ECIS SPEECH
THE HAGUE 18th November 2001
“Battery Hens or Free Range Chickens: What kind of Education for what kind of World?”

Good morning. It’s both an honour and a pleasure to give the Gray Mattern Lecture. I do so with some trepidation. I know I am easily carried away with my own enthusiasm!

Some years ago my wife and I were on a Sunday afternoon walk with our three sons. Our youngest, Tom, who was all of 8 at the time, was holding my hand.

Suddenly he looked up at me.

“Daddy,” he said. “How do little children learn to talk?”

I was so fascinated by his question that I delayed a split second too long in my reply.

He looked at me reproachfully.

“I think that’s a pretty simple question but I bet you’ll give me a long and complicated answer!”

I will do my utmost to avoid that this morning!

I wish to speak to the somewhat provocative title of “Battery Hens or Free Range Chickens: What kind of education for what kind of world?”

We live in fascinating, sometimes frightening, times. We wonder whether we have the wisdom to handle all these new ideas. This is particularly so
with regard to research into the nature of the human brain. To the empirical research of the cognitive and biomedical sciences have now to be added genetics and the less quantifiable speculations of evolutionary studies. While the detail eludes us – and is likely to do so maybe forever – we know enough to realise that the brain is the most complex organism in the universe. The brain, at its simplest is our prime survival mechanism. It enables us constantly to monitor our surroundings and assess any new, unusual activity to see if this should change any of our earlier assumptions. The brain enables us to shape the future by fine tuning our intelligent responses.

With this knowledge we need to be clearer than we might have been in the past, about what we think we are educating people for.

Three years ago I was in Estonia, addressing a conference on the side of the Narva River, the historic boundary between Europe and Russia. A Russian woman, of giant proportions and looking even more intimidating in her enormous bear skin coat and hat, cornered me.

“Who are you?” she asked.

For a moment I was confused. Was this simply a question of identity – or a profound philosophical dilemma? It was the latter.

“You in the West,” she continued, “persistently misunderstood us “dissidents”. When we tore down the Berlin Wall we did so because we wanted to be free to make decisions for ourselves. But you thought we did this because we wished to replace Communism with Capitalism. Now it looks as if we’re replacing one tyranny with another. When the Berlin Wall was there you in the West defined yourselves negatively; you were against Communism. Now that Communism is no longer a threat to you, your reason for being seems empty. Surely you are about more than just money?”
Several years earlier a National Commission on Education had been set up in England. It spent two years talking largely to the Establishment. Eventually it produced a dry and uninspiring report of 450 pages, entitled "Learning to Succeed". Nowhere did it define what it meant by 'success'. It simply took it for granted that everyone would know that 'success' meant being ever more economically productive.

The Commission's report was later debated in the House of Lords.

"Learning to Succeed", commented one of the bishops, "Yes, but for what?

I understand the need for economic growth but, as a goal in itself, surely it stands as barren and arid? Education stands in danger of seeing people only as tools for economic progress, unless it is accompanied by a vision of individuals as creative, responsible and spiritual, and society as the matrix within which genuine fulfillment is the goal for all.

"No time to waste," says the National Commission on Education Report, and I endorse that sentiment. But I would add to it another one: No people to waste". I believe that at this moment our society is in danger of wasting people."

So I ask you, just what are we educating people for?

I guess if we really did know what the future held, and were absolutely certain that our predictions would never be overturned, we could become a suped-up version of battery hen farmers. We could feed youngsters the exact diet that a selective knowledge of the brain might suggest. We could be highly economic. We would waste not a day, nor even a single lesson All frills would be ignored. By a certain date, every child would be guaranteed to get a certain grade in a range of subjects....just like a battery hen.
But should the wire cage ever be removed we know that such hens can’t even stand on their own feet, or flap their wings. They would be perfect morsels for any predatory fox to devour.

In these uncertain times, give me a free-range cockerel anytime, able to stalk the farmyard and fly off to the nearest barn whenever trouble raises its head!

You’d better be clear what I mean by ‘education’. Then you’ll realise why I will argue that we’re in danger of producing an ‘over-schooled and under-educated society’.

I take the Latin word ‘educare’, not only as the root of the word ‘education’ but also as defining its fullest meaning. ‘Educare’ meant “to lead out”, in the sense of a Roman general leading his troops from the security of the camp onto the open field of battle. Knowing that his soldiers had been well trained such a general was confident that they could apply such learning to the complex challenges of a tough life. They knew how to stand on their own feet, and to work as a team. They knew what was good about tradition, but they also knew when new traditions had to be made. That’s what I mean by ‘education’… preparing young people to become capable adults who can stand on their own feet, and can do better than their teachers.

Regardless of what was said about me in the introduction there are really only three things you need to know about me.

First of all I must tell you that I was relatively young to become a secondary school Headmaster, yet relatively old to become a father for the first time. The two events came very close together! As I was trying to work out the appropriate curriculum for 11-year-olds, I was also having to learn how to change nappies. By the time I had ‘graduated’ to working out the logic of the sixth form, I was learning all about play school. Each fed the other, so, in what I say, I speak both as a father and as a teacher.
Secondly you must know that the one thing that really depresses me is to see bored teenagers acting as if the world owes them a living. After a dozen years of headship, during which we – my staff and I – had tried everything we could to rectify this phenomenon (one of my governors told me I had more pilot projects than there were aircraft in the Royal Air Force) – I decided to resign. Teenagers – especially bored ones – it seemed to me were a product of our own creation, of our increasingly centralised, bureaucratic and essentially instructional forms of education.

Thirdly you should know that although I speak with an English accent and live in the beautiful Georgian City of Bath, in no way do I speak on behalf of the British Government’s educational policy. I am in fact something of an intellectual refugee. For the past six years I have been the President of The 21st Century learning Initiative, an international team of researchers, practitioners and thoughtful people, initially drawn from 14 countries and have lived largely in Washington. The Initiative’s prime concern has been to use a better understanding of human learning to guide educational policy – on the simple basis that if you don’t really understand how humans learn you can’t provide effectively for learning to happen.

Much learning doesn’t involve new data – it simply involves looking at things from a different perspective. That is what I hope to help you do this morning. For 20 or more years we have been told that we are living within a paradigm shift. A time in which change is so rapid that even by the time you’ve thought out a new set of relationships, the very ground you were standing on has shifted and you have to think it out all over again. It’s unnerving.

I’d like to give you an example of a paradigm shift.

In the years directly after World War II the American government carried out an analysis as to how it was that the Allies had won. One of their conclusions was that the British had two great Atlantic liners – the Queen
Mary and the Queen Elizabeth – both so large that in times of war they could each carry 20 thousands troops. They were so fast, at 32 knots, they didn’t even need to sail in convoy. Between them they carried over half a million North American soldiers to Normandy.

The Americans said that if there were ever to be another war they would design and build an even better ship. And so they did. The SS United States was, it was thought, the finest ship ever built. In time of war she could carry 25000 troops. The first time she sailed from New York to Southampton she averaged not 32 knots but 40 knots, so cutting the trans-Atlantic crossing time from 80 hours to 72 hours. The Americans were cock-a-hoop. We British yet again retreated.

But what the Americans didn’t realise was that the De Havilland brothers were within 6 months of completing the prototype of the Comet jet aircraft, and BOAC ordered the first 6. The first commercial flight from London to New York took not 80 hours, not 72 hours, but a mere 8 hours. Passengers flocked to the airlines. Within 3 years the SS United States was bankrupt, her engines were stripped out of her and she was left to rust away for 25 years.

Her architect was distraught.

“You made two mistakes,” a colleague said. “You should have realised you can’t put a jet engine into the back of a steamship. Secondly, you should have realised that the travelling public was more interested in how quickly it could cross the Atlantic rather than in the nature of life on a fine ocean liner.”

One technology had leap-frogged another.

There is a follow-up to this story. The world is still building great liners, even bigger than the SS United States. But their job is not to get anywhere in
a hurry. They cruise slowly around the Caribbean, or the Mediterranean, or up to Alaska. Their job is to provide entertainment not transportation.

While you ponder that story, reflect on this: the modern school, the one you work in day after day, doesn’t have a very long design brief (about 200 years and that only for a tiny minority of youngsters). It was largely designed to Industrial Age assumptions.

In contrast, we humans have been using our brain to learn for several million years. Learning is not dependent on schooling. Maybe the very institution of school is now being sidelined by our deeper understanding of how humans learn. Maybe even without realising it we have become more about entertainment than we have about developing capable young people who can stand on their own feet.

Let me share three thoughts with you about human learning. The first is a statement, made in his old age, by a German Jew. He fled his country in the early 1930s. In his autobiography he wrote,

“It is, in fact, nothing short of a miracle that the modern methods of instruction have not yet entirely strangled the holy curiosity of inquiry; for this delicate little plant, aside from stimulation, stands mainly in need of freedom; without this it goes to rack and ruin without fail. It is a very grave mistake to think that the engagement of seeing and searching can be promoted by means of coercion and a sense of duty.”

On his own admission this man was something of a late developer. He was not talking much before the age of 4, nor reading before 7. When asked later why this was, the by then elderly Albert Einstein said he had been too busy working out what questions to ask!

In England, in the year 2001, the young Einstein would have been assigned to a class for special educational needs – the man who was to be the greatest
scientist of the 20th century! My first point: while we are all prepared to accept that we look different physically, we are slow to accept that everyone of us learns in individual ways. One size never did, nor ever will, fit all.

My second observation comes from a very different source – from the Santa Fe Institute. There, under that glorious New Mexican sun, many of the most famous of the world’s Nobel scientists ponder the ultimate boundary of science, namely the human brain. Be they neurobiologists, psychologists, geneticists, mathematicians or systems theorists, what fascinates them more than outer space is the one and a half kilograms of gray matter encased in our skull. Not simply your brain because, by definition, you are brilliant or you wouldn’t be here! No, they are just as interested in the brain of the most obnoxious 13-year-old you ever did meet last period on a Friday!

In one of Santa Fe’s recent publications Schank and Cleave state:

“The method people naturally employ to acquire knowledge is largely unsupported by traditional classroom practice. The human mind is better equipped to gather information about the world by operating within it than by reading about it, hearing lectures on it, or studying abstract models of it.”

So, if you have reached this stage in the Autumn term feeling frazzled, do realise it’s not simply your fault. In a real sense schools fly in the face of the way humans prefer to find things out.

My third observation comes from a very different source. Jeffrey Henry is the only man I’ve heard of who was both Prime Minister and a primary school head. Note, however, that this was in the Cook Islands where presumably both primary headship and prime ministry are part-time jobs!

“If each of you went forth with lanterns and spent a lifetime searching, it is unlikely you would find an educational system that truthfully served its culture.
Why is that, we might all ask.

Part of the problem, I suggest, is that we teachers tend to see education as a stand-alone discipline, rather than an integral part of a greater endeavour. We tend to define this discipline narrowly and happily burden it with our own rules and theories.”

Ponder that: “...a stand-alone discipline, rather than an integral part of a greater endeavour...”

Sometimes we teachers forget, as does the public, that there is not a child in the western education system who, between the ages of 5 and 18, spends more than 20% of its waking hours in a classroom. That is for day schools. Boarding schools are slightly different – but not much. Fully three quarters of a child’s waking hours are not in a classroom, and for most of that time they are not under the direction of a teacher.

Children don’t turn their brain on when they enter a classroom and off again when they leave – it’s usually the other way round! To children growing up in the information-rich 21st century, school is only a part of their intellectual experience. They get their information and experience from many sources – their life is more than that of the school. Yet, if many national governments are to be believed, it is on the pushing for ever higher standards on uniform, course content and tightly defined curricula, that the intellectual future of our society depends.

We should not take ourselves so seriously. Nor allow others to do so. Bright, alert children are those who found at an early age that they were part of a “greater endeavour”. Life really is more than school.

So, let’s look at two aspects of this “greater endeavour”.
First of all, a cutting from the Financial Times of five years ago. On that date the world had 358 billionaires, and their total assets exceed the annual income of half the world’s population. 358 people would be lost in this room (about one tenth of this audience), while our minds find it hard to imagine 3 billion people.

The world has always had great extremes of wealth and poverty but two things are now fundamentally different. The extremes are becoming ever greater while, more significantly, there’s hardly a person in the world who cannot see every day on TV how much nicer it would be to be rich.

You know young people well – that’s your job. You know that very many of them are seized with concern at such inequality. They know that the inequalities are getting bigger – there are now in excess of 450 such billionaires. The most thoughtful of our young people recognise that this has got worse in the last 30 years – indeed in the lifetime of us teachers.

“Are you sure that the knowledge that you teachers have is not actually responsible for getting the world into this mess?” they are starting to say. At a personal level this seems unfair. But the students have a point. They’re not sure we’re as wise as they think we should be. They’re sceptical. Is our generation really as authentic and ‘thought out’ as we like to think that we are?

Let me quote a man whose name you won’t recognise but three-quarters of you at least will have his product in your pocket. Dee Hock invented Visa, that little bit of plastic that we in England were told would ‘take the waiting out of wanting’.

It took Dee and his colleagues many years to perfect credit cards and the electronic transfer of funds. His invention revolutionised so many of our buying habits. There are many other things, he says, that have already
started to happen – things we can’t stop – that will significantly change our life-style in totally unexpected ways.

Let me give some illustrations.

World over population. There are 2 1/2 times as many people on the planet now as the day I was born......and I don’t feel that old.

Depletion of Resources, and environmental collapse. You know many of the statistics.

Global Warming. Several years ago I was invited to join Mikhail Gorbachov’s State of the World Forum. Some 900 of us meet once a year in San Francisco to discuss big issues. I haven’t heard any one of the eminent scientists who attend these sessions deny that global warming is not a direct result of human activity destroying the ozone layer; yet no politicians will touch it.

“It’s not yet the kind of thing to get us reelected in 4 or 5 years time,” they say.

What about human cloning, or Aids in Namibia, where, for every teacher they'll need in 10 years time, they need to appoint 3 now because 2 out of 3 will be dead of Aids in 10 years time?

What about international terrorism? Will Bin Laden be the only determined, reckless idealist to challenge the so-called free world to define the difference between freedom fighters and terrorists?

And what will happen when an aging male population finally discovers the delights of Viagra and starts rushing around like mad March hares on a Spring morning!
To those of you who, in the last few minutes, have been busy calculating how long you have to go before you get your pension, may I remind you that, in reality, there is no neat pile of money waiting to come to you on retirement. Most of the money you’ve paid in has already been used to fund the pensions of that lazy so-and-so who retired 5 years ago, and who is now living it up on some Greek island. It’s not like that. And you’ve guessed it, haven’t you? Whether or not you actually get the pension you expect will depend on the creativity of – wait for it – that awkward, gangly, bespotted antisocial 13 year old we thought about 10 minutes back!

If that’s not frightening enough, ponder the issue of euthanasia, and whether in the future it will be quite so voluntary. You see, we might well be the first generation that the emerging younger generation might be forced to remove!

You’ve guessed why I’ve told you all this. It’s not to depress you at the start of what I’m sure will be an excellent conference.

It’s to remind each and every one of us that the issues coming up in the next 10, 20, 30 years will necessitate youngsters who really have all their wits about them. Youngsters in the 21st century will need a broader, more challenging – yes, more exciting – education than we received. “To have all their wits about them” is a good description. So is that expression ‘Nous’ – good, old fashioned commonsense linked to a fine application of intelligent behaviour. ‘Gumption’ is another suitable description – the ability to find a creative solution outside the box.

Everything I know about young people – both from my experience as a parent, as a teacher and as a researcher – is that young people delight in searching for joined up thinking. Aristotle got it right when he said All men by nature desire to know. Seeing both the big picture, as well as the detail, is what the human brain is all about.
In recent years I fear we have forgotten that.

Think for a few minutes about the scale of the human brain. The basic unit is the neuron, the on/off switch. There are more neurons in a human brain that there are trees in all the forests on all the continents on the earth's surface. But the neuron is nothing like as significant as the synapse, the microscopic connection between the neurons in the form of dendrites. There are more potential synaptic connections in your brain – or that of any stroppy 13-year-old – than there are leaves on all the trees in all the forests on the entire earth's surface. A headache-producing thought! Something in advance of 10/24.

Why? Why are our brains so extraordinarily complex?

Let me tell the story as simply as possible. For much of the last century we’ve been taught that our bodies have been shaped by evolution. In terms of new adaptation evolution is incredibly efficient; in terms of not getting rid of things which are no longer needed, evolution seems strangely laggardly.

We still – so First Year Biology teachers tell us – have a coccyx, the last vertebra of the monkey’s tail that sometimes makes sitting still for too long, most uncomfortable. It’s 7 million years since the human species split from the Great Apes, but evolution has apparently kept this genetic instruction “just in case”. If you ever had your appendix removed the surgeon would have reassured you that you really didn’t need it any longer – it just gets in the way. After all, we humans gave up grazing on grass long, long ago. Or your gall bladder.....you really don’t need that anymore either because we don’t eat so much animal fat. The list is endless. We have bodily parts that are still there “just in case”.

Very recently, almost it can be argued within the past 10 years, psychology is coming to terms with what Henry Plotkin, the professor of psychology at University College London calls evolution in mind. Perhaps more than any
other organ, he and other evolutionary theorists argue, the brain incorporates numerous and sophisticated structures and processes for thinking, which our early ancestors found helped them to learn quickly and efficiently. This really shouldn’t surprise us.

Some neurobiologists liken the human brain to an archaeologist’s paradise for, in every generation it seems, there are recreated all those preferred ways of doing things – instincts almost – that helped to ensure survival. They are still there – ‘just in case’ we need them. As the Harvard Business Review stated three years ago: You can take man out of the Stone Age, but you can’t take the Stone Age out of man.

Take the issue of language. Recent thinking suggests that humans first developed the ability to speak about 130,000 years ago. It was something to do with the way the larynx – the voice box – having moved just far enough down the throat that we were able both to breathe and control the sounds we made, all at the same time. Coincidentally, by that time our ancestors had developed the technology to make fishhooks – so for the first time fish in significant quantities entered the human food chain. Fish are rich in amino acids and the brain desperately needs such fatty acids to create what is called “neural sheathing”. Very simply, this improves the insulation around the dendrites, which largely keeps ideas flowing in the preferred direction.

Once humans learned to talk we developed the most awesome new survival technique. Let me explain. The person who can’t talk, and can’t understand what is said to them, is totally dependent on their own experiences to guide their actions. They know nothing they had not personally experienced. But the person who can converse can add enormously to his or her own experiences by adding the ideas told them by others. Language enable us to develop a kind of “group brain” – our thoughts are more than just our own experience.
The ability to talk, however, came at a cost. To handle all this intellectual ‘data’, the pre-frontal cortex (that’s the part of the brain closest to the forehead) has grown considerably. That in turn has put pressure on the skull, and that too has had to grow.

Most other mammals give birth to their young when their brain is more than 90% fully formed. However, with this enlarged human brain, women have experienced the most awful ‘pains of childbirth’. You see, the woman’s birth canal hasn’t expanded parallel with the growing brain. If you women were to carry our babies until their brains were 90% or more fully-grown, pregnancy would last for 27 months and the baby would never get down the birth canal. So eventually and presumably with many painful failures, we have become accustomed to delivering our young at 9 months, when their brain is only 40% fully formed. No wonder human babies are so vulnerable!

Yet we grow up to be the masters of the world. How?

It’s all to do with how our species has developed a way of genetically transferring from generation to generation certain predispositions to learn, and to learn quickly and effectively, always providing we’re in appropriate environments.

The easiest predisposition to understand is the young child’s ability to learn language, apparently spontaneously. By the age of 3 or 4 children have little difficulty in speaking their own language. Those who live in multi-ethnic environments can frequently speak 2 or 3 more languages by the age of 5. In comparison to the difficulty I had in learning Latin at the age of 16 the young child’s ability to learn language seems amazing. It is.

We now know some of the reasons why this is so. In the ancestral environment from which we came, life was highly precarious. To increase the chances of survival people banded together into small groups and, in their search for new food sources, became of necessity nomadic and
collaborative. We have evolved as a “small group” species, happiest, it seems, when we work in teams and multi-task. It is no accident that cricket and soccer teams have 11 players or that there were 12 disciples, or that a jury comprises 12 people.

Indeed, when more than 15 people (a rugby team) make up a nation’s Cabinet they frequently split into warring factions. Add dependents – women, children and the old – and our ancestors frequently had to deal with no more than 60 people in a lifetime.

Every child is born today with these generic language and social predispositions. Just what they do with them depends on the culture into which they are born.

Research four years ago carried out by the Kellogg Foundation in Michigan into what are the best predictors of success after the age of 18 showed that it was the quality and quantity of dialogue in a child’s home before the age of 5 that was four times more significant than any other factor, far more significant than either the primary or secondary school.

In reality our ancestors knew this long ago. St. Augustine was said to have remarked “I learnt most, not from those who taught me, but from those who talked with me.” That monk of long ago – the man who prayed “Oh God, make me good but not yet” - understood the proper balance between formal teaching and spontaneous learning. He knew that we needed a bit of the battery hen approach, but even more of the free range chicken!

Marion Diamond is an eminent neurobiologist from Stamford. She was one of the team who carried out the autopsy on Einstein’s brain. As a young doctoral student she worked on rats’ brains (which, disconcertingly, have distinct similarities to the human brain). Not being rich she had to carry out a lot of her work at home where she was also bringing up a young family.
She did what is now a standard research procedure. She had two cages of rats, one containing toys and one without. Every week she took a rat from each cage, and cut out its brain, and weighed it. Consistently the brains from the rats in the enhanced environment (the ones with toys to play with) were 10% heavier than those of the other rats who had no playthings. This was the result she had expected. Not that brain weight is an exact measure of intellectual potential, but it’s a guide.

Unbeknown to Marion, her children thought the whole experiment was very unfair on the rats. They started a rescue mission, releasing a number of rats over a period of several weeks and letting them have the run of their own bedrooms.

When Marion discovered what was going on – good scientist that she was – she realized she now had a third colony of rats to study. Unbeknown to her children she then started to collect free-range rats from the children’s bedrooms. She carried out the same experiment.

Much to her delight and to her scientific satisfaction – and, yes, you’ve guessed it - she found that these free range rats had brains more than 10% heavier again than the artificially stimulated rats, and, of course, more than 20% heavier than the rats in the sterile environment. Rats, if you like, need more than the simulated activity of the classroom, as do human youngsters. Early learning is as much to do with the emotions as it is with the intellect.

Let me concentrate on three aspects of brain development. We are now coming to understand just how vulnerable is the brain of the foetus during the last 3 months of the mother’s pregnancy. We know of the harm done to the young brain when the mother experiences ill health, or is addicted to drugs. We are only slowly coming to appreciate the harm done to the young brain when the mother is suffering from excessive stress towards the end of pregnancy. Such stress inhibits the transfer of essential hormones across the placenta that leads to a reduction in the development of intelligence and
which could take many months, even years, of expensive schooling to compensate for later.

If, as a society, we can appreciate this, then significant changes will have to be made in the arrangements – or lack of arrangements – made for the support of young mothers. Hold this thought in your mind, and remember the title of the lecture – *Battery Hens or Free Range Chickens?*

Take a second illustration. Breast-feeding. I’m not talking about artificial milk. I want instead to draw on another idea. There are three stages in the life cycle when the brain literally ‘reorganises’ itself. This is called “synaptogenesis”. Synaptogenesis takes place at birth, at adolescence, and in old age. It is much to do with how the brain shapes itself in response to its changing surroundings.

A very young baby has no control over its leg movements, or its arms, or even its head. What it can do is move its eyes. A number of neurobiologists and pediatricians, noting that a baby’s eyes first focus at 13 inches, recognise that this is approximately the distance between the mother’s eyes and those of the baby at the breast. Probably, they argue, it is the emotional bonding that occurs in those early weeks of life that is the sole external contribution to this first phase of synaptogenesis.

Intelligence starts to develop very very young.

To my fellow men in the audience may I suggest that if we feed our babies bottled milk our eyes are also about 13 inches from our baby’s face, and they can bond with us as well..... that is, if you don’t do what I did, which was to read a book at the same time!

Pause for a moment, and read off the screen something which – in terms of the development of intelligence in the young, has to be the ultimate obscenity. “Lactation Support Rooms”....Breast Pumps.....and motorbike
riders delivering mothers’ milk to distant nurseries. Think again. How are we to use our emerging knowledge? Is it to support Battery Hens, or Free Range Chickens?

My third illustration relates to Empathy. We humans are born with a whole range of little techniques that enable us to get on with each other. It even seems that we are born with a predisposition to give the benefit of the doubt to close relatives. Watch children in an infant school playground, they know all about forming teams, they collaborate as well as compete. They pick each other up as well as knock each other down. Their eyes speak volumes.

So do yours! It’s lonely up here on the stage. I’m energised by the eye to eye contact of enthusiastic listeners in the front row. Freud said it was simply to do with sex and survival – I think it’s more complicated than that! We are very good at supporting each other. Think of the biochemistry involved in a smile, or a kiss. That has to be the subject of another lecture!

There is terrifying evidence from New York, Chicago and other major cities that this highly significant predisposition towards – let’s just say ‘getting on with people’ – is quite capable of being rewired into the exact opposite set of reactions. Evidence is accumulating that youngsters as young as 18 months, who grow up in extremely violent environments, lay down chemical pathways that see aggression rather than conciliation as the course of first response.

Do note the quote from Ghosts from the Nursery: rage-filled adolescents only seem to come out of nowhere; they come, too often, from the nursery.

History has it that Queen Victoria remarked: “Children should be seen and not heard”. To many of her generation young children were of no intellectual interest; they weren’t knowledgeable enough to hold a conversation. The Queen was badly wrong.
Here's a simple analogy. Many of you will remember, not so many years ago, that when you bought a new car you could never go more than 30mph for the first 500 miles. To your chagrin you had to display a warning “Running in – please pass”! Then for the next 500 miles you had to keep to 40mph and so on. When eventually the engine was run in you could drive as fast as you liked. But woe betide the well-being of your engine if you tried to go too fast too soon. Those first 2000 miles of slow driving were, literally, a matter of testing and rounding off the edges.

The brain is just like that. Very few of you will remember anything from your first three years of life (other than highly traumatic events). For long years academics and educators took this to mean that such years were not particularly important. That was a terrible mistake; these are the years in which the brain is running itself in, and it’s on the quality of this experience that future learning depends.

Let me move to the second great period of synaptogenesis – that of adolescence.

I started my teaching career at Manchester Grammar School, which then shared with Winchester the reputation of being the most academic school in England. Classrooms hummed with activity. At the end of each day youngsters would invariably stay behind just to talk – they, perched on the desktops, I lounging against the window. What might have started as a query about geography frequently led to questions of philosophy, politics, and religion. The syllabus was a guide, but in no sense was it carved in stone. To digress was not a sin, but an achievement.

The longer I was at MGS, however, the more suspect I became of the way – quite unconsciously, I believe – a good school appropriated more and more of a youngster’s life. There was so much that could be done – school plays, debates, sporting fixtures, field trips, orchestra, clubs. The list was endless.
The students, it seemed, went home simply to sleep. There was something wrong here.

My moment of truth came several years later, and in the most unexpected of places. For the third year running I was leading a geographical expedition of 17-year-olds in the mountains of southern Iran. We had been moving with the nomads on their annual migration. One evening the tribal chief, a Bedouin, asked through an interpreter for permission to put an awkward question to me. I assented readily. “Tell me,” he said, “we appreciate these fine young men you have brought from a distant land. But we have a difficulty. Why are they not in their own homes, working alongside their parents, learning the wisdom of their elders as they work?”

He was right. It WAS an incredibly awkward question to answer – the culture gap was just too great.

I would have forgotten all this, however, had it not been for another conversation an hour or so later. One of the boys, a tough lad from Oldham in north Manchester, came to see me. He was distressed. “I heard the question the chief asked you. It really hurt me. You see, I’m sure my dad loves me but I hardly know him. When I get home in the evening I’m too tired to talk much. And my dad gets so tired in his job that he rests or sleeps most of the weekend. I know he loves me and my sister, that’s why he works so hard. But there’s an emptiness in my life; I just don’t seem to know my Dad. I feel like I’m incomplete.”

I’ve never forgotten the 30 seconds it took that 17-year-old to say that. The word ‘incomplete’ haunts me still. I’m convinced it’s a clue to all the uncertainties of adolescence. Adolescents feel, deep in their evolutionary conscience, that something essential is missing.

As a parent and a teacher there is no age group that fascinates me as much as adolescents; that restless, ever questioning, bombastic but extremely
vulnerable energy that never stands still long enough for us to define! In years gone by every tribe or small community was ultra dependent on this bloody-minded energy for its survival. Adolescents played an essential role in those societies doing things that older, more sober-minded, adults would no longer do themselves. George Washington was appointed Surveyor general of the Dominion of Virginia on his 17th birthday; the average age of Spitfire and Hurricane pilots in the Battle of Britain was 19 and a half, and more than half of those killed in the American Civil War were below the age of 20. Nelson was 12 when he first went to sea.

Nowadays we tend to speak not about adolescents, but about teenagers. Teenagers as a group only became obvious enough for inclusion in the Oxford English Dictionary in 1954. It’s a recent concept. Let me explain. In 1900 the average girl started to menstruate at about the age of 19. Now, with better food and health care, menstruation frequently starts shortly after a girl’s 10th birthday. In 1900, most boys were sufficiently well established in a job by the age of 20 that they could afford to marry and start a family. The gap between childhood and becoming a fully responsible adult was measured in months, rather than years.

But not now, not in the year 2001.

In the continuing attempt to ‘professionalise’ adult employment, we often argue that a young person should not go into work until he or she has both a university degree and some form of post university experience. Full-time jobs for many don’t start until 22, 23 or 24. The gap between being a child and full adulthood has lengthened to nearly 15 years.

Teenagers are a by-product of contemporary society; a society so determined to get the most out of life now, that we no longer have the time or the inclination to provide adolescents with apprenticeships that will fit them for a more distant future. We don’t quite know what to do with teenagers any
more; their energy so often goes to waste. We give them our money, not our
time.

Frequently their ostentatious confidence antagonises the older generations,
and they bore themselves with self-indulgence. They don’t have a role in
society that is in any sense useful. They really do feel incomplete. And so do
we, as we realise that we are no longer part of that interconnected world that
was our ancestors’ way of transmitting the wisdom of the ages.
Remember the American Indian proverb: We have not inherited this world
from our parents; we have been loaned it by our children.”

At one point in my career at MGS I was invited to give up teaching for a
year and to travel around the world raising money from old boys to rebuild
the school. To a 24-year-old this was an amazing opportunity. In just over a
year I met some 3000 ex-pupils of one of the most elite schools in England. I
was amazed and disappointed, for many of these boys had not grown to be
the men I had expected to meet. “At school, if we did as was expected of us,
we shone,” explained one. “Somehow or other it was different at university.
There we were left largely to work things out for ourselves, and that we were
not so good at doing. I guess we were over-taught at school. We were too
dependent on the teachers. It would have been better for me if I’d learnt
more about working things out for myself.”

*Working things out for myself* – that’s what adolescents delight in doing.
They are, in the process, over-excitable, highly energetic, devastatingly
critical of themselves as well as of everything and everybody else....and
they are extremely vulnerable. Especially at 3 o’clock in the morning when
they come face to face with a reality they can’t stick and when their
loneliness seems almost tangible. They can drive us parents to distraction!
But out of this turmoil a phoenix may arise.

Way back in 1984, Csikszentmihalyi warned us in his seminal study of
Adolescence that, at that date, the average American father spent less than 5
minutes a day in solo contact with their adolescent child. More recently in her much acclaimed study entitled, appropriately, *A Tribe Apart*, Patricia Hersch states: *The most stunning change for adolescents today is their aloneness. The adolescents of the 90s are more isolated and more unsupervised than [their predecessors].....not because they come from parents who don’t care, from schools that don’t care, or from a community that doesn’t value them, but rather because there hasn’t been time for adults to lead them through the process of growing up.*

Csikszentmihalyi has just written a further book. You all ought to read this. It’s called *Becoming Adult: How Teenagers Prepare for the World of Work*. It’s a report on a 5-year study into skill development in advance of employment. Its conclusions challenge many pre-held assumptions. One of these conclusions states, *students who get the most out of school – and have the highest fortune expectations – are those who find school more ‘playlike’ than ‘worklike’*. Reflect on that.

Now to a second conclusion. **Clear, vocational goals and good work experiences do not guarantee a smooth transition to adult work. [What do, however, are] engaging activities – with intense involvement regardless of content – these are the activities which are essential for building the optimism and resilience crucial for satisfying work lives.**

Those of you who know Csikszentmihalyi’s work will not be surprised that he is referring to what is known as a state of *flow*. The brain under normal conditions uses 20% of the oxygen taken into the body; the harder it works the more oxygen is burnt off and the more tired a person feels. With one exception, normally related to adolescence. Some of you may remember such experiences with affection. Times when you got so caught up with an idea, a project, or a topic that you became so all-engrossed you didn’t notice that it was almost breakfast time – and you didn’t even feel tired. It was as if you had gone into fifth gear, a kind of overdrive. You seemed to go further on less fuel. And you did. Brain studies show that people so absorbed in
something that fascinates them actually cut their oxygen input by as much as 50% - which is why they don’t feel so tired.

Youngsters who have experienced such a transforming state – and, as the report says it really doesn’t matter in what form such excitement comes – develop an ability to return to such a state later in life. Those who have NOT experienced such elation in adolescence will find it far harder to achieve later on. You have to learn to fly when you are young.

Young people who know where they’re going, and why, are the ones who are most vested in taking responsibility for the future. Long before I became a headmaster I knew from hard experience that it was the child who came to school already enthusiastic to make sense of issues that matter to them personally who takes from formal schooling whatever it can offer to help them meet their personal objectives. It’s not the other way round, however hard the school might try.

The greatest incentive to learn is personal, it is intrinsic. That is why a caring, thoughtful, stimulating life – a life of manageable, child-like proportions – in the greater community is so vitally important. Vitally important, that is, both to the child and to societies such as our own that are so dependent, year after year, on the continuous, restless energy of the next generation of young minds.

That is why society has to realise that streets that are unsafe for children to play around are as much a condemnation of failed policy as are burned out teachers or inadequate classrooms.

All too often, whenever I reflect on the bored, disillusioned teenagers whom I’ve met in the past, I recall the observations made some time ago by Ernest Boyer: To blame schools for the rising tide of mediocrity is to confuse symptoms with disease. Schools can rise no higher than the expectations of the communities that surround them.
Just what are these expectations?

For a moment or two let me take you into an aspect of economics that I find very troubling. In the past twenty years the world has discovered globalisation. Living standards, especially in the west, have risen dramatically. Increasingly, however, we feel that we are on a treadmill; the more we work the more we can buy. Then we fall foul to the advertising industry and rush out to buy still more. Then we work still harder. Greed is no longer seen as a Deadly Sin, but rather as the essential driver of economic growth. Often it makes us miserable.

If any country, be it in Europe or elsewhere, wants to create a society in which the provision for young children is good both in the home and in the school, this can only happen at a cost. Society can’t have its cake and eat it at the same time. Young people need their parents’ time more than they need their money. The choice is waiting to be made – people are looking to you for guidance.....you see, people think we teachers are the experts and that’s an awesome responsibility.

The eventual choice depends on what kind of education you believe our children deserve - and that really has to be a matter of faith. The decision could go either way – Battery Hens or Free Range Chickens? One way is difficult and time-consuming, but could release the phenomenal ability latent in so many people. The other, the one we could too easily drift into, could lead to a new form of Dark Age – full of consumable goodies, but empty of soul. We stand, in 2001,as did Dr Faustus, facing Mephistopheles, tempted to trade in our children’s souls. What advice will you offer the world as it ponders the choice?

Thank you for listening.