

Pulling Us Back From The Brink – Economics? Science? Religion?



The Growth Delusion

Dr. Bob Lloyd

Dr Bob Lloyd is from Australia, he came to New Zealand in 2002 after having worked for the Australian Co-operative Research Centre for Renewable Energy (ACRE), based at Murdoch University in Perth. He has also worked on renewable energy systems in China and the Pacific Islands and taught at the University of the South Pacific in Fiji. His current research interests at Otago University, where he is the Director of Energy Studies and Associate Professor in the Physics Department, lie in energy conservation in residential housing and energy management including world energy resources and peak oil. His PhD from Flinders University in South Australia was completed in the field of experimental atomic physics.

The Growth Delusion:

What role has faith in the lack of civilisation's preparation for the future ?

Bob Lloyd

First the predicament

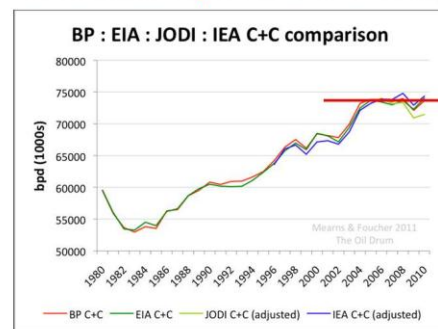
- The world's physical resources, especially energy are reaching limits
- The existing biosphere is degrading
- Many people in fragile and marginal environments are doomed: they are already dying
- Resource wars are dooming more people
- Many species are doomed: they are currently becoming extinct at an alarming rate
- Many freshwater supplies are degrading
- Fertile soils are degrading
- Our economic system and world's fixation on growth, wealth and GDP are doomed: they cannot survive a declining world energy supply

Physical Resources reaching limits (Energy)

- **Fossil fuels**
 - Oil
 - Coal
 - Gas
- **Nuclear**
- **Renewables can they save us?**

Oil data to June 2011

Oil consumption is flat lining



Oil Drum 2011

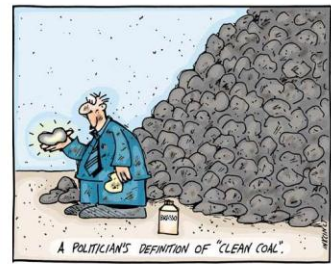
IEA on Peak Oil 28th April 2011



- **Fatih Birol - Chief Economist IEA interviewed on Australian Television recently**



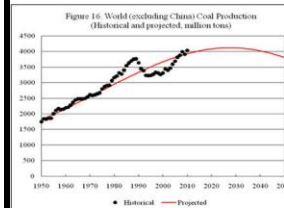
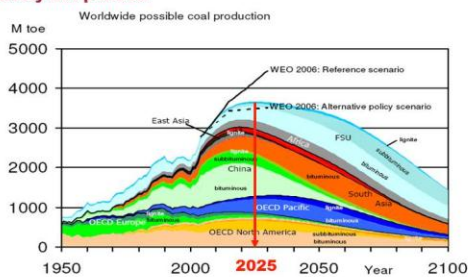
What about coal?



There must be lots of coal everyone says so !

But coal reserve data is old and dated

A similar analysis to peak oil analysis was carried out by the German "Energy Watch Group" and they found peak coal could come as early as 2025 :albeit with a relatively flat plateau



More realistic study by Minqi Li University of Utah Predicts peak coal for China AND the ROW by 2027
– Oil Drum July 2011

What about Climate change?



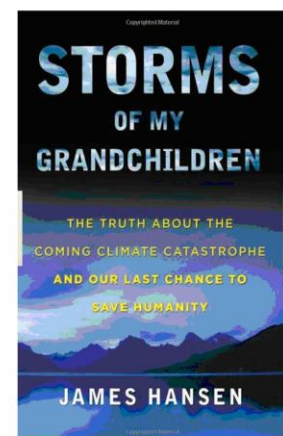
The earth is warming and the culprit is CO₂

Climate Change

Current June 2011 CO₂ is 393.7 ppm

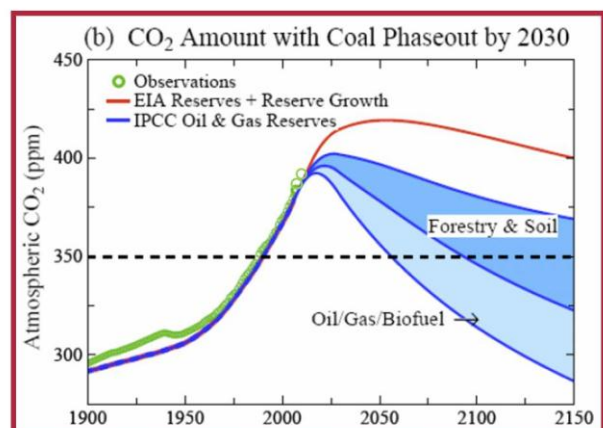
Safe levels 450ppm CO₂ IPCC

Jim Hansen 350 ppm CO₂



According to Jim Hansen the safe level of CO₂ of 350 ppm is possible only if ...

1. **No coal used after 2030**
All coal emissions halted in 19 years
2. **No Unconventional Fossil Fuels**
Tar sands, Oil shale, Methane hydrates
3. **Only conventional oil used**
NO Polar regions, Deep ocean, Pristine land, No deep ocean oil off NZ



- **Tipping points and runaway climate change once temperatures rise by more than 2° C**



Back to energy: What about Nuclear?

(Presently 6% of world energy supply from around 450 reactors)



Maybe not

What about Renewables ?



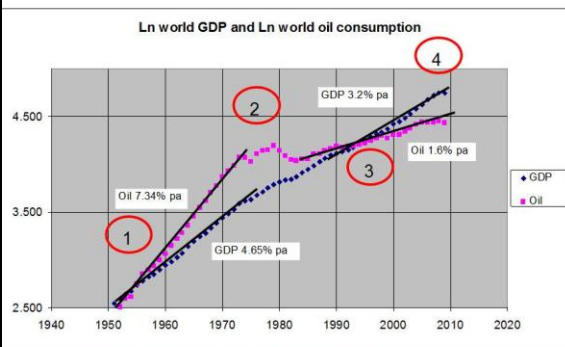
"It makes sense [to put] in place renewable alternatives as quickly as possible, as the longer we wait the more it will cost and the more difficult it will be ..."

Dr Bob Lloyd, page 114

Energy and the economy Is oil money ?

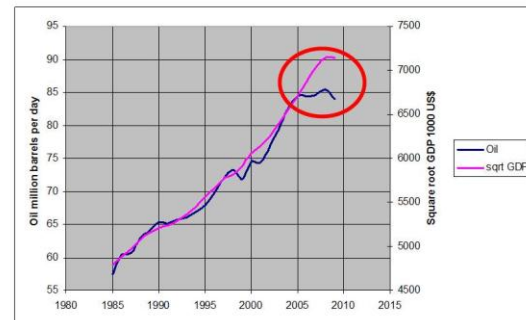


History of oil and world GDP



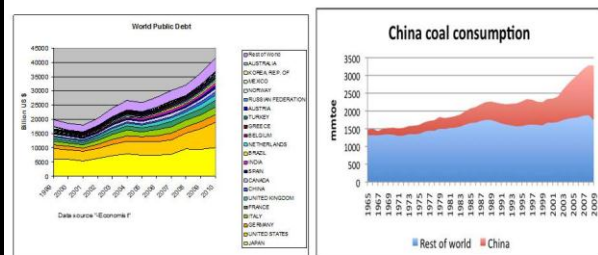
GDP Data from Angus Maddison in constant US \$

Oil consumption is closely linked to world GDP

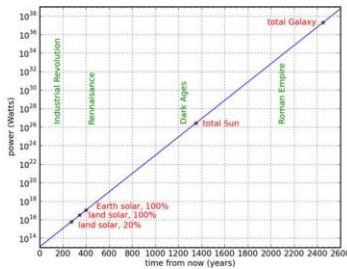


**Does this mean
a decoupling of GDP
from Oil consumption ??**

World Debt and Coal consumption increasing



BUT continuous growth is physically impossible – 2.3% pa increase in energy use leads to the following:



Tom Murphy Oil Drum **Madness Murphy exclaims!**

WHY WHY?

Why have we let the world get to a situation whereby the inertia of the global system will make mitigation of these problems, in time to avert an energy decline or environmental catastrophe, difficult or impossible?

My Answers

- **A tragedy of the commons where corporate interests take precedence over community interests**
 - *See “The commons revisited the tragedy continues”*
- **Because peak oil and climate change are taken as a threat to economic growth**
 - *And economic growth is an axiom of our economic system and is defended with religious zeal*

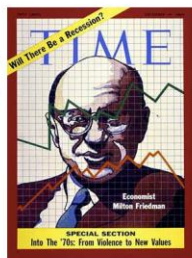
Growth wins

- Proponents of non-growth have been mercilessly attacked by the proponents of growth over the last two decades and have essentially been outcast and marginalised.
- It has been difficult (until now!) to suggest anything other than growth as a solution to world problems eg “Washington Consensus”
- A word has even been invented for never ending growth “sustainable development”
- We must develop sustainably- said often enough it becomes almost believable

In the Developed world

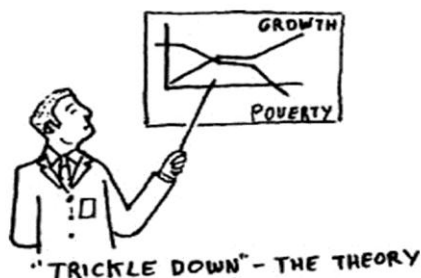
- The relatively recent idea of unlimited economic growth originated from the corporate imperative for profits that arose out of the industrial revolution.
- The industrial revolution was able to deliver growth due to cheap energy and improving technology
- Growth was given legitimacy by the free market economists
- Milton Friedman was the driving force from the 1970s “the social responsibility of business is to increase its profits”

See The Shock Doctrine by Naomi Klein



Give me more

Growth will help the poor by creating wealth for all



However!



In December 2010, the FAO food price index rose above its 2008 peak.

In the Developing world

- Growth is seen as an ethical argument
- The developed countries have done it now its our turn
- If you are in poverty, any further increase in population, means if the economy doesn't grow many will likely die.



Cheap Oil



Spindletop 1901

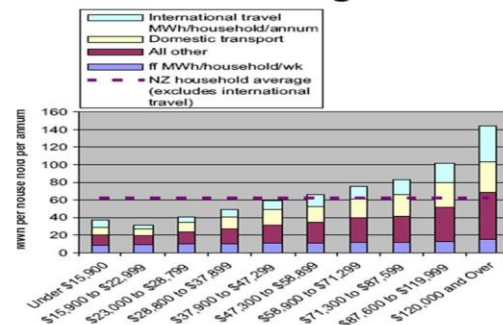
- One of the reasons for the fabulous growth of the 20 C has been possible is OIL. Oil and the other fossil fuels have powered growth mostly because of the generous EROEI for such fuels (estimated at around 35:1 for the current mix of world oil supply) – Charles Hall et al

Indefinite growth

- It seems obvious from a physical perspective that growth cannot occur indefinitely in any bounded system
- Yet growth is not seen as a limiting factor by much of society today
- We all seem to want growth Why ?



Economic Growth is not sustainable because it implies more resource usage



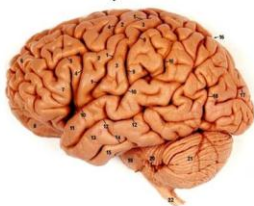
BUT Economic growth does not imply an increase in wellbeing

- See *Growth Illusion*, Richard Douthwaite
- *Affluenza, Growth Fetish*, Clive Hamilton
- *The Upside of Down*, Thomas Homer Dixon
- *Transition to a Sustainable Society*, Ted Trainer
- *NZ Treasury Report* May 2011

How has the belief in something so seemingly irrational and dangerous as unlimited growth in a finite world happened?

Corporate marketing and corporate vested interests have certainly helped but why have people accepted such nonsense?

Why have we all been seduced into wanting economic growth, more possessions, a higher status, etc ??



Maybe an answer can be found in the human brain

Evolution

- The human brain evolved in the times of the Pleistocene and earlier
- When we were hunter gatherers
- There is considerable evidence to suggest that the way the brain works is not conducive to coping with modern day problems
 - (Heinen and Low 2007). Ornstein and Ehrlich (1989) Cosmides et al 1992

The modular brain

- According to Paul Maclean
When the human brain evolved
it developed in several stages:
the Triune Brain

- Reptilian brain – earliest structure -responsible for much of our instincts our “gut feelings”
- Mammalian brain - emotions
- Homosapiens brain - cerebral cortex intelligence



Koestler

- Arthur Koester (remember him) suggested that this structure has lead to considerable dysfunction in present day humans

“The most striking indication of the pathology of our species is the contrast between its unique technological achievements and its equally unique incompetence in the conduct of its social affairs.”

(Koestler 1978)

“WHY?”



- Because different parts of the brain are responsible for each of these tasks and the parts may not talk to each other very well.
- They seem to be ring fenced from each other
- A bit like Thomas Kuhn’s paradigms ring fencing scientific theories
- Catton “Overshoot” and Homer Dixon “The Upside of Down” both talk of mind bubbles

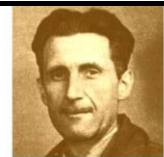
Erich Fromm

- The Sane Society (1956)
- Questioned if a whole society can be sick
- Rejected sociological relativism
- Conclusion: society circa 1950s was insane because of its focus on economic production rather than well being
- Gave pointers to the future along the lines of eco-socialism

Triune theory discredited

- In recent years developmental psychology and brain research has realised that the brain did not evolve as a sequence of separate organs
- Nevertheless many researchers still think that the brain does seem to be divided into functional entities whereby “higher” thinking is carried out in regions separate to survival functions. (Pinker 2002, Pinker 1997, Rose 2003, Ridley 2003, Mithen 1996, Gardner 1983).
- Call it - modules, bubbles, paradigms or faith based ideas

Orwell



- There is a good case to suggest that a modular brain structure can allow “cognitive dissonance” and allow different parts of the brain to believe distinctly separate truths- Koestler’s contemporary George Orwell called it “doublethink” in his novel “1984”
- “Sustainable Development” said often enough, becomes believable

Faith, religion and science

- If humans had no faith in anything it is highly likely that they could not survive
- We have to have faith that the sun will rise in the morning as otherwise we could not plan our future existence
- Our faith is mostly based on historical experience
- Faith in scientific theories is akin to Kuhn’s paradigms

- Scientists generally have great faith in their theoretical structures
- Occasionally crisis occur and the faith is shattered - examples Copernicus, Newton, Darwin, Einstein, QM
- Then a scientific revolution occurs
- Popper suggested what identifies science is that scientific theories must be able to be falsified ie there must be a mechanism by which the faith in the theory can be shattered

- Because of the modular structure of the brain faith often becomes an obsession, the belief, idea or theory etc becomes ring fenced and the believer refuses to accept any alternative --- despite the evidence
- In many cases religious beliefs fall into this category.
- Sometimes this also happens in science
- But in addition many religious beliefs cannot be falsified

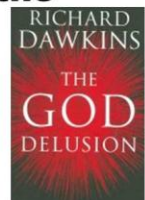
Back in 1949 Hubbert on the human condition talked of a “cultural lag”

“in view of the rapidity with which the transition to our present state has occurred it is not surprising that such a cultural lag should exist and that we should continue to react to the fundamentally simple physical chemical and biological needs of our social complex with the sacred-cow behaviour patterns of our pre-scientific past.”

Interpreted

- Homo sapiens has not had the time to evolve to be able to cope with the long term intensely scientific problems posed by resource depletion and global warming
- Faith in the past cannot take into account novel futures
- In this respect Hubbert pre-empted the evolutionary psychologists by quite a few decades

Evidence for a growth module in the brain parallels the evidence for a religious module in the brain



Success of religion: from Dawkins “The God Delusion”

- Indoctrination at an early age
- Exclusivity
- Evolution leading to a genetic predisposition
- Memetic predisposition
- Powerful vested interests

Combine a modular brain with a genetically inherited tendency towards accumulation of wealth and you may have a “growth/status module” in the brain

- This idea has been taken on board by the marketing industry of late

Neuromarketing



- From “Marketing to the Reptilian Brain” Forbes magazine July 2006
- “In a three-way battle between the cortical, the limbic (home of emotion) and the reptilian areas, the reptilian always wins, because survival comes first. When you tap into the reptilian brain, you learn what a product means to a consumer at its most fundamental level.”

Branding

- By marketing a popular brand you can “OWN a part of the customer’s brain”



And Children

- To complete the triune brain story, neuromarketing is now targeting children, as they have been found to be particularly susceptible to this form of marketing –
- Nice undeveloped, receptive reptilian brains here.



Success of the Growth Paradigm/Module

- Indoctrination at an early age
- Exclusivity: read any economics text newspaper
- Evolution leading to a genetic predisposition
- Memetic predisposition
- Powerful vested interests

It appears to me that:

- Our ability to solve complex problems such as climate change and peak oil may be compromised by the structure of our brain - not allowing us to mitigate in a rational manner
- Our recent belief in Growth parallels our longer term belief in Religion – they may tap into the same areas of the brain
- Growth suits big business and through neuro-marketing this gives another level of reinforcement
- In addition growth is needed by people in the third world for just for survival

And an irony

- When growth stops –
- And it must stop eventually – perhaps sooner than later
- The final struggle for resources are likely to advantage those of us who are predisposed towards a reptilian brain solution. Those of us with inherited resources (Boone and Kessler) and a strong survival instinct (McLean).
- Not necessarily those who saw it coming

Summary: Why we want growth and are not ready for peak oil and climate change

- Indoctrination- advertising, marketing propaganda
- Exclusivity – corporate moves to ensure that free market thinking is axiomatic
- An evolutionary predisposition towards growth (a growth module in the brain)
- A modular brain which also allows a good deal of faith based obsession

I think the question we have to answer is: Do we have too much faith: faith in existing institutions'

- Faith in governments, the media, neuromarketing, the global advertising machine, the war machine, the growth economy and faith that the mindless pursuit of more wealth and the accumulation of ever more stuff will give us happiness?
- Maybe a healthy scepticism would be more useful for future survival

Questions and discussion

