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Centennial Collegiate

# Over-schooled but Under-educated: Have we got the balance right?

October 2nd, 2007

Participants at this conference might also be interested in the following two articles published by the 21st Century Learning Initiative:

-  Adolescence: A Critical evolutionary Adaptation
-  When will we ever Learn?

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

Chinese Proverb

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.”



Hitherto we have been considering the uninspired teacher, who works his or her way dully and mechanically through the prescribed curriculum. But teachers may be, and frequently are, charming, intelligent, and persuasive. They may put things well; they may speak in a way that will command attention and awake emotion and enthusiasm; they may have a power of making difficulties seem easy. The child will listen to such teachers and will greatly appreciate them — particularly if he has an examination to pass in the near future. But the more accomplished a teacher is in the art of lecturing or coaching, the worse he is as an educator. Working on the old-fashioned system, the clever teacher (deplorable paradox!) does almost more harm than the stupid one. For the clever schoolmaster makes

things too easy for his pupils; he relieves them of the necessity of finding out things for themselves. **By dint of brilliant teaching he succeeds in almost eliminating the learning process.** He knows how to fill his pupils with ready-made knowledge, which they inevitably forget (since it is not their knowledge and cost them nothing to acquire) as soon as the examination for which it was required is safely passed. The stupid teacher, on the other hand, may be so completely intolerable that the child will perhaps be driven, despairingly and in mere self-defence, to educate himself; in which case the incompetent shepherd will have done, all unwittingly, a great service to his charge, by forcing him into a rebellious intellectual independence.

Aldous Huxley  
*The Dangers of Good Teaching* 1927

## **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

## **Purpose Statement**

The 21st Century Learning Initiative's essential purpose is to facilitate the emergence of new approaches to learning that draw upon a range of insights into the human brain, the functioning of human societies, and learning as a self-organizing activity. We believe this will release human potential in ways that nurture and form democratic communities worldwide, and will help reclaim and sustain a world supportive of human endeavour.

**“Learning about Human Learning” -  
The emergence of a new Synthesis drawn  
from several disciplines**

**1) Philosophy, and later pedagogy**

**2) Evolutionary Theory:**

**a) Body      b) in Mind**

**3) Psychology (Behaviourism):**

Pavlov      Thorndike      Watson      Skinner

**4) Cognitive Science (Metacognition):**

Piaget      Gardener      Chomsky      Bruer

**5) Neurobiology:      Greenfield      Edelman**

**6) Evolutionary Psychology (predispositions):**

Pinker      Mithen      Wright      Wills      Malik      Plotkin

**7) Values (philosophy, purpose); Nature via  
Nurture:**

Senge      Wright      Sperry      Eccles      Wyller  
Zohar and Marshall

## **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 imprints of the history of then-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

## **Six Key Issues:**

1. The biological nature of learning
2. The science of learning and the construction of knowledge
3. From the Free Market, go-go capitalism to globalistic
4. The impact of new technology
5. The nature of home and community and, the over-riding issue
6. Education for what? Battery hens or free range chickens?

## **“Synaptogenesis”**

We know that the human brain is essentially plastic, but it constantly reshapes itself in response to environmental challenges, but that it does this within the blueprint of the species' inherited experience. There are three phases during the normal life cycle when the brain goes through extraordinary periods of internal reorganisation – a kind of mental housekeeping. Experience during each of these phases becomes critical to how the individual brain is reconfigured to deal with the next stage of life.

## 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 no 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

“Thus, learning becomes a delicate but powerful dialogue between genetics and the environments the experience of our species from aeons past interacts with the experiences we have during our lifetime.”

Professor Robert Sylwester  
*A Celebration of neurons*, June 1995

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 breastfed children are physically stronger than nonbreast-fed children, that they have greater verbal, quantitative, and memory abilities as pre-schoolers 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’ brain”**

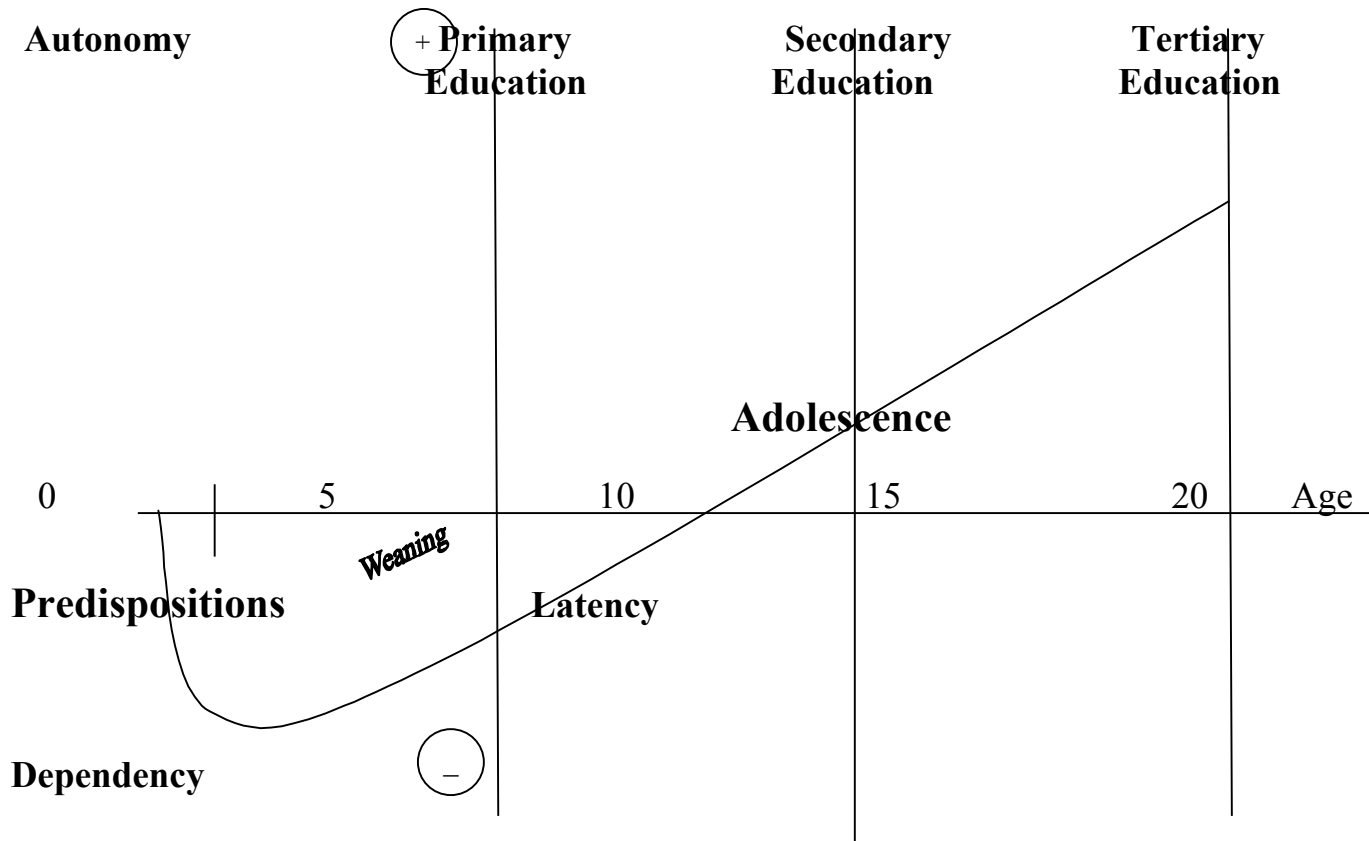
“Our earliest experiences are not simply laid down as memories or influences, they are translated into precise physiological patterns of response in the brain that then set the neurological rules for how we deal with our feelings and those of other people for the rest of our lives. It’s not nature or 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 ecosystem 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**



*"The neural basis of cognitive development: a constructivist manifesto,"*

"As we build networks and patterns of synaptic connections when we are very young, so we build the framework which will 'shape' how we learn as we get older; such 'shaping' will significantly determine what we learn – it will be both an opportunity, and a constraint. The broader and more, diverse the experience when very young, the greater are the chances that, later in life, the individual will be able to handle open, ambiguous, uncertain and novel situations."

Stephen J. Quartz and Terrence Sejnowski  
The Salk Institute,  
San Diego, California.

"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."

Psychiatrist Stanley Greenspan in  
The American Enterprise, May/June 1998

## **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.

## **Are teenagers Necessary?**

Modern society seems to have moved, without skipping a beat, from blaming our parents for the ills of society, to blaming our children.

For most of our history, the labours of young people in their teens was too important to be sacrificed – ‘schooling’ for teenagers remained a minority activity until well into the twentieth century. In fact teenagers can be seen to be an invention of the Machine Age. It was Roosevelt’s solution to the Depression years to take teenagers out of the jobs that could be done by formerly unemployed family men by requiring all early teenagers to attend High School. “But, for very many youngsters, High School, which virtually defines the rise of the teenagers, is hardly an exalted place”.

“The Rise and Fall of the American Teenager”  
Thomas Hine, page 1-9

**Colonial America** was fed by the applied energy of what later became known as Adolescents

“But as soon as the young American begins to approach man’s state, the reins of filial obedience are daily slackened. Master of his thoughts, he soon becomes responsible for his own behavior. In America there is, in truth, no adolescence. At the close of boyhood, he is a man and begins to trace out his own path.”

Alexis de Tocqueville  
*Democracy in America* (1835)

## **Adolescence and Apprenticeship forms of learning**

Thomas Hine writing in 1999 on the rise and fall of the American teenager noted, “the principle reason high schools now enroll nearly all teenagers is that we can’t imagine what else to do with them.” That is a shocking conclusion by a man who spent years studying the issue. Modern society, by being so concerned for the well being of adults tries desperately to ignore the adolescents\_ need to explore and do things for themselves, by giving them ever more to do in school. It is as if modern society is trying to outlaw adolescence by over schooling children. That is not education. There is a frightening manmade hole in the desirable experience for adolescence - there are simply not enough opportunities for them to learn from doing things for themselves in a modern society.

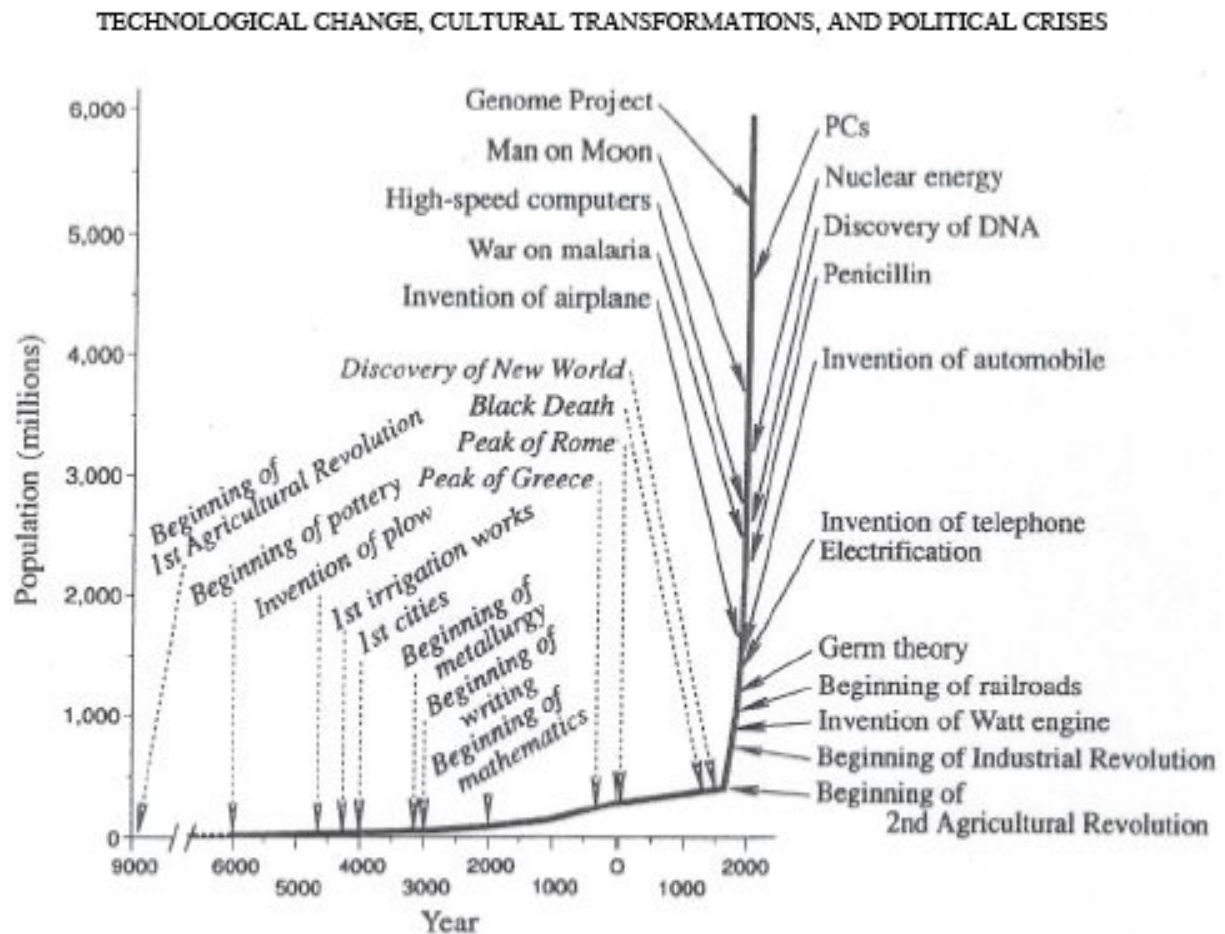
## **Crazy by Design**

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; 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.

## A Short Walk through Economic History



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

The graph comes from Robert William Fogel. *The Fourth Great Awakening & The Future of Egalitarianism*, 2000.

## **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**

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.

Digital Chosun \_ The Chosun Ilbo

## **Alternative Schools Grow Ever More Attractive**

An increasing number of people fed up with the standardized education provided by Korea's public schools are turning to alternative education, licensed or otherwise, which has been proliferating since the mid-1990s. Following explosive growth since 2000, there are now more than 100 alternative schools across the nation.

Prof. Cho Han Hye-jeong of Yonsei University is also the principal of Sungmisan School. "It is natural that a growing number of people who have had enough of the existing entrance exam-oriented school system are coming to think. 'I'd like to spare my children such an education,'" she says. That has meant an end to the prejudice that alternative schools are for misfits and trouble-makers. More and more ordinary students, including the academically gifted, go to alternative schools to pursue an education that values their individuality.

Competition for some of the most popular alternative schools is fierce, with as many as five applicants for every place.

No longer are alternative schools a place where a handful of education-conscious parents send their children. Highly educated and professional parents lead the trend, and the children of academics, teachers, doctors, lawyers and entrepreneurs now make up a substantial proportion of pupils at alternative schools.

(englishnews@chosun.com))

Digital Chosun \_ The Chosun Ilbo

## **Alternative Schools Grow Ever More Attractive**

Prof. Lee Tae-woo of Yeungnam University suggested to his daughter Jingyu, 16, she switch to an alternative school. “I’ve always wondered if children are happy within the boundaries of formal education,” he says. “If children get a standardized education like battery chickens, they can’t develop their own personalities and thus make themselves unhappy.”

Supreme Court Justice Kim Young-ran and lawyer Kang Ji-won also sent their daughters to alternative school. “We got an intellectual education in the formal education system, but I’m often skeptical if the education enriched our lives,” Kang says.

As the number of alternative schools has mushroomed, legislators earlier this year passed a bill aimed to absorb the alternative programs into the framework of the formal education system. When a related executive decree goes into force next year, the number of state-approved schools, currently at 25, is expected to rise sharply.

Dr. Chung Yeon-sun of the Seoul Alternative Learning Community Network says, “Given the current situation, where public education has been degraded to a system incapable of bringing any intellectual or emotional stimulus to students, we should expand and diversify alternative education programs so they can in turn change our public education.”

(englishnews@chosun.com)

# Cognitive Apprenticeship

1. Modeling
2. Scaffolding
3. Fading
4. Discussion

...a way of "going beyond what comes naturally". A form of intellectual weaning, that balances the rate of physical maturation.

## Upside Down and Inside Out

A possible description of the assumption we have inherited about systems of learning, namely, that older students should be taken more seriously than younger students and that the only learning that really matters is that which is formal. This presentation will call for these assumptions to be reversed in the light of modern understanding about how humans learn.

# INTELLECTUAL WEANING

("Do it yourself")

## SUBSIDIARITY:

It is wrong for a superior body to retain the right to make decisions than an inferior body is already able to make for itself.

"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 organizing schools - that way we can get a uniform standard."

Verbatim report of conclusions of  
presentation made to the Policy Unit at  
Downing Street in March 1996

# Pilgrim, or Customer?

## **“Dark Age Ahead”**

Jane Jacobs 2004

Cultures collapse when “mass amnesia” causes an entire population to lose a sense of what created and actually maintains their culture. Jacobs argues that, in Western society, there are five jeopardized “pillars.”

- Community and family
- Higher education and the cult of the academic specialist
- The practice of science and its relationship to quality of life
- The relationship of structures of government to human possibilities
- The debasing of intellectuals

“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

“We are not blind! We are men and women with eyes and brains... and we don’t have to be driven hither and thither by the blind workings of The Market, or of History, or of Progress, or of any other abstraction.”

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

Native American Tradition

## For further information:

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