

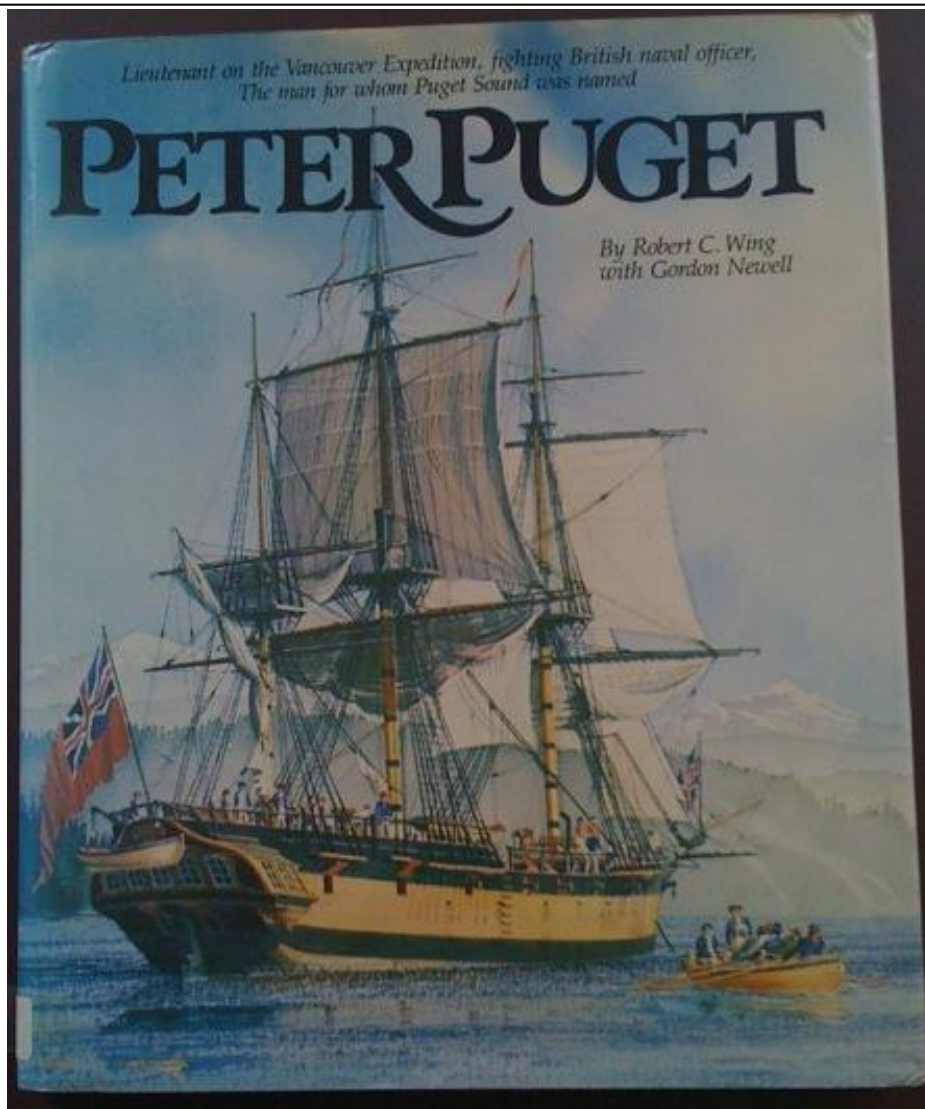
“Your wonderful brain, and your responsibility to use it wisely”

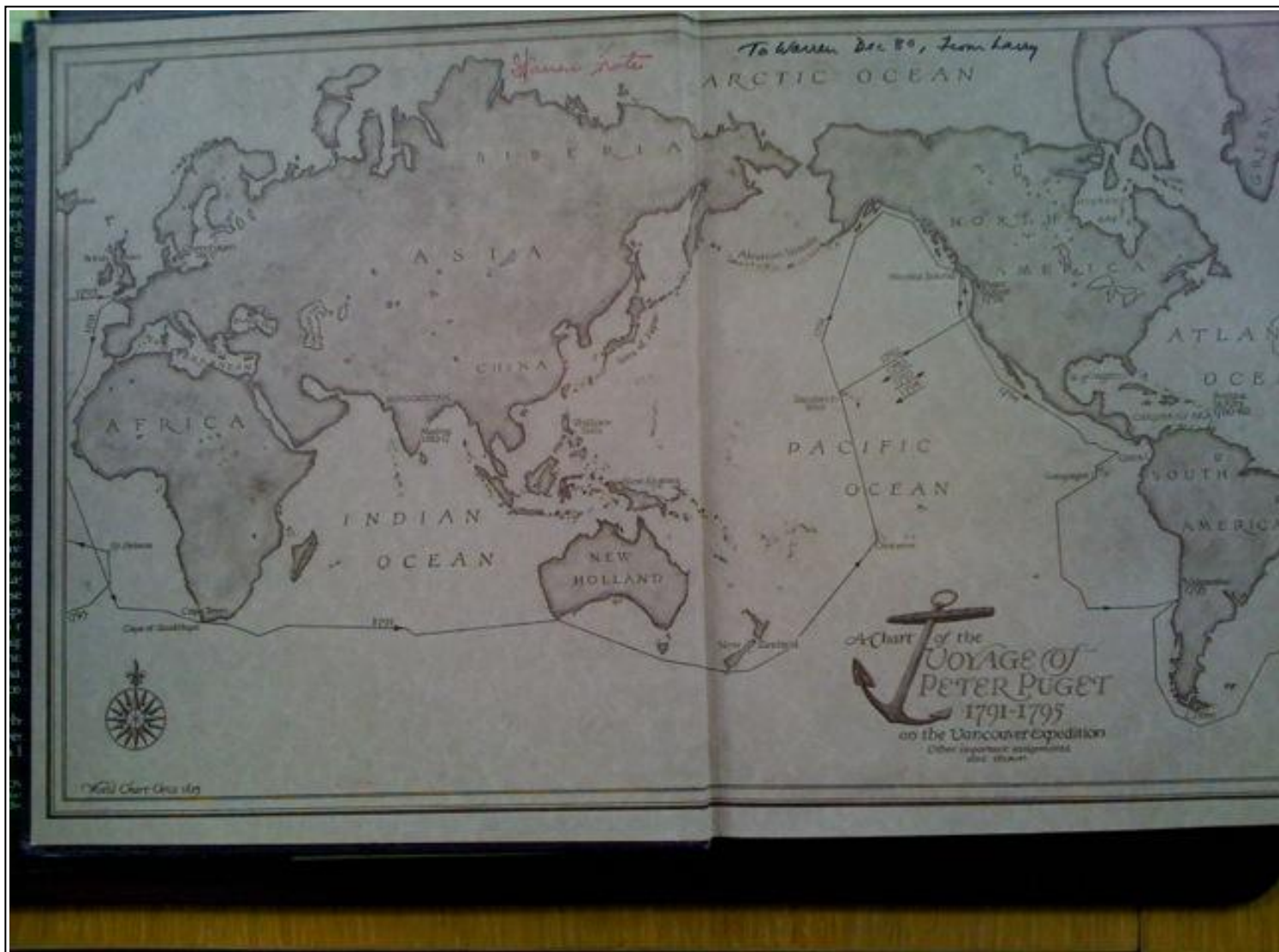
John Abbott
President
The 21st Century Learning Initiative

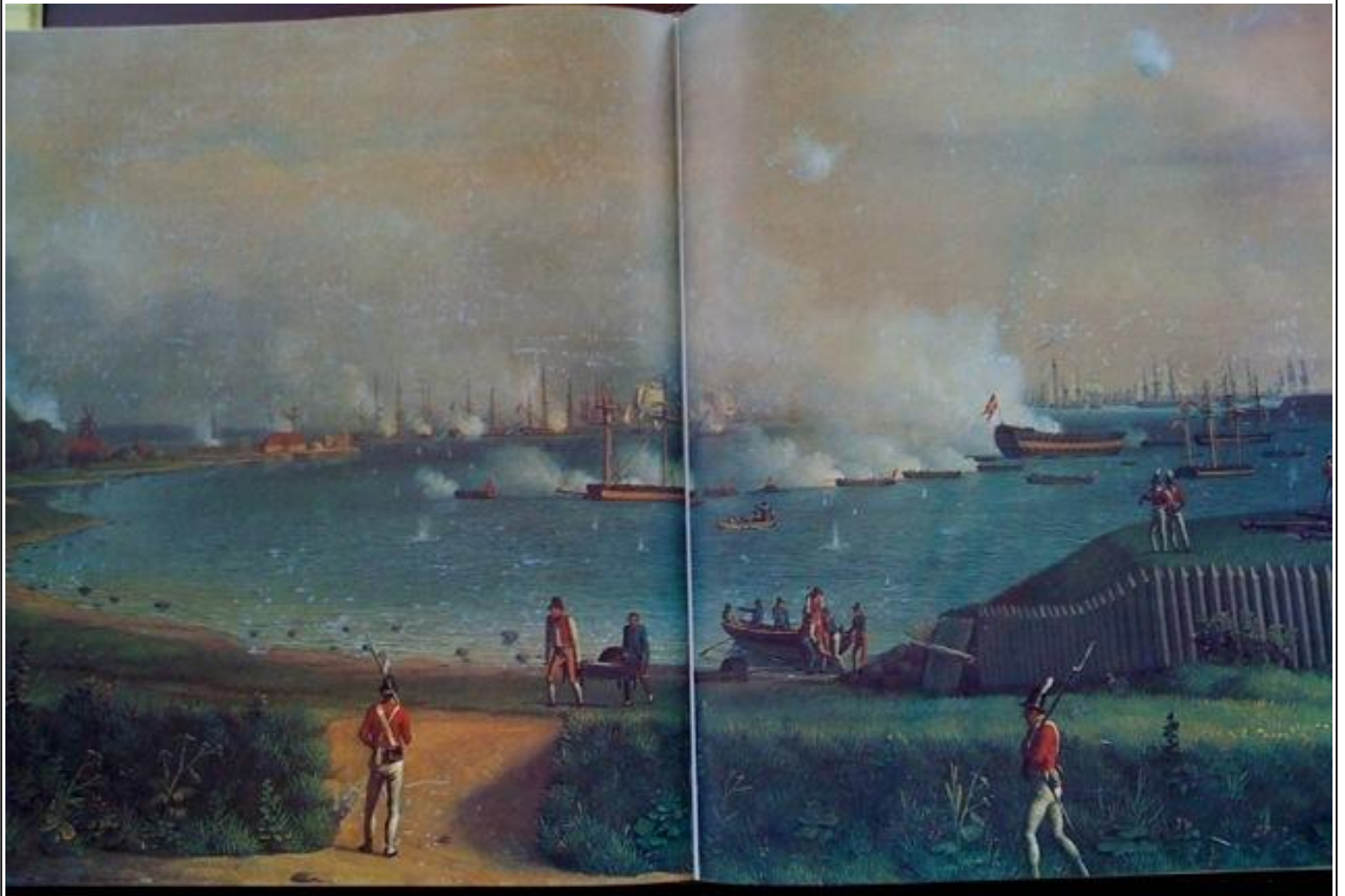
Supporting documentation for this discussion can be downloaded from the website: www.21learn.org

20th October 2010
Vancouver





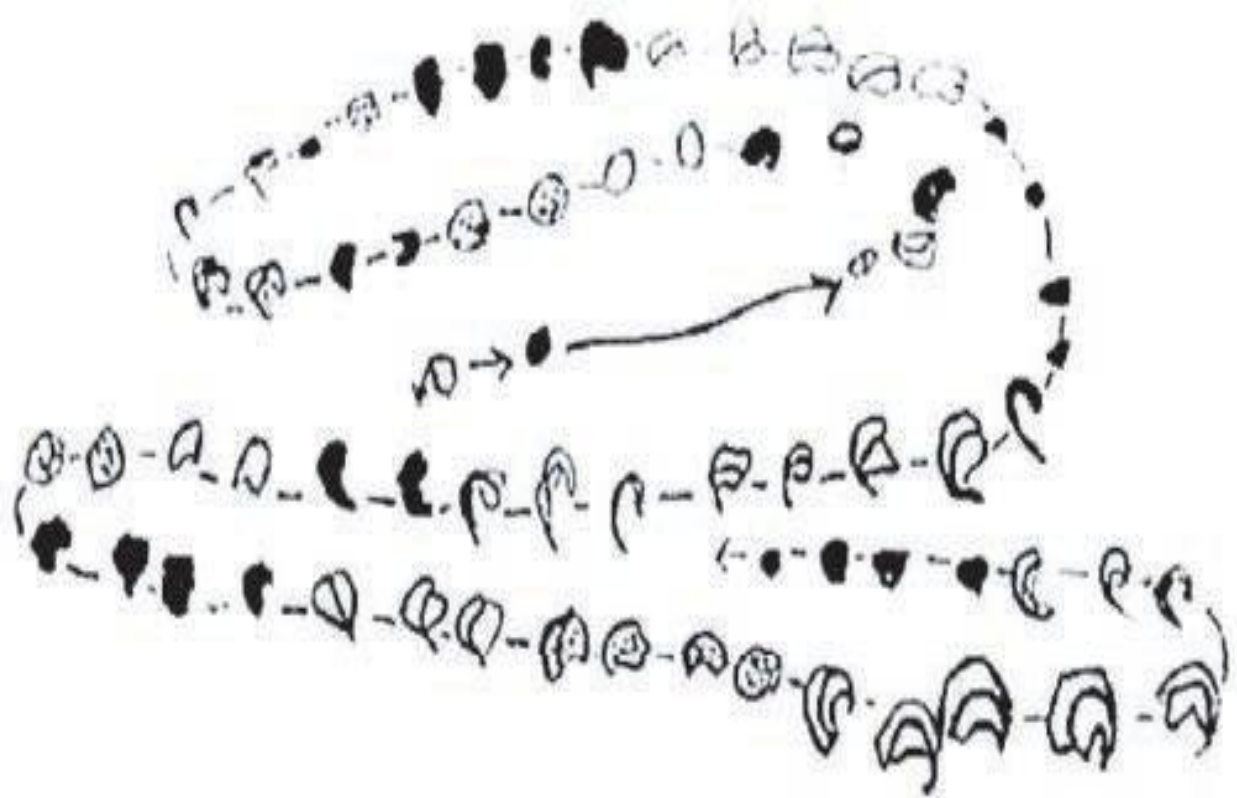






Some learning experiences... for all

- The dawn of the day
- The ebb and flow of the tide
- The opening of a flower
- Strength and fragility
- Conformity and protest
- Permanence and transience



“To us the sun appears to be the largest and brightest of the stars, but it is actually the smallest and the faintest. There are many billions of galaxies in the observable universe. Our planet Earth is a puny object in a violent, unbelievably vast and expanding universe, yet it has remained hospitable to life at least three and a half billion years. Our very existence is a consequence of stability of the sun, which has been burning long enough to allow life to evolve and flourish on our planet. Recently scientists caught a glimpse of the violence of that great burning star that makes our life possible. It is that violent and blazing star whose light and heat comes to us from ninety-three million miles away that makes it possible for us to sit comfortably in our homes thinking about it all... (continued)

“That act of thought is almost as great a miracle as the universe itself. We are a submicroscopic dot in a tiny corner of a small galaxy in a universe containing billions of galaxies, but in us the universe has become conscious, has started thinking about itself. The sun is not thinking about itself as it burns; the universe is not thinking about, is not conscious of itself as it explodes through space; but we are. Something is going on in us that is as wonderful and extraordinary as the universe itself.”

Richard Holloway

The Creation Story

An ingenious narrative compresses the age of the planet into the six days of the Biblical creation story (David Brower).

In this scenario Earth is created on Sunday at midnight. Life in the form of the first bacterial cells appears on Tuesday morning around 8:00am. For the next two and half days the microcosm evolves, and by Thursday at midnight it is fully established. On Friday around 4:00pm, the microorganisms invent sexual reproduction, and on Saturday, the last day of creation, all the visible forms of life evolve.

Around 1:30am on Saturday the first marine animals are formed, and by 9:30am the first plants come ashore. At 10 minutes before five in the afternoon the great reptiles appear, roam the earth in lush tropical forests for five hours and then suddenly die around 9:45pm.

Shortly before 10:00pm some tree-dwelling mammals in the tropics evolve into the first primates; an hour later some of those evolve into monkeys. Around 11:40pm the great apes appear.

Eight minutes before midnight the first Southern apes stand up and walk on two legs. The first human species, *Homo habilis*, appears four minutes before midnight, evolves into *Homo erectus* half a minute later and into archaic forms *Homo sapiens* 30 seconds before midnight.

The modern human species finally appears in Africa 11 seconds before midnight, and in Europe five seconds before midnight. Written human history begins around two-thirds of a second before midnight.

Fritjof Capra, *The Web of Life*, 1996

The Descent of Man

Studies in genetics suggest that the split with the Great Apes occurred seven million years ago. At twenty years to a generation that is three hundred and fifty thousand generations ago. In all that time the genetic structure of humans has come to differ from the Great Apes by less than 2%.

Three hundred and fifty thousand generations is, at a minute a generation, equivalent to the number of minutes we are, on average, awake for in a year.

Before the Dawn: Recovering the lost history of our ancestors. Nicholas Wade

To MEANDER... To follow a winding course; to wander aimlessly.

A MEANDER (geographic term)... A bend in a winding river, resulting from helicoidal flow.

HELICOIDAL... A movement of water like a corkscrew, eroding from one side, and building up on the other; a natural process of adjusting to constantly changing conditions.

The Danish Nobel winning Physicist, Neils Bohr, understood this as he remonstrated with a PhD student... “You’re not thinking, you’re just being logical”.

HELICOIDAL THINKING ... is dynamic; instantly reacting to changing circumstances. Over hundreds of thousands of generations the human brain has come to work in such a natural, dynamic, meandering way.

So this lecture will, for very good reasons, be a “meander”... taking ideas from one place and building them up in another in response to changing circumstances, and creating new meaning.

“Learning about Human Learning” - The emergence of a new Synthesis

Drawn from several disciplines

- 1) Philosophy, and later pedagogy
- 2) Evolutionary Theory
- 3) Psychology (Behaviourism)
- 4) Cognitive Science (Metacognition)
- 5) Neurobiology
- 6) Evolutionary Psychology
- 7) Values (philosophy, purpose); Nature via Nurture

Nature via Nurture

Genes are designed to take their cues from nurture. To appreciate what has happened, you will have to abandon cherished notions and open your mind. You will have to enter a world where your genes are not puppet masters pulling the strings of your behaviour, but are puppets at the mercy of your behaviour, a world where instinct is not the opposite of learning, where environmental influences are sometimes less reversible than genetic ones, and where nature is designed for nurture... the human brain is built for nurture.

Matt Ridley

Nature via Nurture 2003

Our bodies and minds are not of recent origin. They are the direct consequence of millions of years of surviving in Africa and adapting to the dramatic changes this continent has seen in the course of the last five million years. The way we interact today at a social and cultural level is in many ways the result of organisational skills developed by our hominid ancestors in Africa over millions of years.

Cradle of Humankind

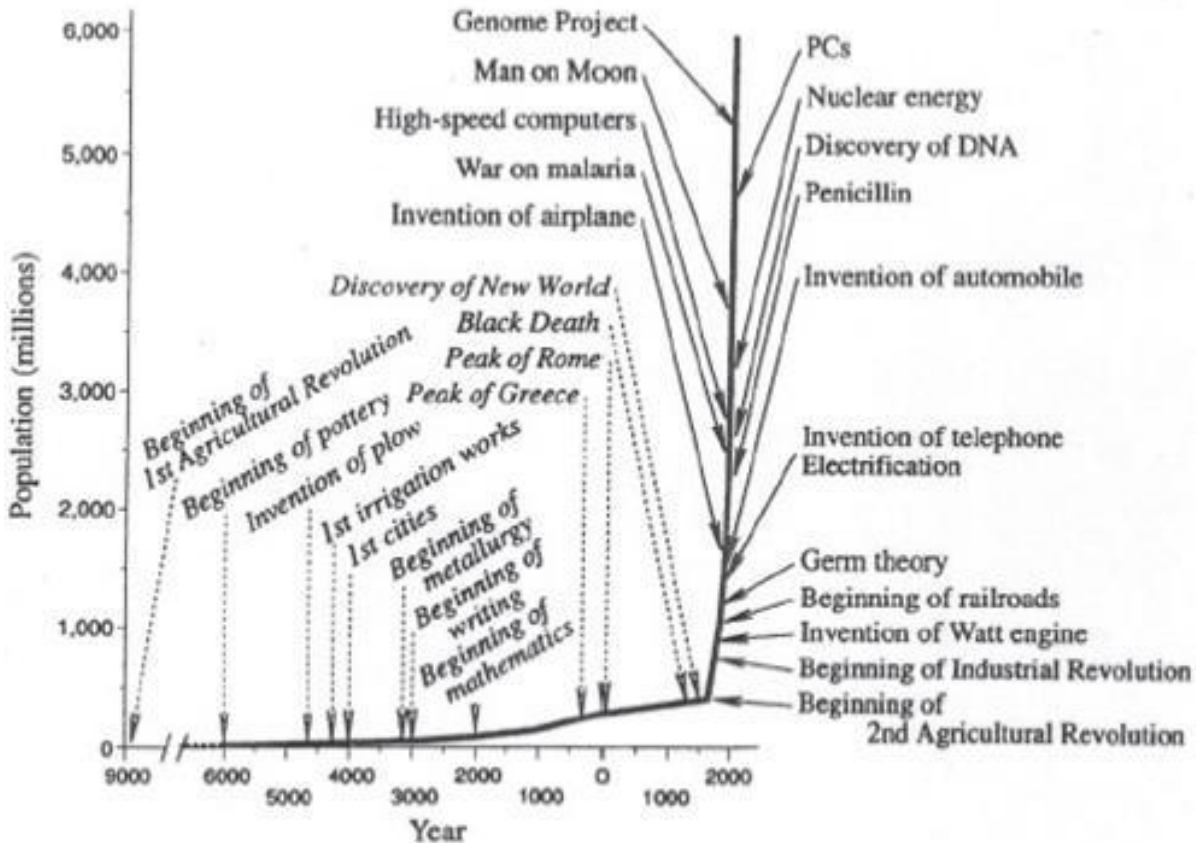
Lee R. Berger South Africa, 2002

“You can take Man out of the Stone Age, but you can’t take the Stone Age out of Man.”

Harvard Business Review, August 1998

A Short Walk through Economic History

TECHNOLOGICAL CHANGE, CULTURAL TRANSFORMATIONS, AND POLITICAL CRISES



Evolutionary Intelligence

"Human beings, together with all their likes and dislikes, their senses and sensibilities, did not fall ready-made from the sky; nor were they born with minds and bodies that bare no imprint of the history of their species. Many of our **abilities** and **susceptibilities** are specific adaptations to ancient environmental problems, rather than separate manifestations of a general intelligence for all Seasons."

John D. Barrow
The Artful Universe, 1996

Tell me, and I forget;
show me, and I remember;
let me do and I understand.

To remain a pupil is to
serve your teacher badly.

Friedrich Nietzsche
1844-1900

Education is what remains
after you have forgotten
everything you ever learnt
in school

“Classes are boring, ‘cos we don’t have to think about what we are doing. We’re just told to copy stuff down off the board or from what the teacher tells us. It makes us lazy... in fact, sorry to say this, but it’s you teachers who make us lazy.”

I learned most not from those
who taught me but from those
who talked with me.

St. Augustine
6th Century

Learning and schooling
are not synonymous

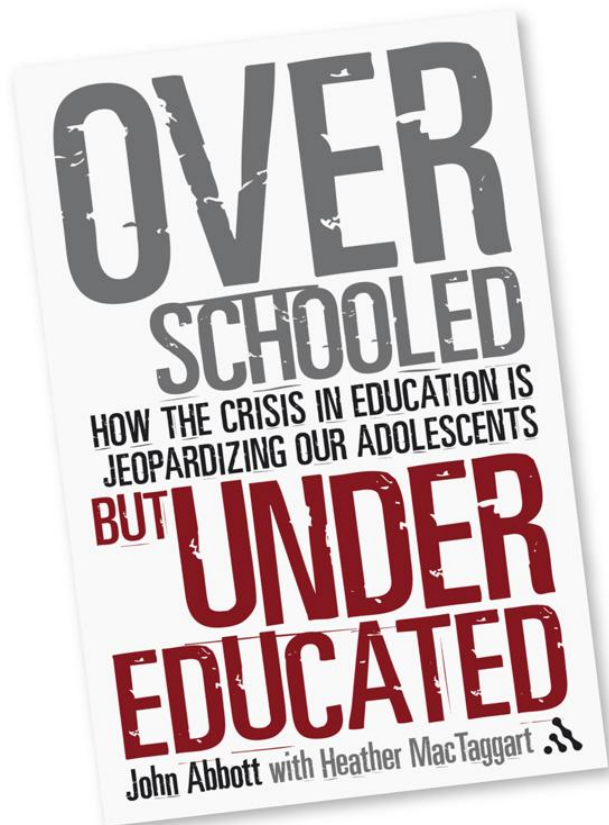
Traditionally, Education has often been likened to a three-legged stool, which will always adjust to the most uneven surface (unlike a four-legged chair)

The Home (Emotions)

The Community (Inspiration)

The School (Intellectual)

Progressively, however, modern society has attempted to define Education as Schooling and has defined schools as having a similar three parts — Academic, Socialisation and Control



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“Peter Puget and Adolescence” and this lecture can be downloaded as pdf files from the website

As they grow the children are increasingly looking to us to help them shape the future





Separate slides to be used for discussion purposes follow...

The factory, rather than a moral, learning community, is the inspiration for traditional models of learning. When the factory was touted as the ideal organisation for work and when most youngsters were headed for its assembly lines, making a mass public education system conform to the model of the factory may have seemed like a great achievement.

The limitations of such a traditional factory model of education have become manifest and they are crippling. The traditional model of schooling is incompatible with the idea that students are workers, that learning must be active, and that children learn in different ways and at different rates.

Dr Albert Shanker, formerly President, American Federation of Teachers

By the time children reach the age of formal schooling, they have forged elaborate learning skills and their minds are prodigiously complex repositories of knowledge.

Unfortunately the education system – based as it is on outdated, incorrect, over-simplified psychological principles – all too often collides catastrophically with children’s natural learning skills, teaches them to mistrust and repress those innate skills, and moves countless numbers of children through 15,000 hours of systematic training in learning not to learn.

Schooling

Silvia Farnham-Diggory

If we change our representation of intelligence, learning and teaching... We change relationships between students and teachers, schools and the community... And our representation of what the classroom and schools should look like. To push for change without continuing to deepen our understanding of what we are doing will only intensify the problems we seek to solve.

Schools for thought

John Bruer

Princeton, New Jersey

This township believes in functional literacy, that is the ability to be conformable with all the changes in a rapidly evolving society.

Comfort depends on mastering the skills of learning, and knowing that it is the individual's responsibility to develop this for a further 70 years or more. It depends on four key skills:

**the ability to think,
to communicate,
to collaborate,
and to make decisions**

So, Now...

Formal schooling, therefore, has to start a dynamic process through which students are progressively weaned from their dependence on teachers and institutions, and given the confidence to manage their own learning, collaborating with colleagues as appropriate, and using a range of resources and learning situations.

The challenge now is for communities to begin building new organisations for learning that handle both the skills of the past and enable the understanding and coordination of constant change, life-long learning, diversity and complexity so as to prepare young people to participate in a vibrant and democratic civil society.

"Much to my surprise I can't really fault your theory. You are probably educationally right; certainly your argument is ethically correct.

But the system you're arguing for would require very good teachers. We're not convinced that there will ever be enough good teachers. So, instead, we're going for a teacher-proof system of organising schools - that way we can get a uniform standard."

Verbatim report of conclusions of presentation
made to the Prime Minister's Policy Unit, Westminster
March 1996

Home, School and Community

"No curricular overhaul, no instructional innovation, no change in school organization, no toughening of standards, no rethinking of teacher training or compensation will succeed if students do not come to school interested in, and committed to, learning..."

We need to look, not simply at what goes on inside the classroom, but at students' lives outside the school's walls."

Laurence Steinberg, 1997

It has been the lack of real understanding about education and learning amongst teachers that has allowed successive governments to bully the profession. Teachers undoubtedly need to understand the theory of learning. Deprived of a real understanding of both pedagogy and policy they are simply parroting the latest curriculum directives.

The most crucial location in space and time (apart from the big bang itself) could be here and now. I think the odds are no better than fifty-fifty that our present civilisation on Earth will survive to the end of the present century... What happens here on Earth, in this century, could conceivably make the difference between a near eternity filled with ever more complex and subtle forms of life and one filled with nothing but base matter.

Sir Martin Rees, President of the Royal Society 2003

*"The biggest crisis we are facing is a **Crisis of Meaning**. The tremendous social changes of the last 100 years have stripped modern society of that which gives us meaning be it in our roots to our ancestors, religions, spirituality, our relationship to nature...*

Within this Crisis of Meaning our young people are facing a MORAL crisis - a crisis of values. Without these anchors young people no longer understand the value of perseverance, learning for learning's sake etc.

Instead our daily lives are filled with a pursuit of money and temporary ecstasy. Both of these goals are unfulfillable and result in a misguided frenzy in the pursuit of the next thrill, or in depression."

Dr Rolando Jubis, Jakarta, 2000

“If civilisation is to survive it must live on the interest, not the capital, of nature. Ecological markers suggest that in the early 1960’s, humans were using 70% of nature’s yearly output; by the early 1980’s we’d reached 100%; and in 1999 we were at 125%.”

Ronald Wright
A Short History of Progress 2004

So remember this:

We have not inherited this world from our parents. We have been loaned it by our children.

Native American Tradition



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