend heavily on the oceans for food?

Shrinking forests: Chris Bright (2000: 24) writes of 'Earth's tattered cloak of natural forests'. Just a couple of cases illustrate his point. About 42 per cent of the wood harvested in the world for industrial purpose (that, all wood except firewood) goes into *paper* production, which in Canada is the largest consumer of energy, and in the USA the second largest (Abramovitz and Mattoon, 2000: 105, 107). You can solve that! In USA, about two-fifths of collected rubbish is paper. It's been called 'the urban forest' and it can be recycled. The water that paper mills use can also be cleaned and recycled, used over and over again in a closed loop.

And did you know that the fastest growth area for paper use is in office paper. The World Trade Organization (WTO) was set up in 1994 after the Uruguay Round of talks; are you aware that the text of the agreement that set up the WTO ran into an astonishing 26,000 pages! And yet we talk of the 'paperless office'! Wasn't technology supposed to solve all of that? It still can, of course. The Bank of America recycles 60 per cent of its paper. It's easy to reduce paper use; by cutting down on handbooks, directories, reference materials, invoices and so on and replacing them using electronic means. I know you will be applauding the banks for forcing people into paperless, electronic banking.

The loss of plant and animal species: As the world economy expands, local eco-systems are collapsing at an accelerating rate. You now understand three things about the environment, namely (1) nature

is incredibly complex; the earth is an awesomely interlocking, interdependent living system; (2) 'nature gives nothing away for free'; everything has its tradeoffs and its penalties; and (3) 'nature has no reset button'; you can't put things back the way they were, once you have tampered with them. (Bright, 2000: 37).

So I am glad you are around. You will be far more responsible about the living planet than your mothers and fathers have been. They just lacked imagination, foresight and compassion!

The knowledge-based, computer-dominated century

You are living in a new period of the world's life. The kind of world-view which your mothers and fathers had was fashioned by the industrially based economy, by the assumption that human beings are lords of the earth, and that the planet is something to be exploited and plundered. That period has passed into history. You don't belong in it, thankfully.

Lester Brown (2000: 3) has written that 'when the listed stock value of Microsoft overtook that of General Motors in 1998, it marked the beginning of a new era - a shift from a (world) dominated by heavy industry to one dominated by information'.

You already learn as much from television as you do from school, one of the reasons being that you spend more time with TV than you do with your teachers. You watch about 1400 hours of TV and see 22,000 commercials each year, and it is from them that you learn what to value, what to eat and what sorts of behaviour are acceptable.

Each of you has probably spent more time in child-care (12,500 hours) than you will spend in twelve years of formal schooling.

Because about 85 per cent of the world's videos, films, CDs and TV programs emanate from the United States, you have already absorbed American culture and values. Much of it is not very ennobling, and it is no surprise that Asian countries are defensive about the Americans invading their media markets.

Computers, the Internet, and multimedia are giving you access to an enormous amount of information. You can consult almost any library or government department in the world, and you can find out things that your parents and even your teachers know little about. So you have a different view about studying, and especially in the way you think about knowledge - what it is, how it is accessed, how it is produced, who owns it. 'Finding out about things' is taking on new meanings and methods for you. You will do a lot of your schooling in non-school locations with a lap-top computer, connected to Internet, with your own e-mail address.

India is becoming one of the powerhouses of the world for electronics. By the time you are twenty, Chinese and Indians will make up more than half the population of the world, and the 'overseas Chinese' and 'overseas Indians' will strongly influence and may even control the world's networking webs.

You need to be aware, however, of what is called 'technology deprivation'. The science writer Margaret Wertheim (1999: 17) has stated recently that for the majority of the world, Internet does not exist. A quarter of the populations in Europe and North America have access to Internet, but in Africa only two persons in a thousand have such access.

The cost of purchasing a computer puts it beyond the reach of the vast majority of the world's population. In USA 450 people in 1000 have access to a computer, whereas in India it is 1.1 person per 1000. The discrepancies can be even more elementary than that. Fewer than 15 per cent of the Bangladeshi population has access to electricity; and about two thirds of the world's population has never made a telephone call.

You need high levels of literacy and a good education to use information technology wisely. About a fifth of the world's population (1.3 billion people, it has been estimated) are still illiterate, and many more can't speak English, the language of Internet. But conditions are improving. In some poorer countries they are developing telecentres or telecottages, which are hubs for e-mail where the messages are received and then delivered by bicycle (ibid: 139)

O'Meara (2000: 126) points out that mountain farmers in countries like Myanmar and Laos now use mobile phones to find the best route to market for their yak caravans to take during the rainy season.

About twenty years ago, we could not have imagined that a time would come when every child would have access to a television set at home; when every child would be able to use a computer both at home and at school; when everyone would be contactable, wherever they are, by mobile telephone. Indeed, much of the concern about your levels of literacy arises from the fact that you don't read the way their parents did in the past, you do not write letters the way your parents do. You and your classmates are image-dominated (through TV, video, and film) rather than literary (through writing and printed text), you communicate orally (through mobile phones and voice-mail) rather than through print. It is worth making explicit how fundamentally different your life has become.

Access to information data bases: The production of information is now exponential, and knowing how to access the data-bases is a more important skill for you to have than the rote-learning of basic information. Indeed, you have to learn very little by heart. No-one with a computer linked to Internet would consider buying a print version of the Encyclopedia Britannica now; it is available on a single CD-ROM, the equivalent of the twenty five volumes can be carried as easily as a pencil, the text is regularly updated, and the disk gives international access to it.

The consequences of just that one disk for a learning program are profound. Furthermore, it is available at about an eighth of the cost of the print version.

As a consequence, it is essential that you are able to sift material, to test it for reliability, to synthesise it into meaningful chunks, to link it with other learnings, to apply and to extend it in other contexts, and then use it to solve problems and analyse issues.

Video and film: There has been an enormous increase in the amount of print material in the print medium, especially books and magazines. But now the amount of material (both documentary and story) available through video, television, and film presentation is astonishing. In some parts of the globe, a person has a choice of more than a hundred TV channels to watch, for example. It is still largely a wasted medium. Hugh Mackay (1998: 11) said recently

From the mass audience's point of view, the (TV) medium's deepest social purpose is to pass the time, to distract people from themselves and to stimulate or tranquilize by whatever means it can.

But that will soon change. Once it and you become linked to the information network, you will be able to replay online, as often as you like or need to do so, significant demonstrations, lectures, talks and teaching, episodes, films, documentaries and newscasts from around the world. These are visual and contextual presentations which use a whole-of-frame, image-based, presentational format quite different from that of linear text.

Virtual reality: There is now a growing literature about virtual reality, virtual schools, and the virtual organization (Davidow and Malone, 1992; Hedberg et al; 1997; Liptiack and Stamps, 1994). These techniques and others using three-dimensional methodologies provide experiences which

transcend the time and place where the observer is located. The implications for in-school programs and for individual learning is enormous.

The e-book and e-paper: Print materials like books are costly and heavy to carry about. All of your text-books can now be placed on one small disk or CD. You can buy the text of a book (such as a novel) on disk and to load it into your laptop computer. You can also download it into an e-book which you can be read anywhere, because the screen is backlit and you do not need external lighting. In effect, these are 'go anywhere' books.

From 1998 we have had available e-paper, electronic paper which is about twice the thickness of a normal sheet of paper, just as useable and portable, but capable of being wiped out and reused millions of times (O'Meara, 2000: 129).

Transportable computers: You will of course have a notebook computer or laptop, and with that you can create a work-station anywhere, including a school-learning station. But it will be cleverer than the laptop I use. It will be a telephone with your personal telephone (voice-mail) number, your e-mail address, and a fax machine, and it will be powered by light (usually sunlight). Already, the handheld telephone is metamorphosing into 'wireless digital personal assistants' (PCAs). It has been called a 'major technosocial upheaval' comparable in impact with the invention of the steam engine (Cohen, 2000: 46). This hand-held telephone gives you:

- access to e-mail;
- access to the Internet;
- instant messaging, by voice, print, or storage;
- the news - probably to an international newspaper, or to TV like CNN;
- detailed driving instructions on how to choose the best route (through Mapquest); or how to find a shop or restaurant;
- instant access to stored information banks (such as medical records, or office files);
- instant banking;
- access to e-commerce, for placing orders and buying things;
- access to the stock exchange, buy or sell stocks;
- through Bluetooth, power to activate devices in your home, like turning on the heater; or the oven; or checking the security of your home while you are away somewhere.

It is likely also to combine the amenities of a smartcard (for accessing a line of credit with a bank, for tracking investment accounts, for transactions in lieu of cheques or credit cards) and to hold in its memory one's driver's licence and passport, all secure through a secret password. With this facility, you can be on call, at call, or online from anywhere. You don't need to be anchored on school premises in order to pursue your official learning program.

Computers are commonplace in your schooling, and they are enhanced by use in 'smart buildings'. Your school is likely to use rented premises whose owner agrees to adapt it as technology develops new capacities.

The wired or cabled city: Linking the world to home, office, and school by networked systems enormously expands the power and versatility of learning programs. You will be linked at home and school to an array of services delivered down-line where once required physical delivery or a shopping excursion. You have academic and personal advice on tap twenty-four hours of the day, connection with your parents, friends and school, e-mail and webpage communication. Many serendipitous extensions to schooling will develop for you.

Many political movements have used the informal channels of Internet to spread their views; it's been called the 'word of mouse' campaigns. And telemedicine is developing strongly.

The merger in January 2000 of America On-Line (AOL) and Time Warner to create the world's largest 'media conglomerate' is a sign not only of the symbioses developing in the information society but also of what the possibilities are. The growth of the e-commerce business is remarkable.

You are now finding that 'the lines separating telecommunications from computers, information processing, publishing, recording and entertainment are becoming increasingly blurred' (O'Meara, 2000: 124); that might worry my generation, but yours takes it in its stride.

But don't be too blase about it. Angell (2000), in his book called *The New Barbarian Manifesto*, says that because a few gifted corporations can move their production centres around the planet to find the cheapest labour; you may end up having 'governing opulence for the elite few' and poverty for the many, especially because big internationals tend to be stateless and can avoid paying taxes in any state. There might be, he predicts, an 'age of rage' and what describes as a 'flight of the information rich'.

Both print and digital skills: None of the new information and learning technologies wipe out the need for you to master print skills.

'Literacy' has simply become a more expansive term, covering both print and digital skills. You will now acquire a greater range of skills, rather than one set substituting the need for the other.

But the old-school way of learning - by steps and stages, by the sequencing of learning into one best path, by the traditional, scientific approaches, by having the curriculum divided neatly into subjects - is already passing. Knowledge for you is a web of interconnections where you access interesting information from many angles. Words like 'subjects', 'classes', 'grades' and 'promotion' won't make much sense to you. Schools will not be organized that way by the time you leave primary education.

You won't sit for 'final examinations' at the end of school. That seems a rather silly notion. Your performance as a student will be routinely checked against national and international bench-marks throughout your education; and you can choose which certificates you present for. The really good universities in the world are all international, and are not restricted by the country they happen to be located within, and you will want to study in a university or college like that. There is already a world trade in good educational practices.

Your school will have comparatively fewer teachers, but they will be better paid and more highly qualified. Your school will hire more adults (technical, computing, tutoring, evaluating) to supplement your school work, and some teaching will be done by sophisticated technological devices.

And of course you will develop your own sense of balance, discrimination and humour about all of this. The Worldwatch team quote the writer Bill McKibben who in the early 1990s surveyed the content of a day's worth of programming on more than 90 television channels and compared it with a day spent in the mountains. Television, he concluded, immersed him in an artificial, people-centric world, whereas his time in the wilderness taught him that human beings are not all-important. (O'Meara 2000: 141)

A personal life-story is emerging: But hold on. I've just drawn a big canvas of what the world looks like, a sort of big photograph, but I have not put you into it. All of this is not passive, or unchanging, or predetermined. It is being changed by you, by how you act, and by what you think and do.

You can make a huge difference. We found that out earlier this year. Think of the way the world has been changed by Nelson Mandela and Boris Yeltsin, by Evonne Cawley and Noel Pearson, by Paul Keating and Mother Teresa, by Bill Gates, Madeleine Albright, Joh Bjelke-Petersen, Piaget and

Edwin Hubble, by Walt Disney and Andrew Lloyd Webber, Charlie Perkins and Janet Holmes a Court, Sidney Nolan, Sidney Myer, Herb Elliott and John Monash. You make a difference. *One person can make a difference.* You are going to make an impact on this world, small or large, good or bad though the impact may be.

So we want to help you to be wise, to believe big and noble things about yourself and your world. You will be a success with your life, and it is possible for you to make the world a beautiful place, not least for your grandchildren.

I also understand that your teachers are very important to you. I know they can design a curriculum which will equip you to live abundantly, creatively and responsibly in the world we have just described.

The Conference Theme

Now Tamsin, Dirk and Harriet, would you excuse me for a moment while I address all these adults behind you. You can quietly talk to each other while I do this.

This conference set itself the theme 'Distance and Rural Education in the new millennium'. We can't predict what the year 3000 will be like, but it is probably healthy to look fifty and a hundred years ahead. You have put your own complexion on the theme by calling this period 'The Dawning of Opportunity', a title which can be read in several ways. The meanings you read into the phrase may reveal a mindset which ought to be made quite explicit.

By 'dawning', do you make the assumption that your field is not yet properly recognized, that the day has not really started for you, and that you are demanding a place in the sun? Judging from recent politics, you could conclude that governments around Australia have not been particularly adept at providing appropriate services to rural areas, and not least educational services. Perhaps now is the time for some imaginative, creative interventions from you as a group. There is a strong base to move from; for teachers are moving up in the scale, both in terms of remuneration and professionalism.

'Dawning' suggests a recognition that a new knowledge-based economy is emerging which presents you with new possibilities. It is a tidal wave whose crest you could ride, or one that could swamp you. You could be in the forefront of developments, or you could disappear in it and possibly drown. Are you confident about the future shape of schooling, and of your place in it?

In the phrase 'dawning of opportunity' you may be suggesting that this new millennium is ushering in a new era in history as profoundly revolutionary as was the Renaissance which jolted Europe out of the Dark Ages. If you mean *that*, then you are in the company of some of the wisest prophets of our time. If that is what is happening, then teachers - probably more so than any other professional group in society - need to understand what the next generation must learn, know, and be, in order to make a success of the new world conditions.

In short, this is more than just a pretty topic. It is a profoundly important issue for you, and I hope you will go away from this conference in awe, possibly in shock, challenged and changed.

Let me revisit the three aspects about schooling for the new millennium with which we began this excursion.

Students: We know a lot about the nature of the world into which the students now at school will enter. There will be many implications in this portrait for the curriculum and for the way schooling is put on line and delivered.

Teachers: The way teaching and teachers operate will change, and those changes are likely to be radical. I am not sure where Mark Hopkins fits into the picture.

Schooling: And the fabric of schooling will change if only because of information technology, the onset of the knowledge-based economy, world-wide. They may be traumatic for some rural communities.

Merlin's future-sight

In the legends about King Arthur and his Knights of the Round Table is an enigmatic, awesome but central figure called Merlin, a so-called wizard, which means there is a hint of magic about him. He became the personal teacher of the young prince Arthur. He is a figure whom I love for what he represents.

All the legends agree that Merlin could talk to nature, and was on speaking terms, literally, with the birds and animals, with trees and plants; he was thoroughly a companion of the living Earth. Most remarkably, he also had the gift of *future-sight*. Future -sight is very different from foresight which we use when we look into the future and anticipate what we might encounter up ahead. Future-sight is the result of being *already* in the future. It treats the future as though it has already happened, as something which you have already experienced and know about.

Most modern versions of the Arthur stories, like the stage show *Camelot*, have trouble explaining or coming to terms with Merlin. T. H. White on the other hand, in his novel, *The Once and Future King*, with uncanny insight represents Merlin as a person who is living his life backwards. He has already lived in the future, and he is now an old, wise man in the process of growing young. As a teacher of the young hero-king Arthur, he talks of the future with the authority of one who has already been there, and who knows this present moment is a fleeting contribution to the big picture of the emerging future in which Arthur will become an influential figure. Merlin knows, because he has already lived the future.

It's a powerful image of what the truly magical teacher is. You know the future. You have already been there, in imagination at least. And you know how to make your young charges fulfil their destinies and become heroes within it

Conclusion

So Tammy, Dirk and Harriet, thank you being our companions this morning. We have a lot of confidence in you. Now would you like to stand up and turn around? I want to introduce you to your teachers. This is Mr Merlin, your Year One teacher. And this is Ms Merlin, who will be your mentor in Year Two. They know all about your world. They're magic teachers. They have future-sight. They are educational wizards. You're so lucky to be in such good hands.

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