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

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Supporting documentation for this discussion can be downloaded from the Initiative’s
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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
My heart leaps up when I behold
A rainbow in the sky:
So was it when my life began;
So is it now I am a man;
So be it when I shall grow old,
Or let me die!

The Child is father of the Man;
And I could wish my days to be
Bound each to each by natural piety.

William Wordsworth, 1770 — 1850
I learned most not from those who taught me but from those who talked with me.

St. Augustine
6th Century
You’re not thinking,
You’re just being logical

Neils Bohr
Danish Nobel Winning Physicist
Oh God, oh my God, how I suffered. What torments and humiliations I experienced. I was told that because I was a mere boy I had to obey my teachers in everything. I was sent to school. I did not understand what I was taught, and was beaten for my ignorance. I never found out what use my education was supposed to be.
“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.”

15-year-old girl
At The Learning Partnership Conference
Halton, Toronto
30th September 2004
Education is what remains after you have forgotten everything you ever learnt in school.
Tell me, and I forget; show me, and I remember; let me do and I understand.

Chinese Proverb
To remain a pupil is to serve your teacher badly.

Friedrich Nietzsche
1844-1900
“You can take Man out of the Stone Age, but you can’t take the Stone Age out of Man.”

Nigel Nicholson, Harvard Business Review
July / August 1998

e.g. The Stirkfontein Caves, the Kalahari Bushmen and the Hadza
Your Ancestry
on the basis of a generation being 25 years

1990   You    (first generation)
1965   Your    2 parents
1940   Your    4 grandparents
1915   Your    8 great grandparents
1890   Your    16 great-great grandparents

And so on

6th generation 1865 = 32 ancestors; 1840 = 64 ancestors;
1815 = 128; 1790 = 256; 1765 = 512; 1740 = 1,024;
1715 = 2,048 and 1690 = 4,096 (13th generation)
“Learning is a consequence of thinking”
Diagram
A bone pressure plaque from Blanchard
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. Africa has shaped not only our physical bodies, but the societies within which we live. 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*
Brett Hilton-Barber and Lee R. Berger,
South Africa, 2002
Pregnancy and the Developing Brain

"There is no period of parenthood with a more direct and formative effect on a child's brain, than the nine months of pregnancy leading to the birth of a full term baby. The mother's emotions affect the foetus, and so do her general habits and the parent's physical environment. (Probably) half of birth defects are due to avoidable exposure to medicinal drugs, recreational drugs, alcohol, tobacco smoke, and toxic agents at work and at home."

Marian Diamond
The Magic Trees of the Mind, 1998
"We have unequivocal evidence that breast-fed children are physically stronger than nonbreast-fed children, that they have greater verbal, quantitative, and memory abilities as preschoolers and significantly higher I.Q. scores during their school years. This is due not simply to healthy substances in the milk, as many assume, but also to the early mother-child relationship that breast-feeding implies."

Karl Zinsmesiter,
The American Enterprise, May/June 1998
Mechanisation? Big Brother?

"Almost three hundred American employers, including Aetna, Eastman Kodak, Cigna and Home Depot, now offer "Lactation Support Rooms" where female employees can now take regular breaks to attach electric pumps to their breasts in order to collect milk in bottles for their infants in day care. Some companies, aside from the 'pumping rooms', have "lactation consultants" to help mothers solve breast-feeding problems."

Original quotation in “There's No Place Like Work” by Brian Robertson, and re-quoted in “Nasty, Brutish and Short”, an article by Richard Lowry in National Review, May 2001
“Why Love Matters: How Affection shapes a baby’s brain”

“Our earliest experiences are not simply laid down as memories or influences, they are translated into precise physiological patters of response in the brain that then set the neurological rules for how we deal with our feelings and those of other people for the rest of our lives. It’s not nature or nurture, but both. How we are treated as babies and toddlers determines the way in which what we’re born with turns into what we are.”

Sue Gerhardt 2004
"Edelman's model of our brain as a rich, layered, messy, unplanned jungle eco-system is especially intriguing, however, because it suggests that a jungle-like brain might thrive best in a jungle-like classroom that includes many sensory, cultural, and problem " layers that are closely related to the real world environment in which we live - the environment that best stimulates the neural networks that are genetically tuned to it."

A Celebration of Neurons
Robert Sylwester, June 1995
GRAPH 2: INTELLECTUAL WEANING BASED ON NORMAL HUMAN DEVELOPMENT

Autonomy

Primary education
Secondary education
Tertiary education

Predispositions

Dependency
"For the first time in history, there is a growing trend for more and more middle and upper-middle class parents to farm out the care of their babies to others, often in settings not conducive to meeting children's irreducible needs... The impact will likely be slow and insidious. People may gradually become more self-centered and less concerned with others. Thinking may become more polarized ... Impulsive behavior, helplessness, and depression may increase."

Infants weaned on T.V. cannot “concentrate”

Commenting on the research by Dr. Dimitri Christakis of the Children’s Hospital in Seattle on the impact of T.V. on young children, the Guardian stated; “Children under two should not watch television because it increases the risk of them developing attention deficit disorders.” Quoting the Journal of Paediatrics, “Watching too much television increased the child’s likelihood of being unable to pay attention in school. For every hour of T.V. watched daily by children at ages 1 to 3 the risk of attention problems at age 7 increases by nearly 10%.

(Current estimates in the US suggest that between 4 and 12% of youngsters suffer from ADHD. At present three-year-olds in the US watch an average of 3.6 hours of TV a day)

Seattle Times 5th April 2004
The Guardian 6th April 2004
Adolescence

Adolescence is currently seen as a "problem" in Western Society; that excess of hormones leaves the rapidly maturing child unaware of its new physical strength, and confused as to how to direct it. While modern parents and teachers find adolescence disruptive, earlier cultures directed this energy in ways that developed those skills on which the community was dependent for its ongoing survival. In doing so it also ensured that young people learned, and practiced, what was seen as appropriate social behavior.
Crazy by Design

We have suspected that there is something going on in the brain of the adolescent, apparently involuntarily, that is forcing apart the child/parent relationship. What neurologists are discovering challenges the conventional belief held until only a year or so ago, that brain formation is largely completed by the age of twelve. Adolescence is a period of profound structural change, in fact “the changes taking place in the brain during adolescence are so profound, they may rival early childhood as a critical period of development”, wrote Barbara Strauch in 2003. “The teenage brain, far from being ready-made, undergoes a period of surprisingly complex and crucial development.” The adolescent brain, she suggests, “is crazy by design.”
Adolescence

From the earliest of times the progression from dependent child to autonomous adult has been an issue of critical importance to all societies.

The adolescent brain, being “crazy by design,” is a critical evolutionary adaptation that has built up over countless generations, and is essential to our species’ survival. It is adolescence that drives human development by forcing young people in every generation to think beyond their own self-imposed limitations and exceed their parents’ aspirations. These neurological changes in the young brain as it transforms itself means that adolescents have evolved to be apprentice-like learners, not pupils sitting at desks awaiting instruction.

Youngsters who are empowered as adolescents to take charge of their own futures will make better citizens for the future than did so many of their parents and their grandparents who suffered from being overschooled but undereducated in their own generations.
A Short Walk through Economic History

The graph depicts the growth of world population and some major events in the history of technology.

The Journey of Man: a genetic odyssey

“Today we are in many ways the same Palaeolithic species that left Africa only 2,000 generations ago, with the same drive and foibles”. Spencer Wells (2002)

— There were no modern humans living outside central Africa until at least 60,000 years ago

— Grandmothers (and the menopause) facilitated the learning skills of young children when parents were working

— Our distant ancestors reached India 50,000 years ago, Thailand 40,000 years ago, northern Europe 25,000 years ago and Tierra del Fuego 10,000 years ago.

… They were “travelling” at a speed of about 3 or 4 miles in every generation; life was a constant struggle, but there were always ‘pastures new’ beyond the next mountains. (The oldest remains in Jericho are over 8,500 years old). There were possibly 10 million humans when settled agriculture started 10,000 years ago, 400 million two hundred years ago; there are now 6.5 billion.
Adolescence; a critical Evolutionary Adaptation.

In accepting that the impact of the neurological changes in the teenage brain makes them “crazy by design” it can be seen that adolescence is actually a critical evolutionary adaptation that is essential to our species’ survival. It is an internal mechanism that prevents children from becoming mere clones of their parents. Adolescence is probably a deep-seated biological adaptation that makes it essential for the young to go off, either to war, to hunt, to explore, to colonize, or to make love - in other words, to prove themselves, so as to start a life of their own. As such it is adolescence which forces individuals in every generation to think beyond their own self-imposed limitations, and to exceed their parents’ aspirations.
“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
All Change?

In 2003 oil geologist Kenneth Deffreyes predicted that he was “99% confident” that global oil production would peak in 2004. In August 2004 Texan oil baron T. Boone Pickens announced: “Never again will we pump more than 82 million barrels [a day]”.

George Monbiot, 24th August 2004-08-31

“China’s farmers cannot feed hungry cities,” with grain production falling in every year since 1998 as more agricultural land is used by industry in support of a 9% annual growth in the economy. In the first six months of this year food imports surged 62%, leading to a 30% increase in the future price of grain.

Jonathan Watts in Beijing, 26th August 2004
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.

Taken from: *Our Final Century? A scientist’s warning: how terror, error and environmental disaster threaten Humankind’s future – in this country, on earth, and beyond.*

Sir Martin Rees, 2003
Astronomer Royal and Professor of Astrophysics at Cambridge, 2003
When I consider your heavens,
The work of your fingers,
The moon and the stars,
Which you have set in place.
What is man that you are mindful of him,
The son of man that you care for him?
Yet you have made him little lower than the angels
And crowned him with glory and honour.

Psalm 8: 3-5
We have not inherited this world from our parents. We have been loaned it by our children.

Native American Tradition