

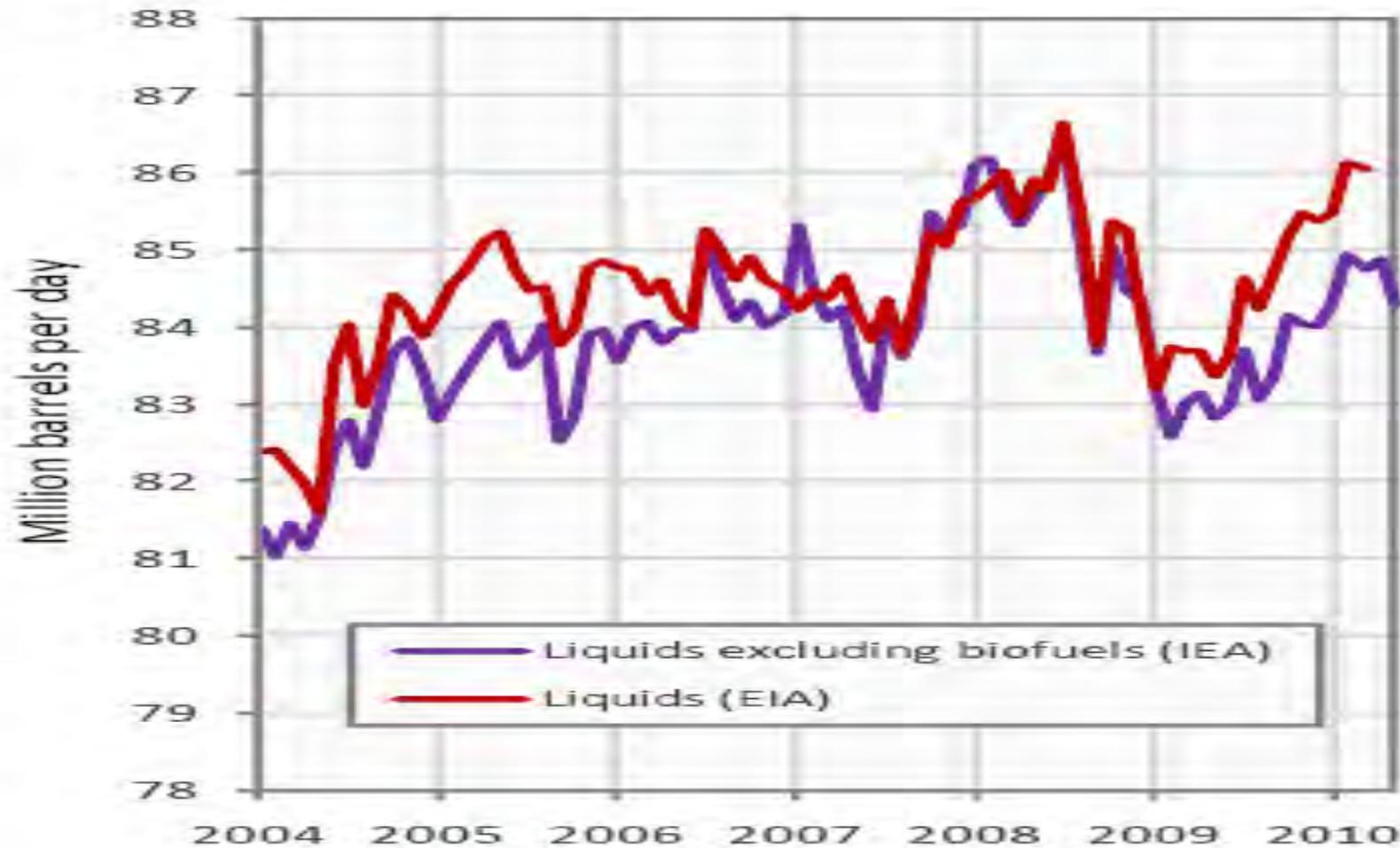
The Growth Delusion:

**Why we are not
ready for peak oil
(and climate
change)?**

Bob Lloyd

Oil data to June 2010

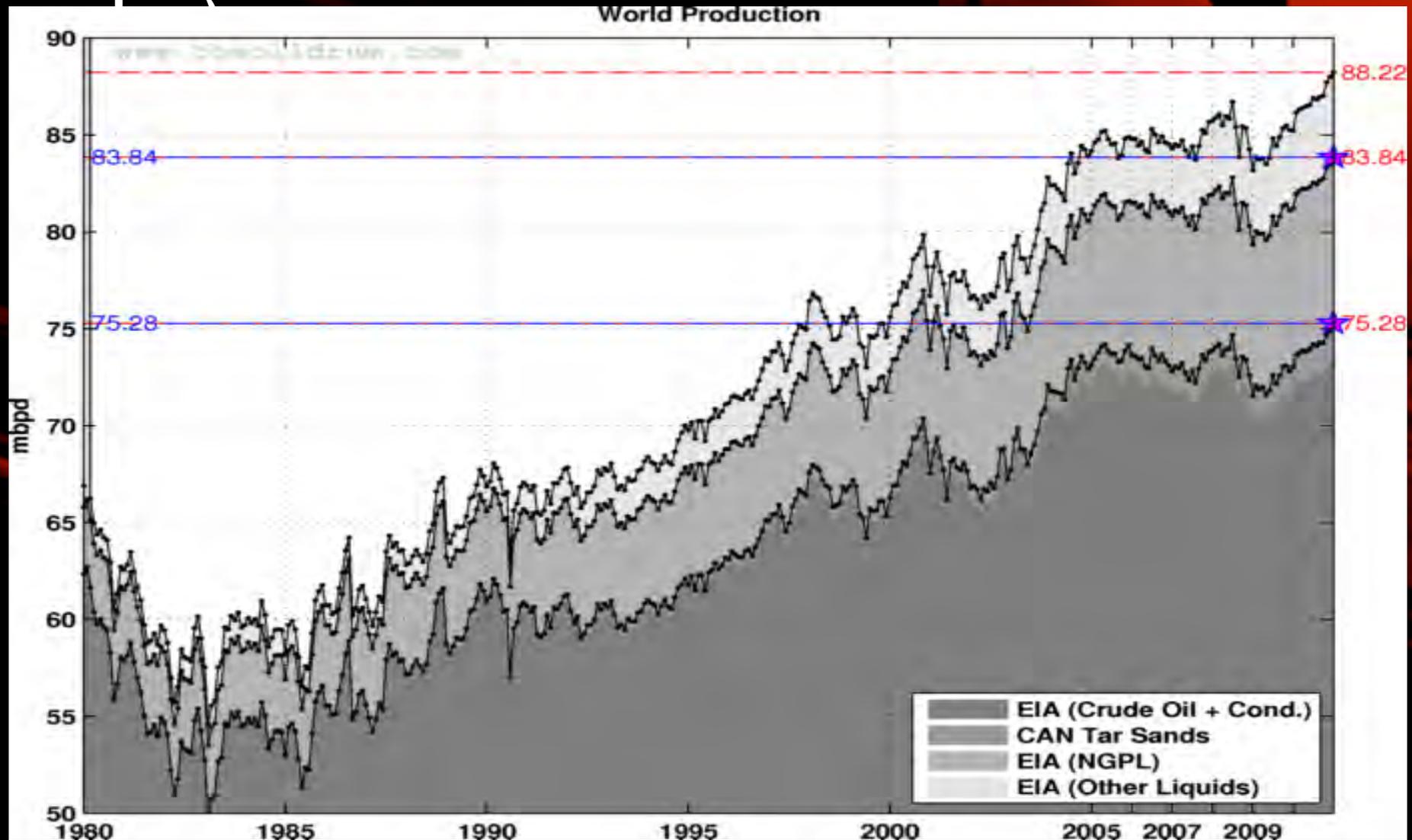
Oil consumption is flat lining



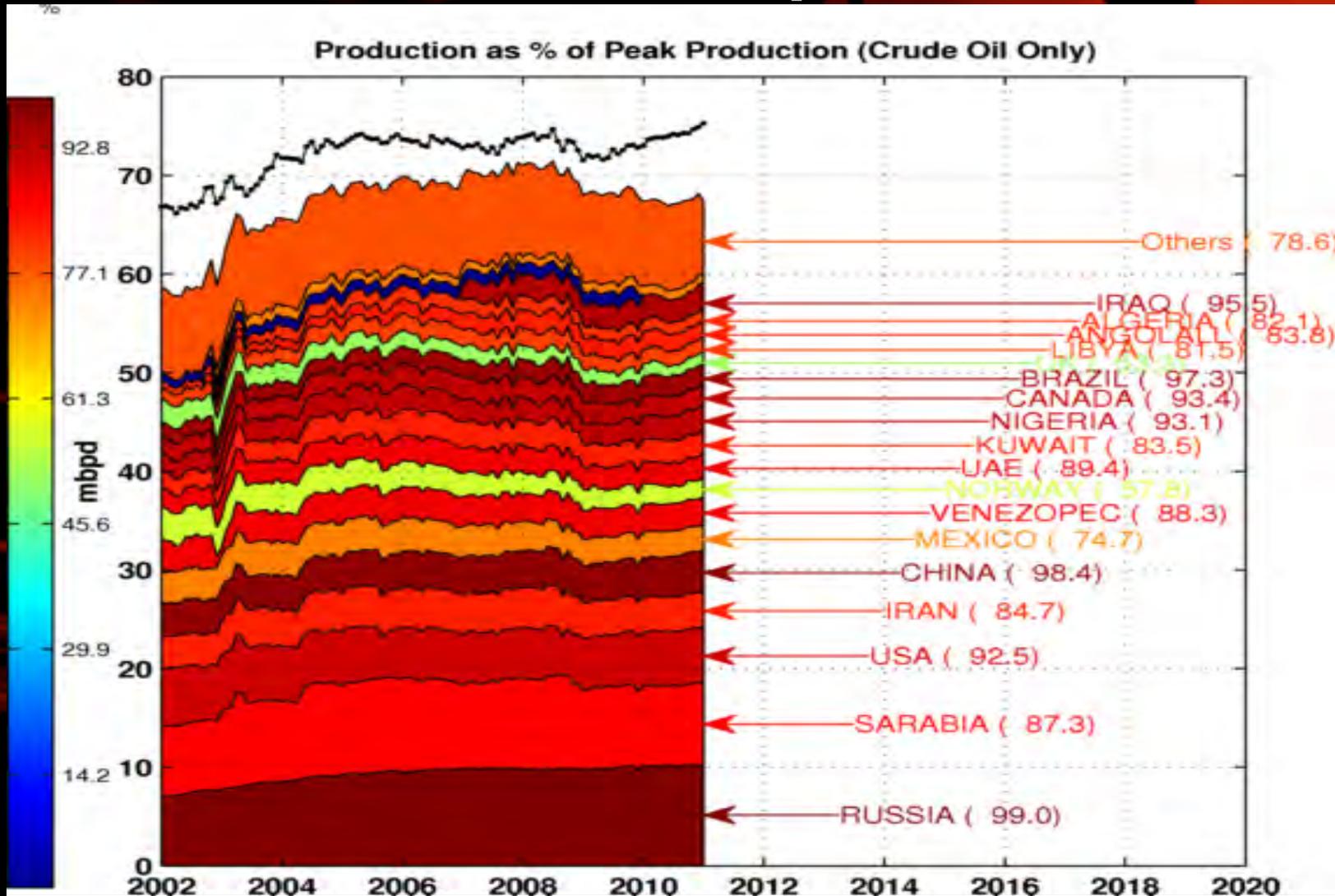
Source: Energy Information Administration

What has happened since last year?

(Sam Foucher oil



Jodi database (90% of world production)



JODI

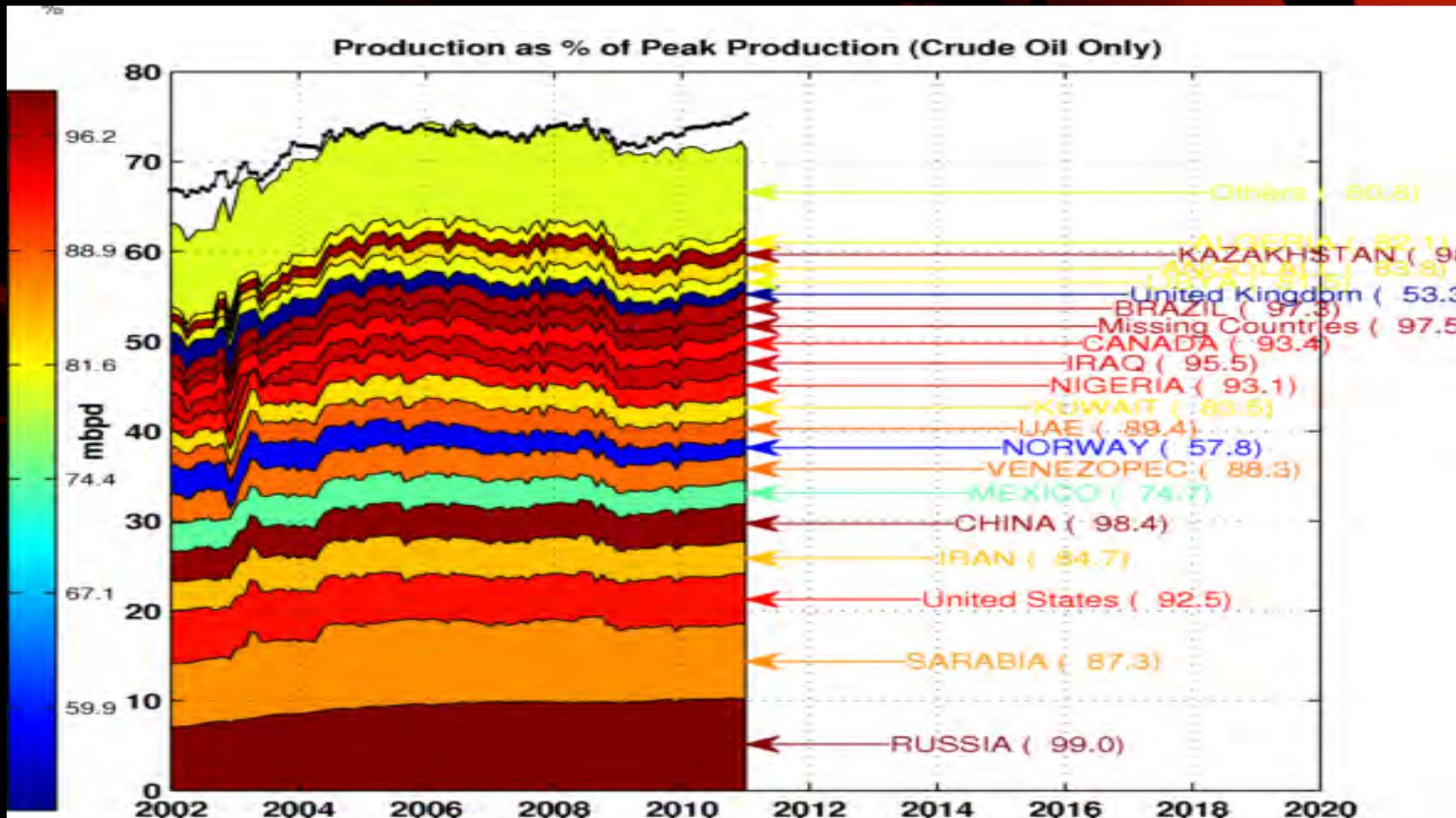


- **Joint Organisations Data Initiative- started oil database in 2001 but not released until 2005**

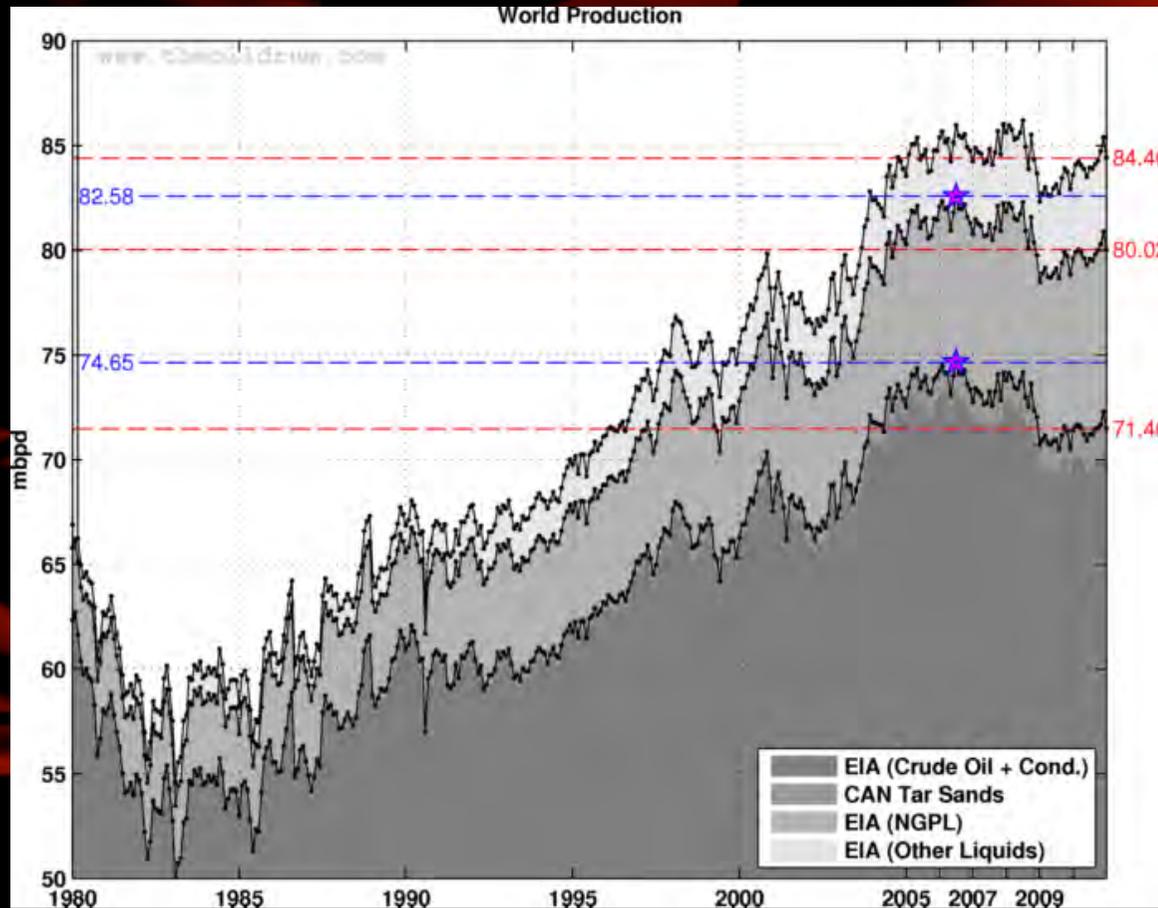


King Abdullah of Saudi Arabia releasing the JODI World Database, 19 November 2005, Riyadh, Saudi Arabia

Jodi - adding missing data



Reconstruction of total liquids supply based on crude from JODI data



What is happening?

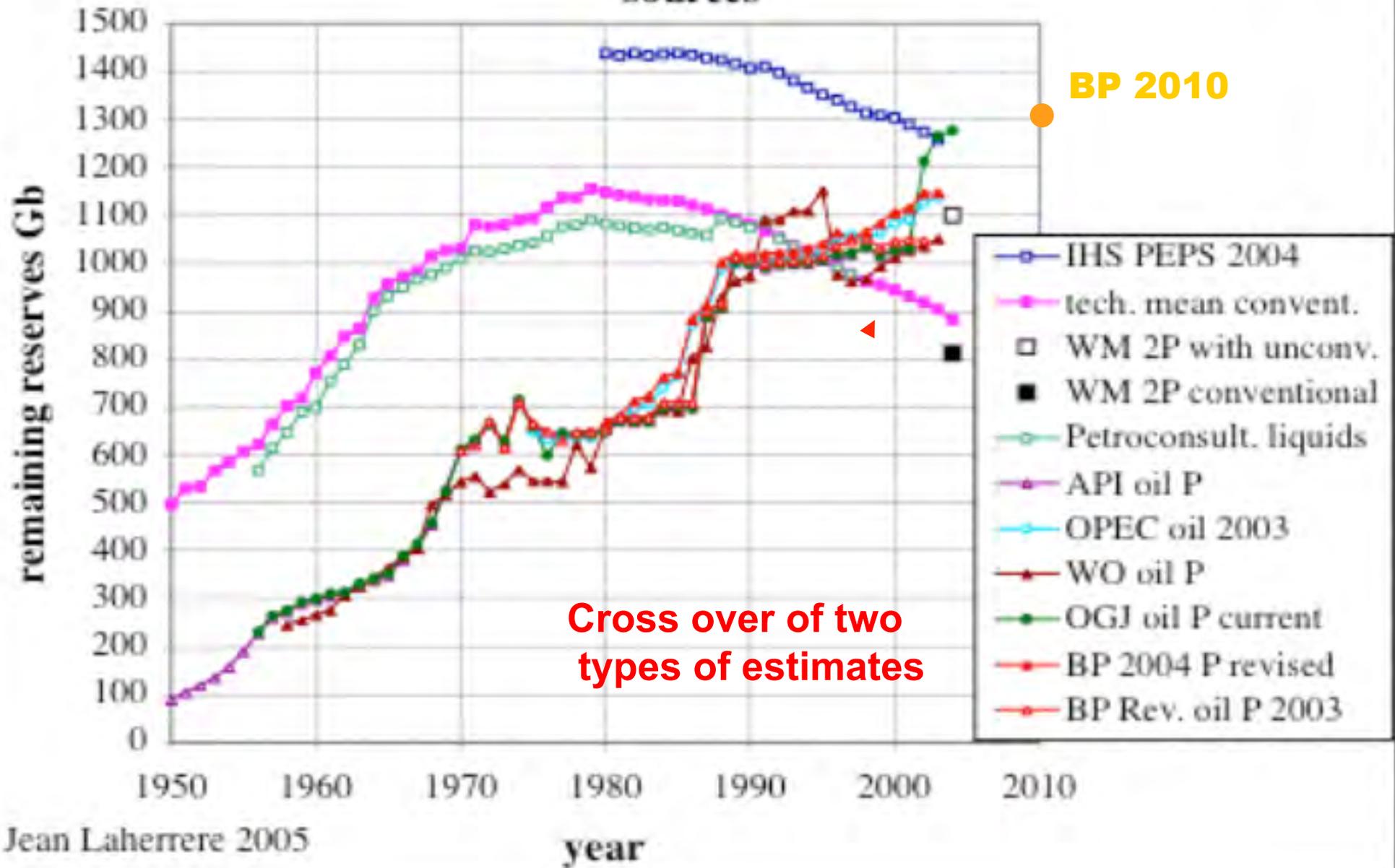
- **The Unlike the IEA the EIA does not actually collect the production data they use data from IHS**

- **Who is IHS?**



- **“IHS is a global information company with world-class experts in the pivotal areas shaping today’s business landscape: energy, economics, geopolitical risk, sustainability and supply chain management. We employ more than 4,500 people in more than 30 countries around the world.**”

World remaining oil reserves from political and technical sources



- 
- **In addition IHS owns CERA
Cambridge Energy Research
Associates: founded by Daniel
Yergin**
 - **Yergin is the arch opposition of peak
oil groups and has been
pronouncing no peak or an extended
plateau for many years**

IEA Oil market report

12th April 2011



- **World total oil supply dipped to 88.3 mbd in March 2011**
- **This is close to the 88.12 suggested by the uncorrected EIA data !!**
- **BP Stats 2011 gives 87.4 million barrels per day**
- **IEA April 2011**



Also from the IEA May 2011

- **Prospect of limiting the global increase in temperature to 2°C is getting bleaker**
- ***CO₂ emissions reached a record high in 2010; 80% of projected 2020 emissions from the power sector are already locked in***

UK Govt report obtained under FOIA June 2011

The Impacts of Peak Oil

... peak oil's effects on the economy would not be limited to higher oil prices – there could be a number of other potentially significant impacts on the economy ...



In exploring the potential impact of peak-oil on the UK we need to consider both the *direct and indirect impact* on the UK economy resulting from changes in oil prices and supply pressures as well as the *short term versus the long term impacts*.

The short term versus the long term impacts are outlined below. If we consider the direct and indirect impacts, the direct impacts are more likely to be channelled through economic variables such as inflation, output, current account of balance of payments and tax revenues, whereas the indirect impact will arise as a result of economic and political reactions of other countries' to changes in the oil price and supply pressures.



Immediate impacts

- Transfer of income from importing to exporting countries
- Deterioration in balance of payments for net oil importers

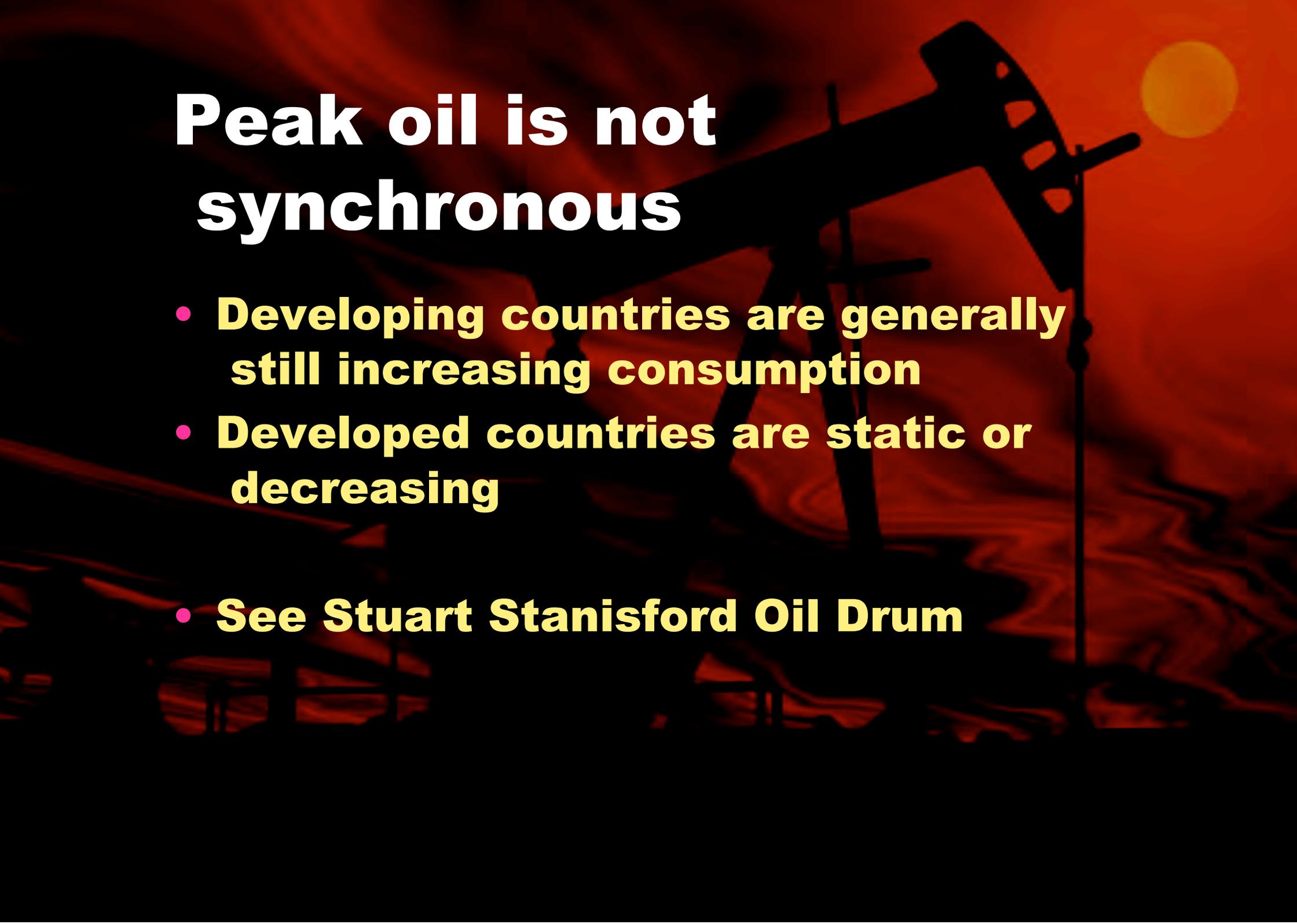
Short- & medium-term impacts

- Higher inflation
- Increased input costs (transport, industry)
- Reduced non-oil demand (because of higher prices for goods)
- Potentially reduced oil demand and consumption
- Lower investment in net oil-importing countries
- Upward pressure on wages
- Higher unemployment
- Consumer and business confidence falls
- Downward pressure on GDP
- Tax revenues fall
- Falling exports due to economic impacts in our main export markets

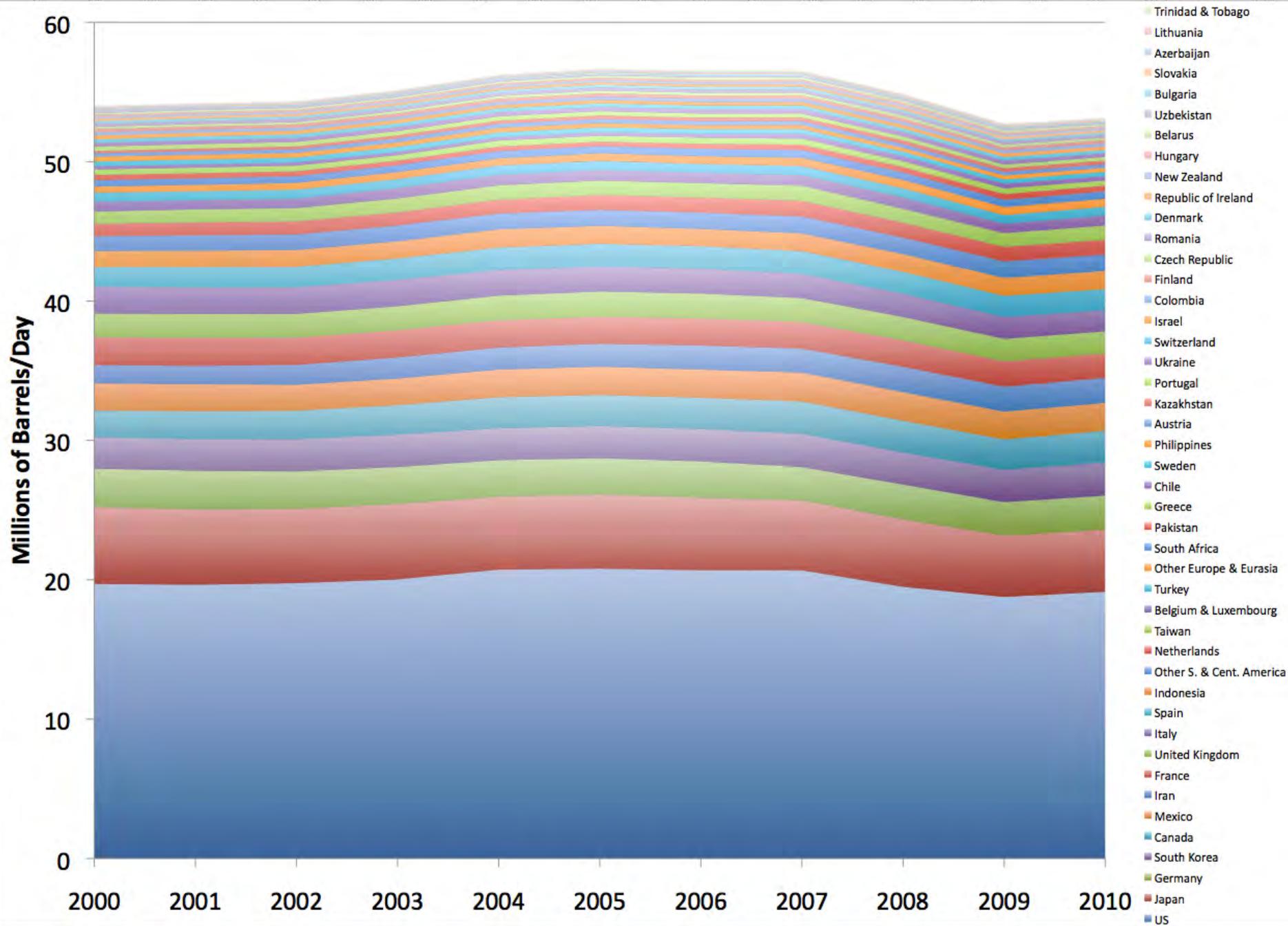
Other possible impacts

- Social unrest
- Resource nationalism
- Increased geopolitical competition for resources/supplies possibly leading to an increase in long-term supply contracts
- Greater emphasis of security of supply over climate change objectives

Peak oil is not synchronous

The background of the slide features a silhouette of an oil pumpjack against a vibrant sunset sky. The sun is a bright yellow circle in the upper right corner, and the sky transitions from orange to red. The pumpjack is a large, dark structure with a long arm extending upwards and a vertical post. The overall scene is dark and atmospheric.

- **Developing countries are generally still increasing consumption**
- **Developed countries are static or decreasing**
- **See Stuart Staniford Oil Drum**



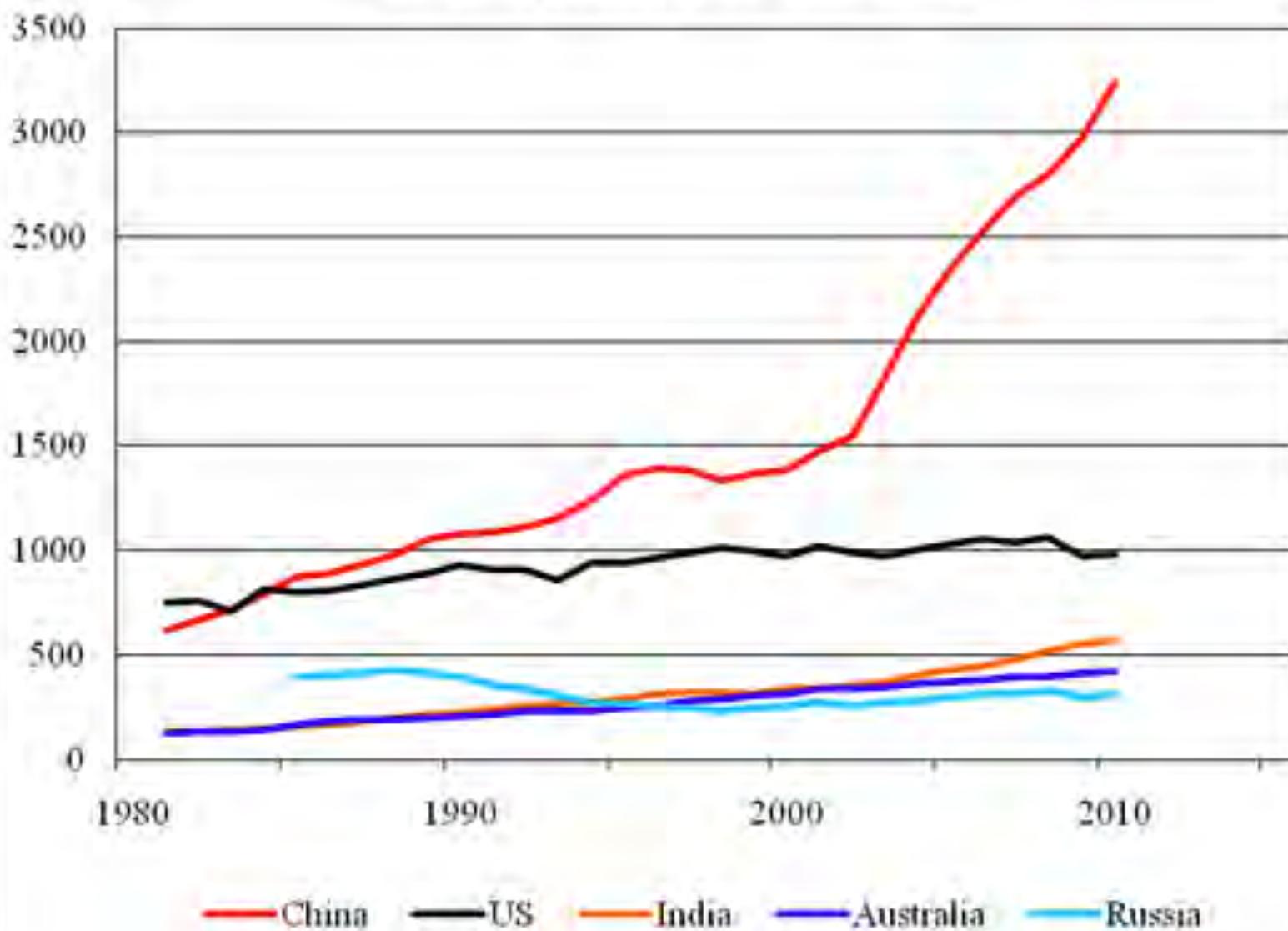
NZ Oil consumption BP Statistics 2011

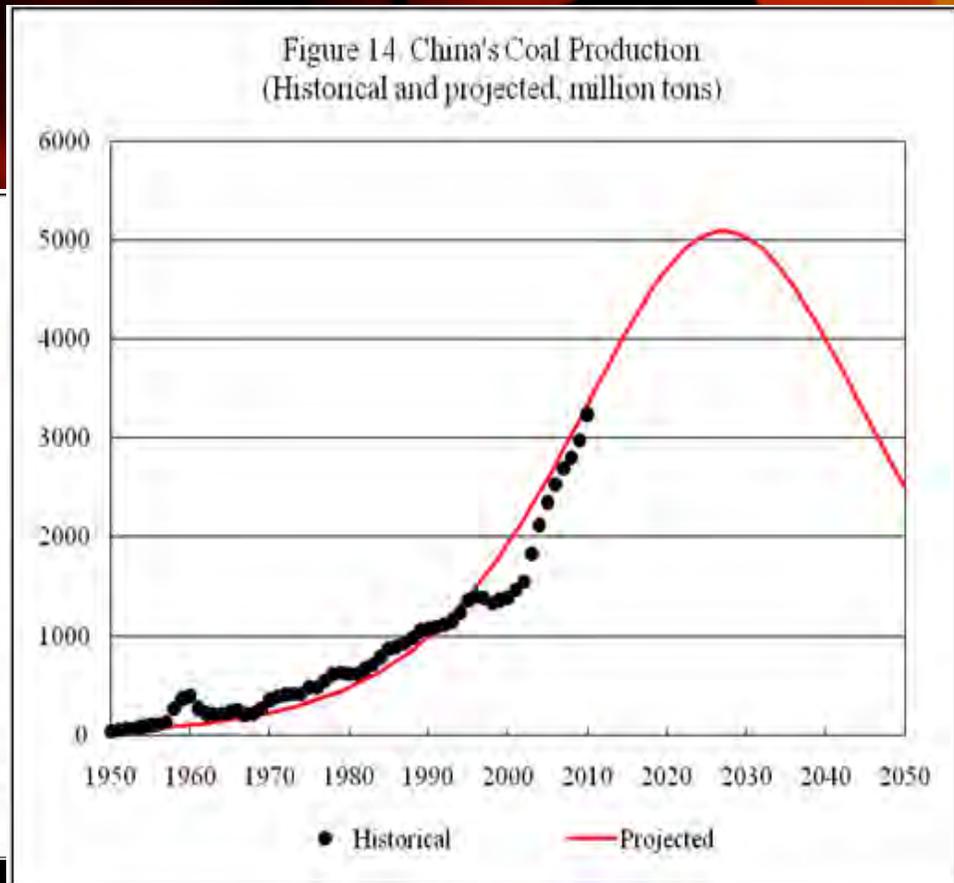
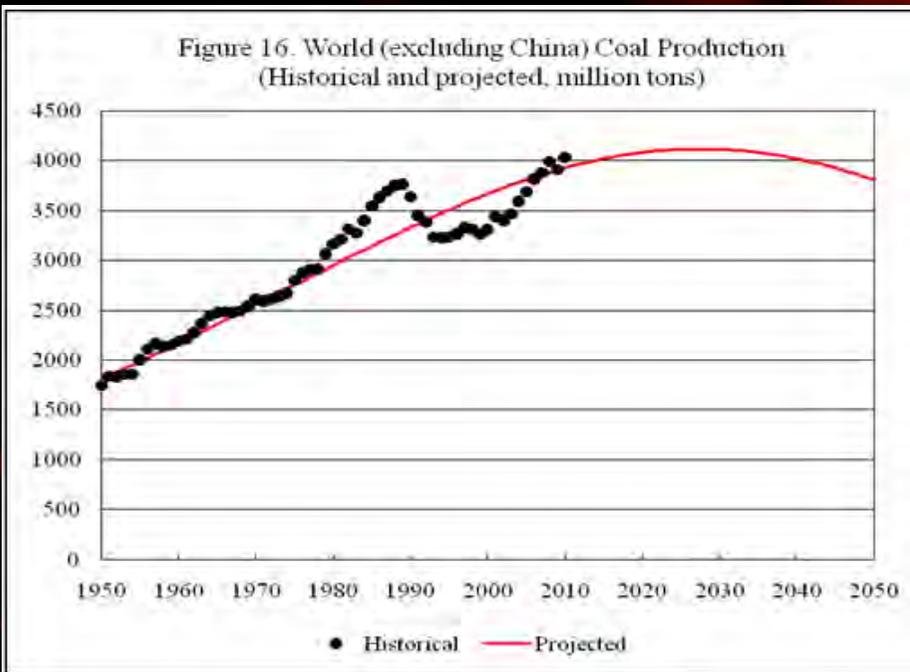


Conclusion

- **Peak oil is here and peak gas and coal are likely to follow within a few decades**
- **Plus climate change !!**

Figure 11. World's Largest Coal Producers, 1981-2010
(Annual production, million tons)



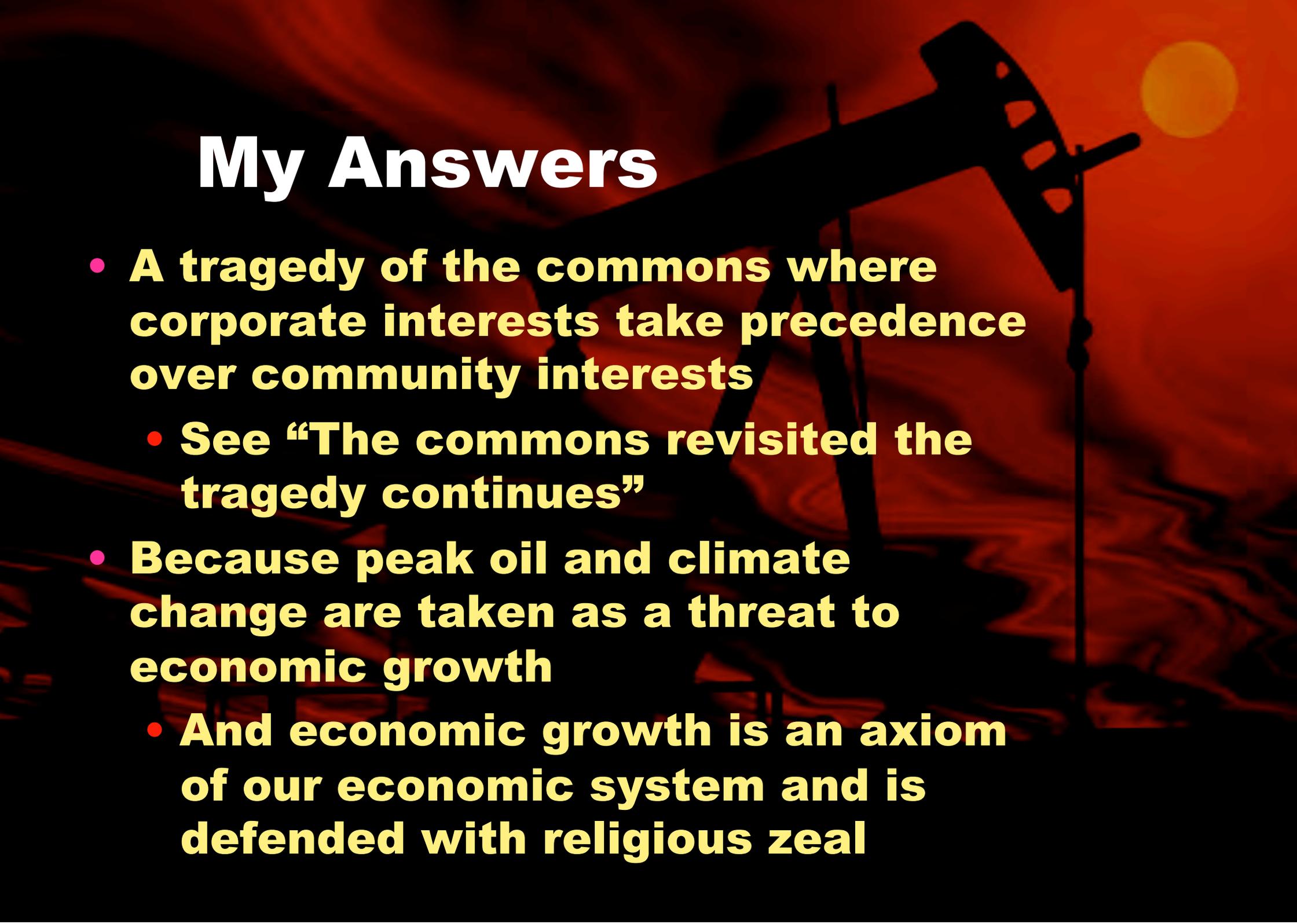


**From Minqi Li University of Utah – Oil Drum
July 2011**

WHY WHY?

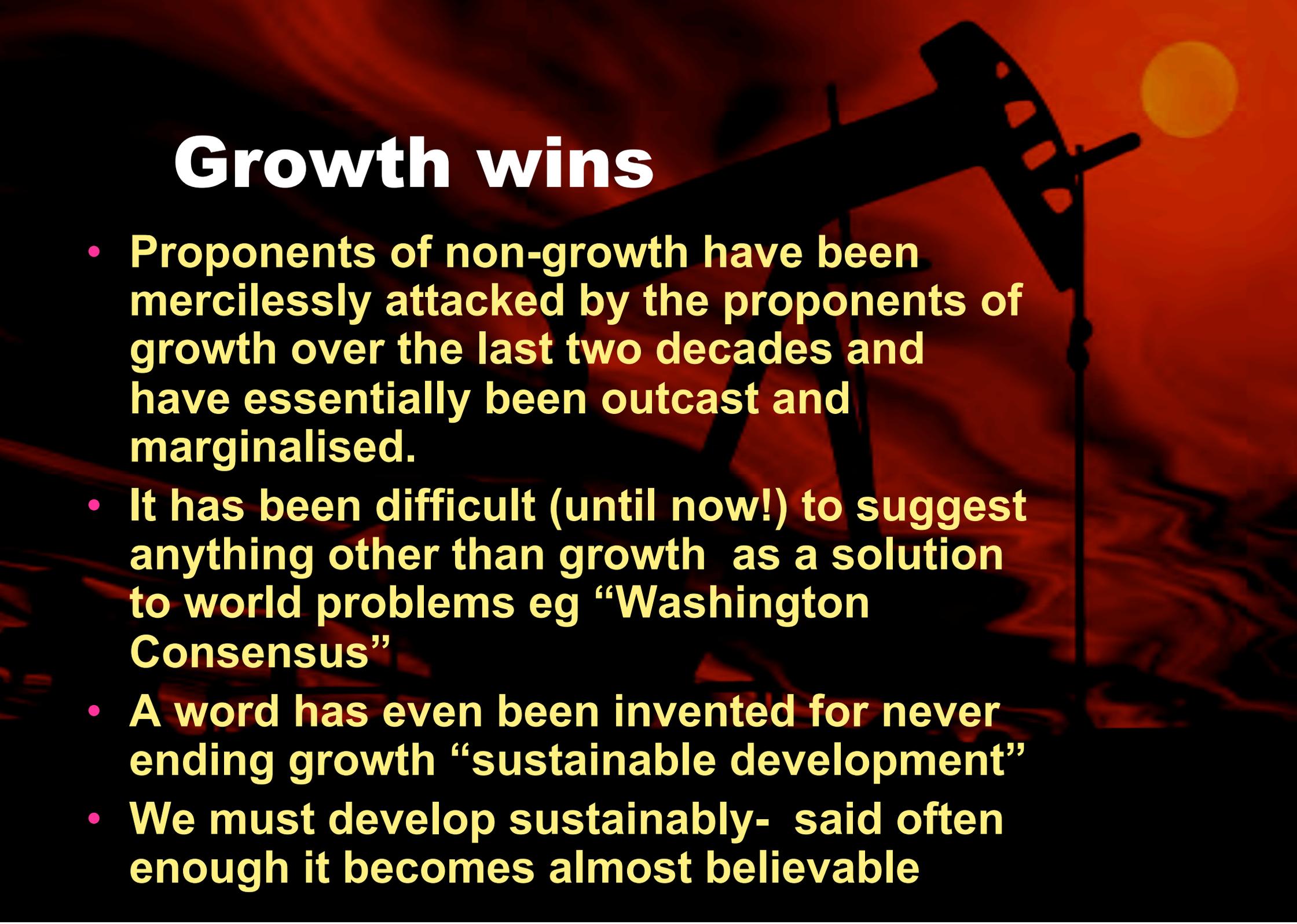
Why have we let the world get to a situation whereby the inertia of the global system will make mitigation of these problems, in time to avert an energy decline (or environmental catastrophe) , difficult or impossible ?

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

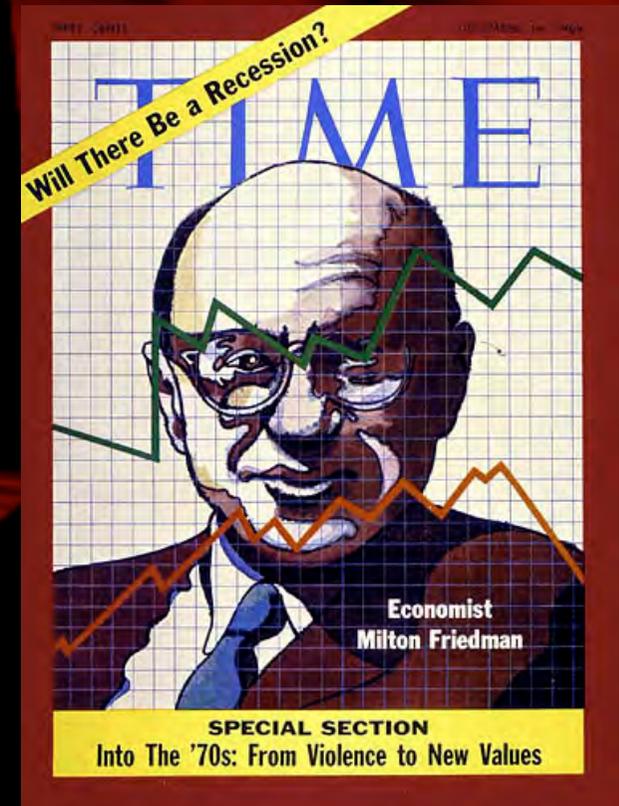


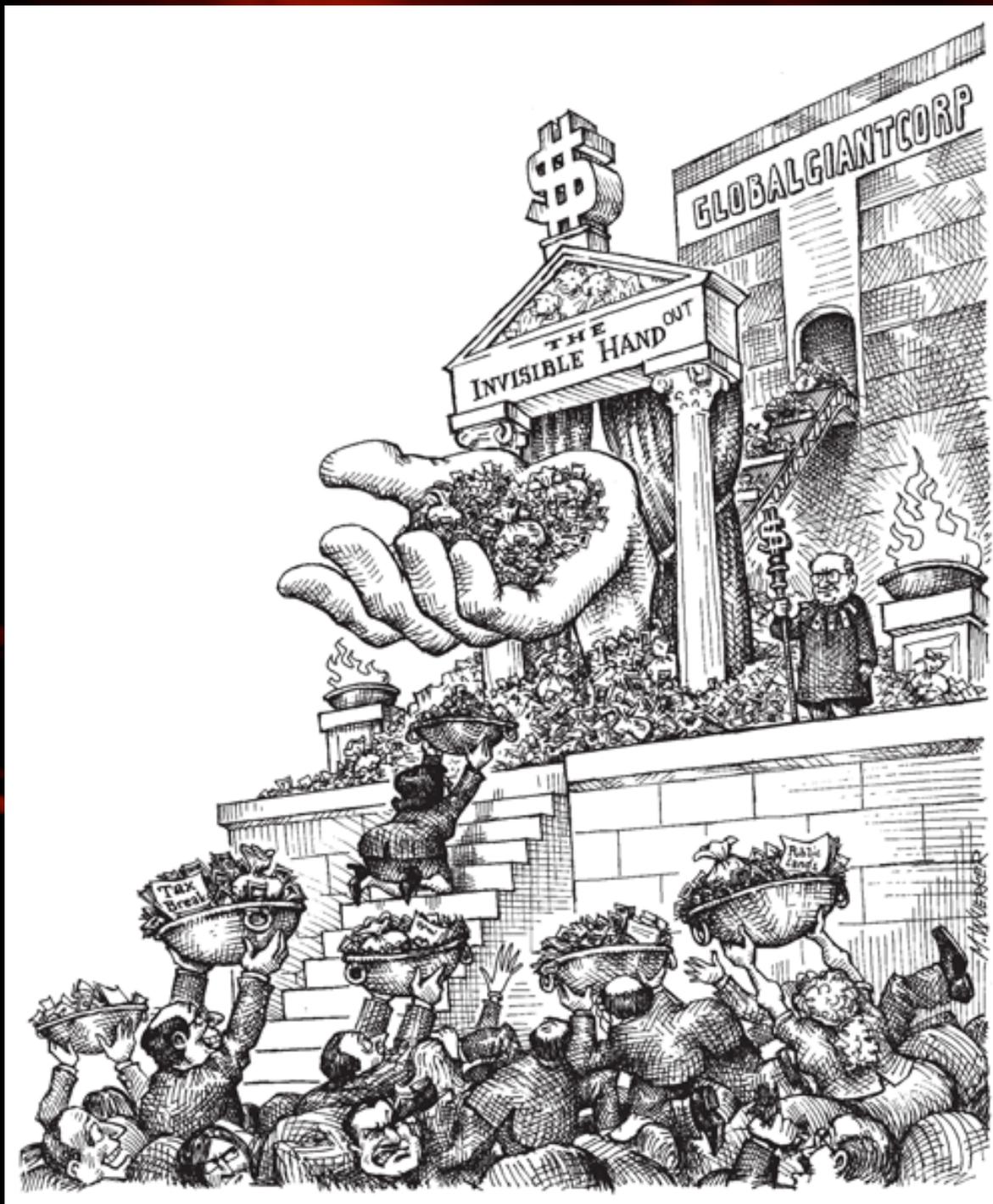
- Proponents of non-growth have been mercilessly attacked by the proponents of growth over the last two decades and have essentially been outcast and marginalised.
- It has been difficult (until now!) to suggest anything other than growth as a solution to world problems eg “Washington Consensus”
- A 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”

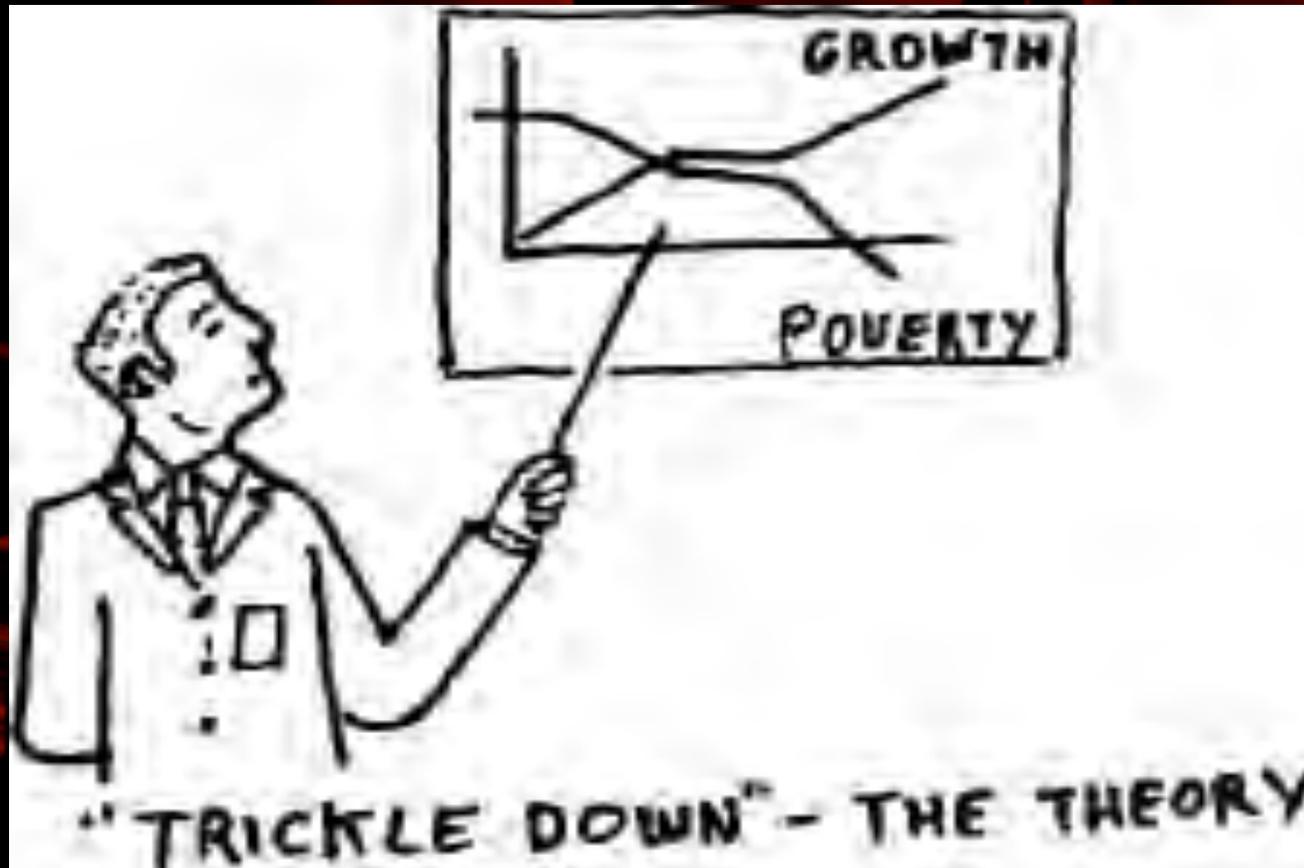
See The Shock Doctrine by Naomi Klein



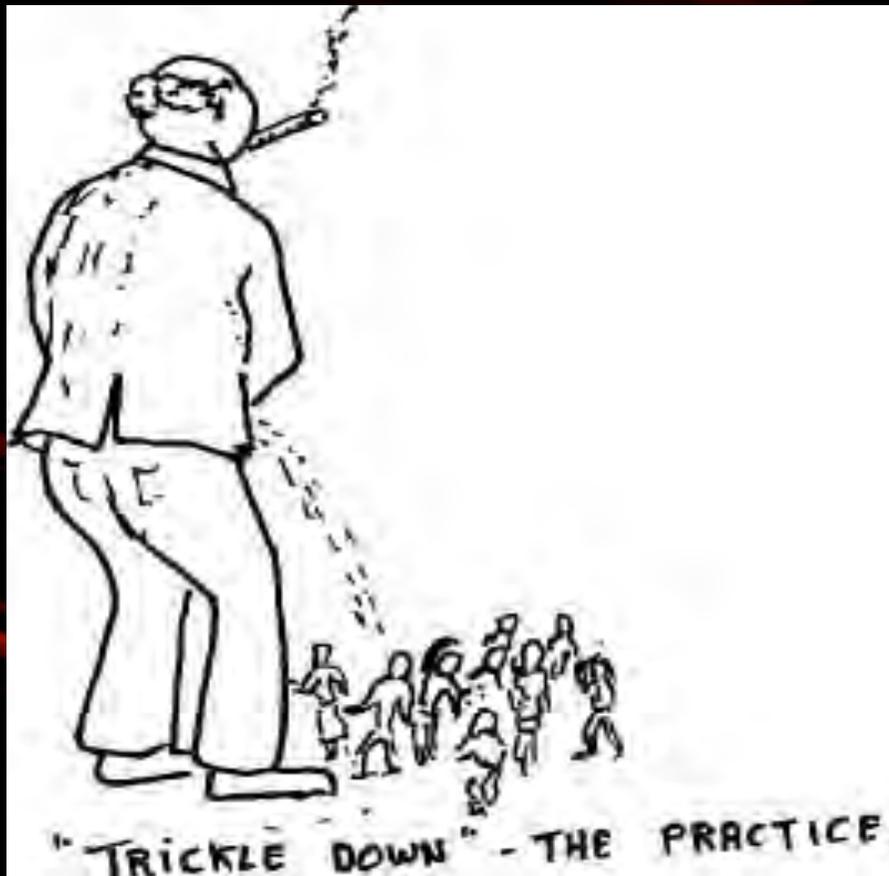


**Give me
more**

**Growth will help the poor
by creating wealth for all**



However!



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

Also recently

OLIPHANT'S VIEW



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

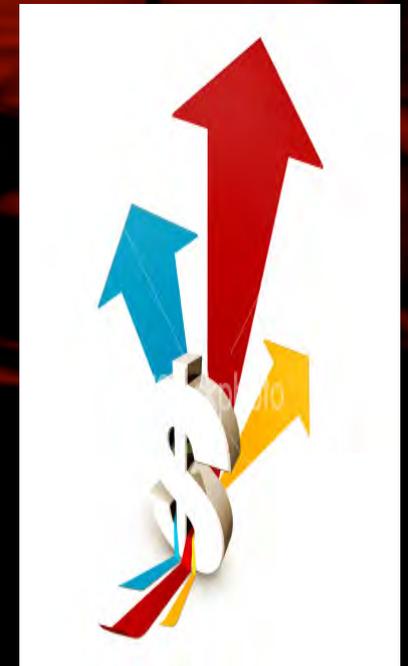


Spindletop 1901

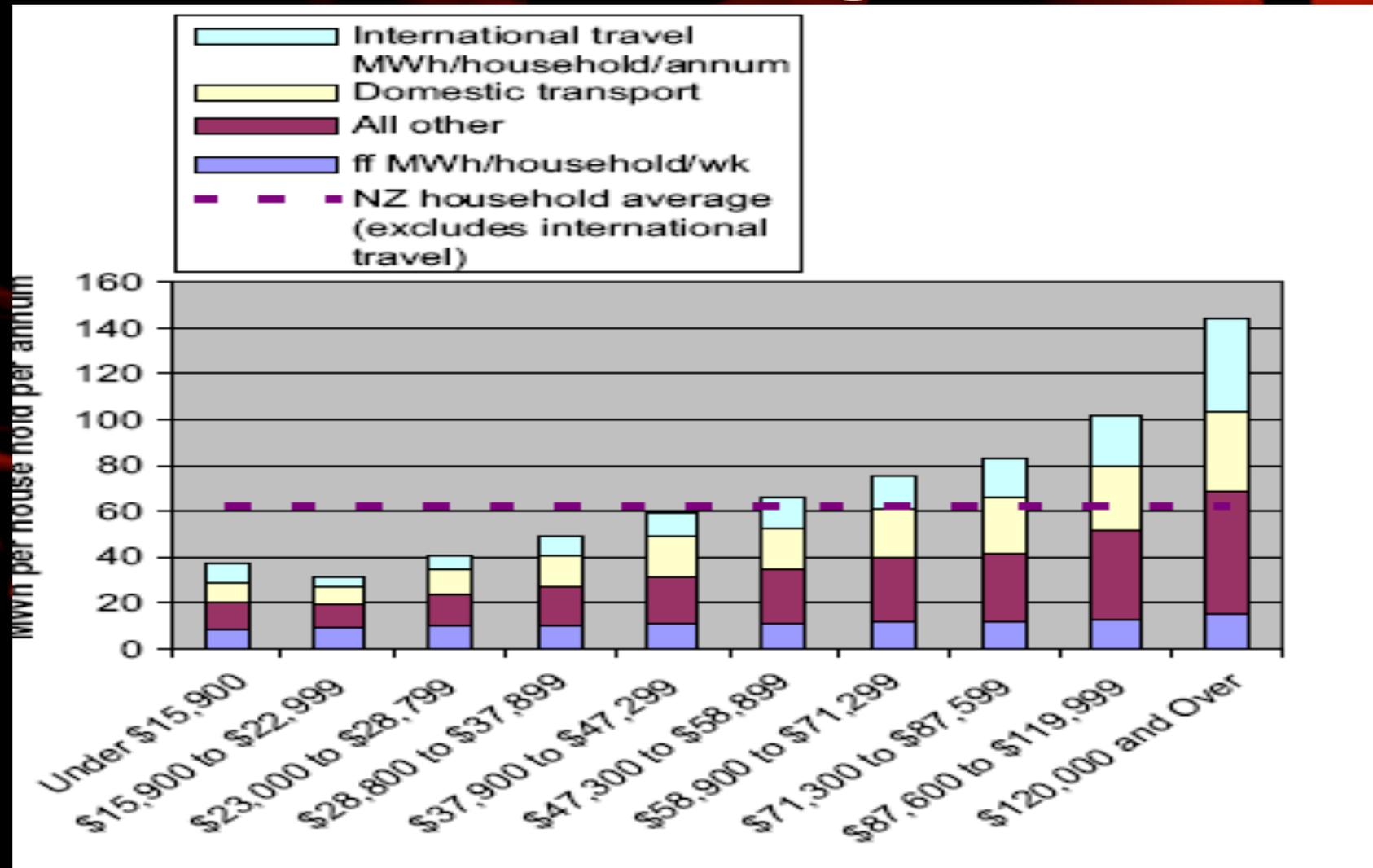
- One of the reasons for the fabulous growth of the 20 C has been possible is OIL. Oil and the other fossil fuels have powered growth mostly because of the generous EROEI for such fuels (estimated at around 35:1 for the current mix of world oil supply) – Charles Hall et al

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



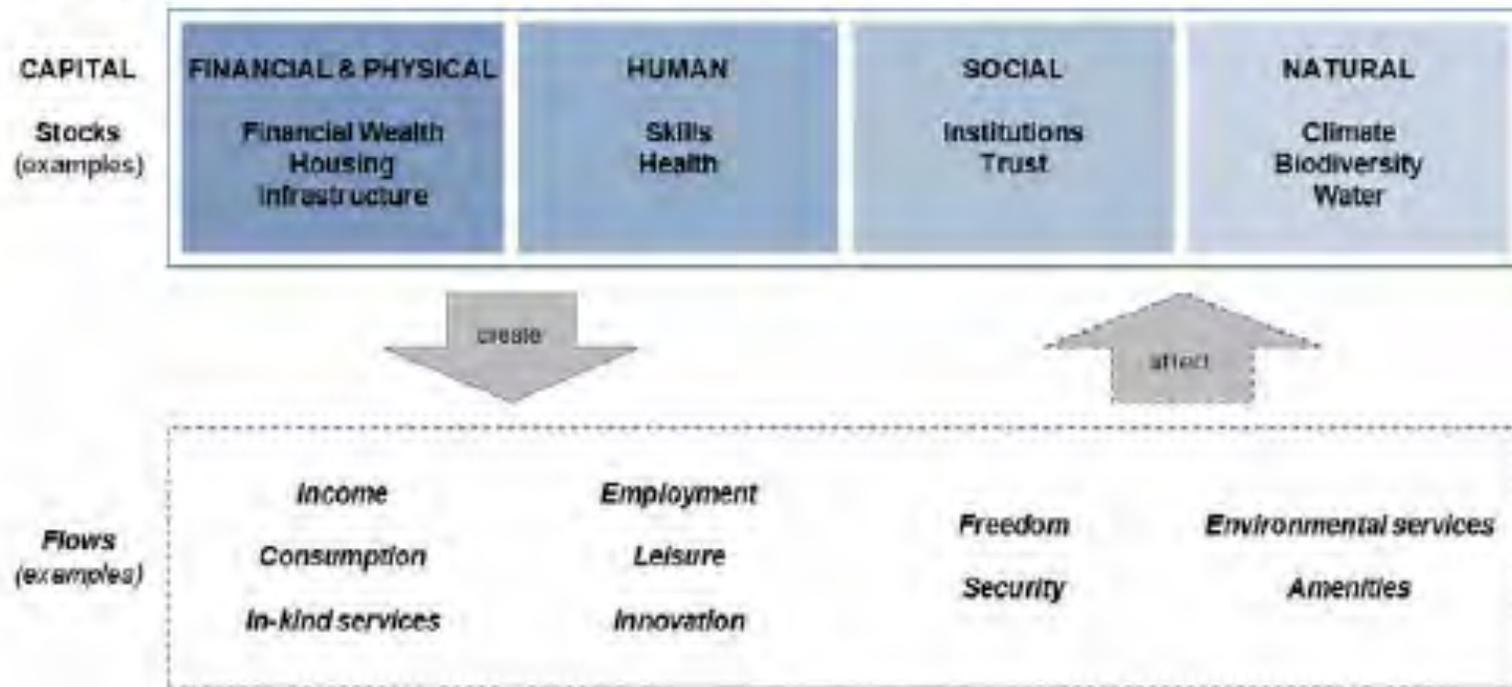


BUT Economic growth does not imply an increase in wellbeing

- ***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****

NZ Treasury report May 2011

Figure 1 – Treasury's Living Standards Framework



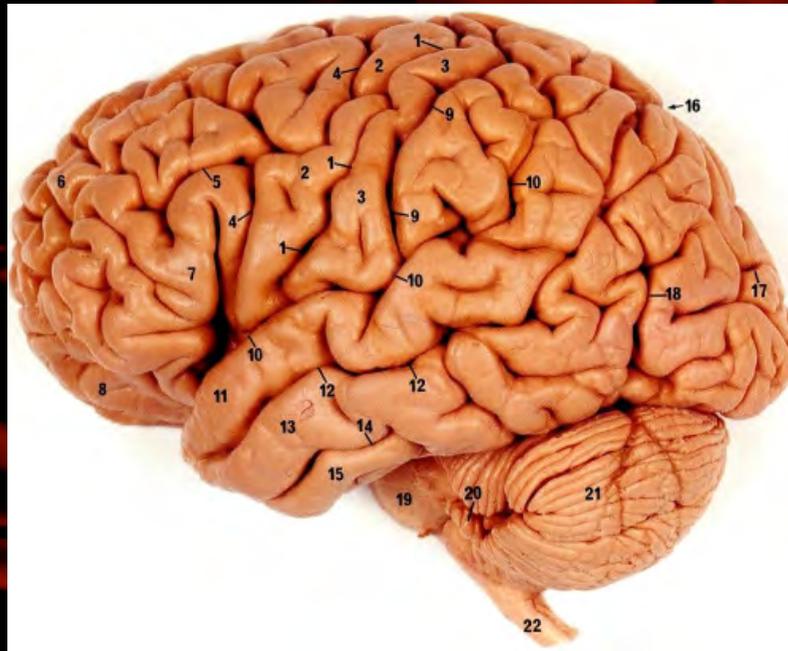
Great framework and background but no dialogue on how to make the transition to a non GDP based measurement nor how to cope with inequality or environmental issues

The background of the slide features a silhouette of an oil pumpjack against a vibrant sunset sky. The sky transitions from a deep red at the bottom to a bright orange at the top, where a large, glowing sun is visible. The pumpjack is positioned on the right side of the frame, with its long arm extending towards the center.

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

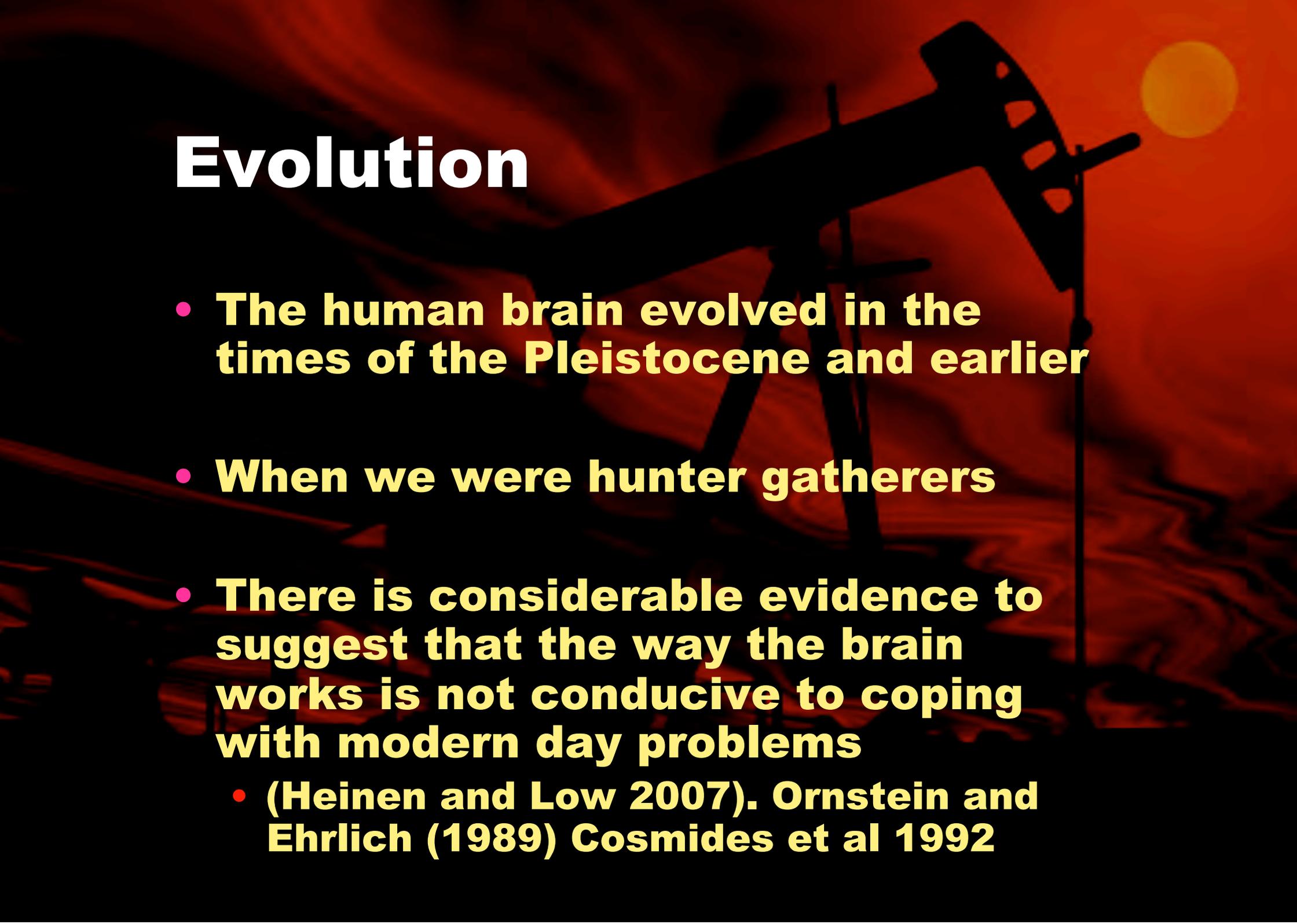
Corporate marketing and corporate vested interests have certainly helped but why have people accepted such nonsense?

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

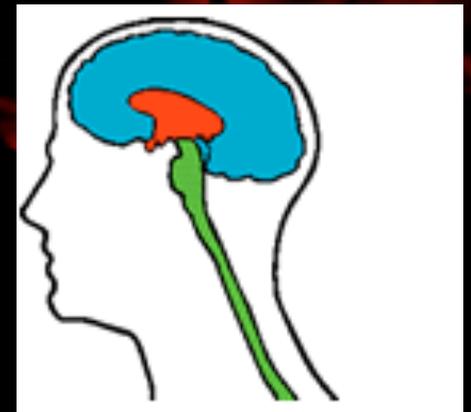
Evolution

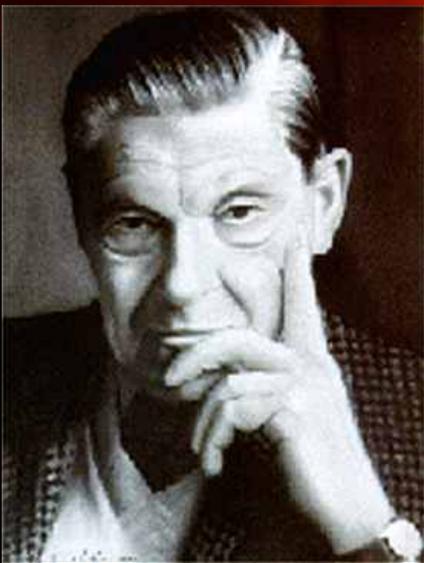
A silhouette of a telescope is positioned diagonally across the upper right portion of the slide. The background is a vibrant sunset with a large, bright orange sun in the top right corner and a dark, silhouetted landscape at the bottom. The overall color palette is dominated by reds, oranges, and blacks.

- **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?”



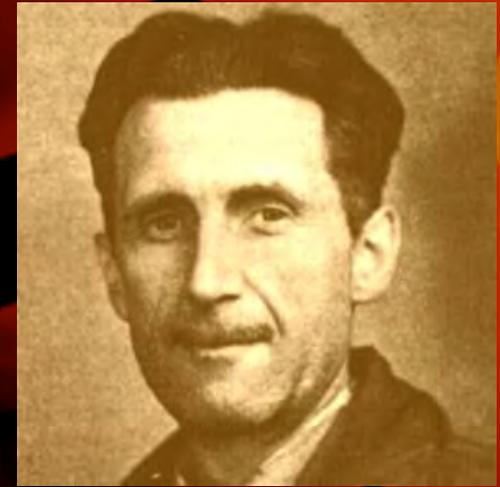
- **Because different parts of the brain are responsible for each of these tasks and the parts may not talk to each other very well.**
- **They are ring fenced from each other**
- **A bit like Thomas Kuhn’s paradigms ring fence scientific theories**
- **Catton “Overshoot” and Homer Dixon “The Upside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

Erich Fromm

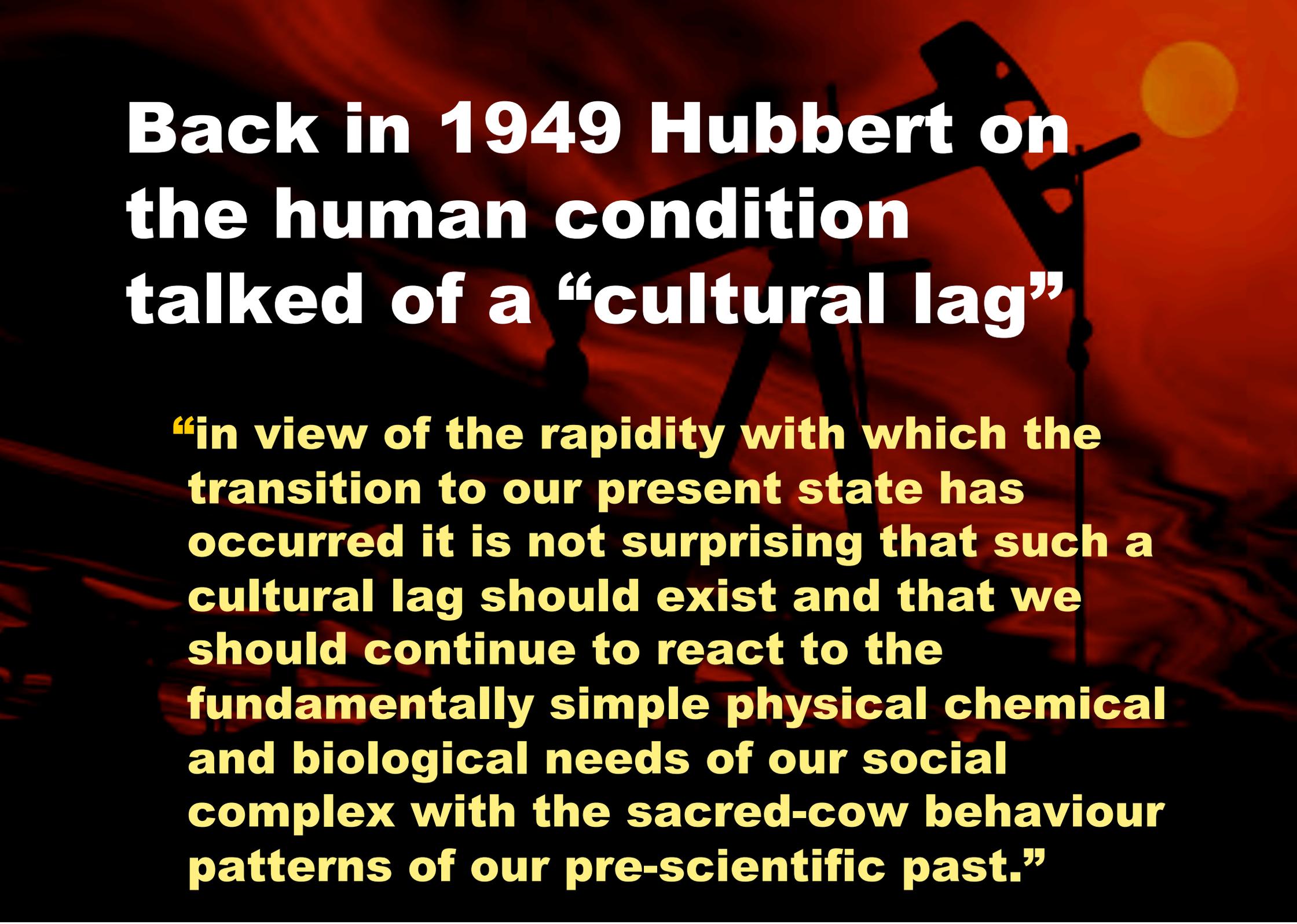
- **The Sane Society (1956)**
- **Questioned if a whole society can be sick**
- **Rejected sociological relativism**
- **Conclusion: society circa 1950s was insane because of its focus on economic production rather than well being**
- **Gave pointers to the future along the lines of eco-socialism**

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).**
- **Modules, bubbles, paradigms**



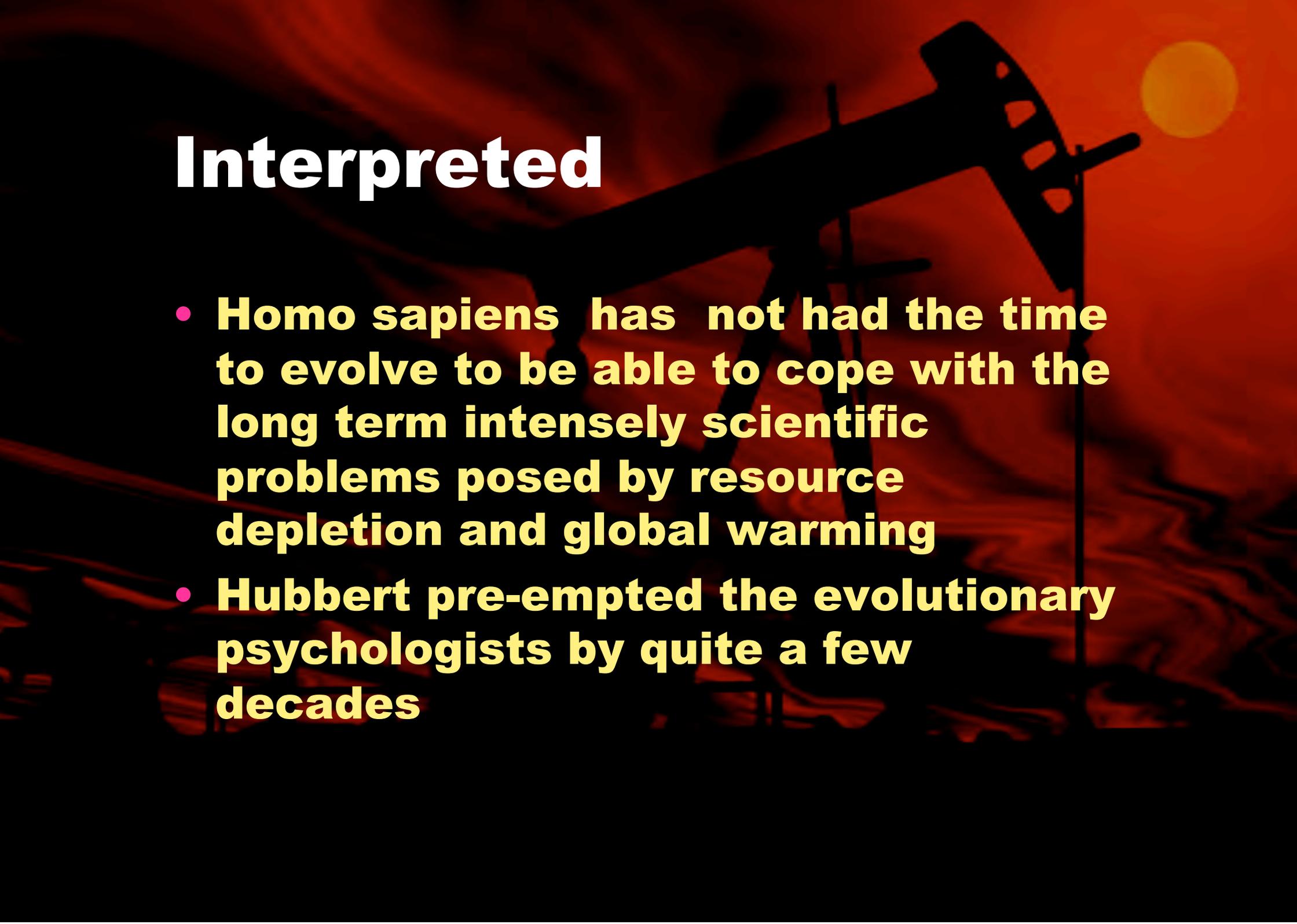
- **There is a good case to suggest that a modular brain structure can allow “cognitive dissonance” whereby different parts of the brain can believe distinctly separate truths- Koestler’s contemporary George Orwell called it “doublethink” in his novel “1984”**
- **Sustainable Development said often enough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

A silhouette of a person using a telescope against a red sunset background with a bright sun.

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

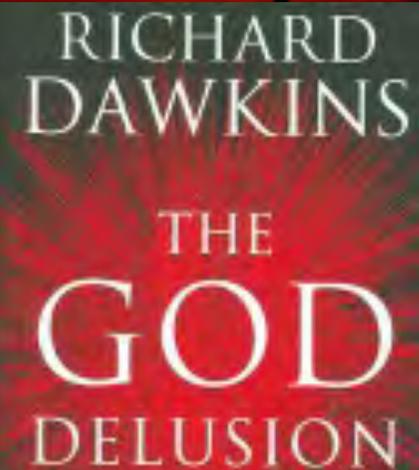
“in view of the rapidity with which the transition to our present state has occurred it is not surprising that such a cultural lag should exist and that we should continue to react to the fundamentally simple physical chemical and biological needs of our social complex with the sacred-cow behaviour patterns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

The book cover for 'The God Delusion' by Richard Dawkins. The author's name 'RICHARD DAWKINS' is at the top in white. The title 'THE GOD DELUSION' is in the center, with 'THE' in a smaller font above 'GOD', which is the largest word. 'DELUSION' is below 'GOD'. The background is a dark greenish-grey with a bright red sunburst or starburst pattern behind the title. A silhouette of an oil pumpjack is visible in the background of the entire slide.

RICHARD
DAWKINS
THE
GOD
DELUSION

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**

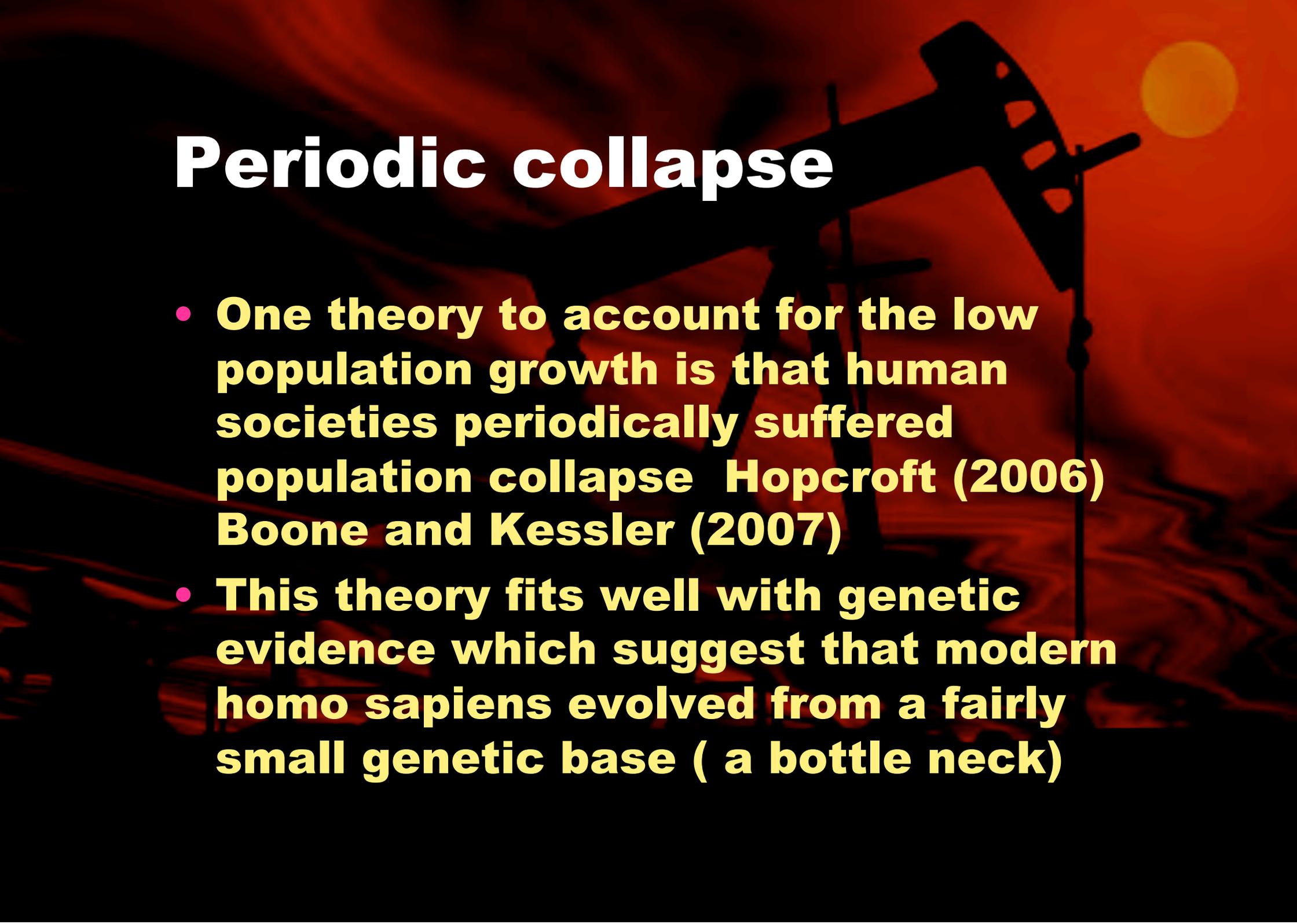
Genetic Predisposition towards growth-

- **Physical- population growth**
- **Economic growth**
 - **Selfish genes can be exhibited as selfish traits in the phenotype – we like to hoard and collect stuff to gain potential advantage over possible rivals (Dawkins)**
 - **Reproduction – exhibiting affluence can be useful for showing sexual fitness to potential mates (Dawkins, Geoffrey Miller)**
 - **Growth Memes – rich is successful, poor is failure (Dawkins, Susan Blackmore)**

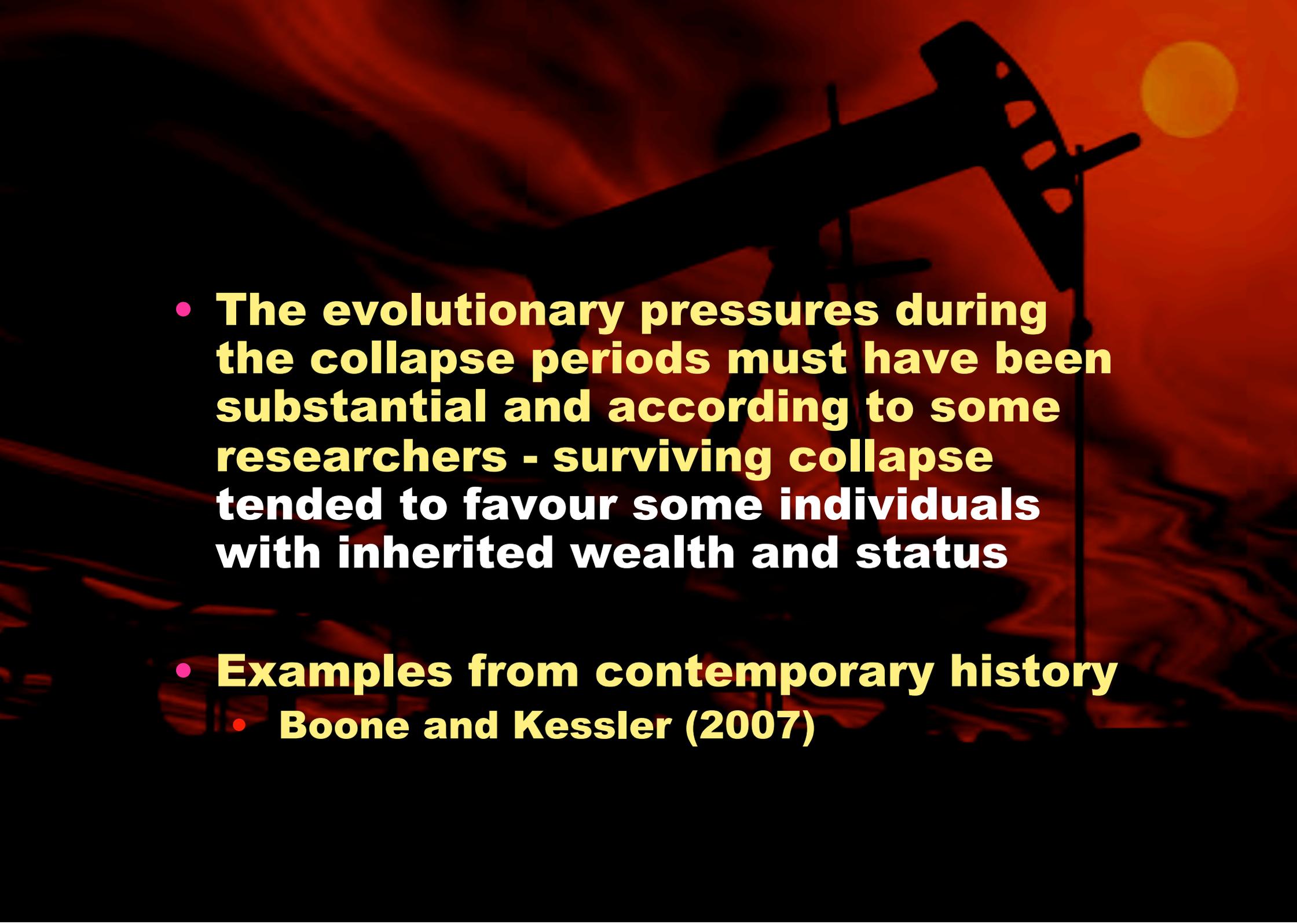
Population growth

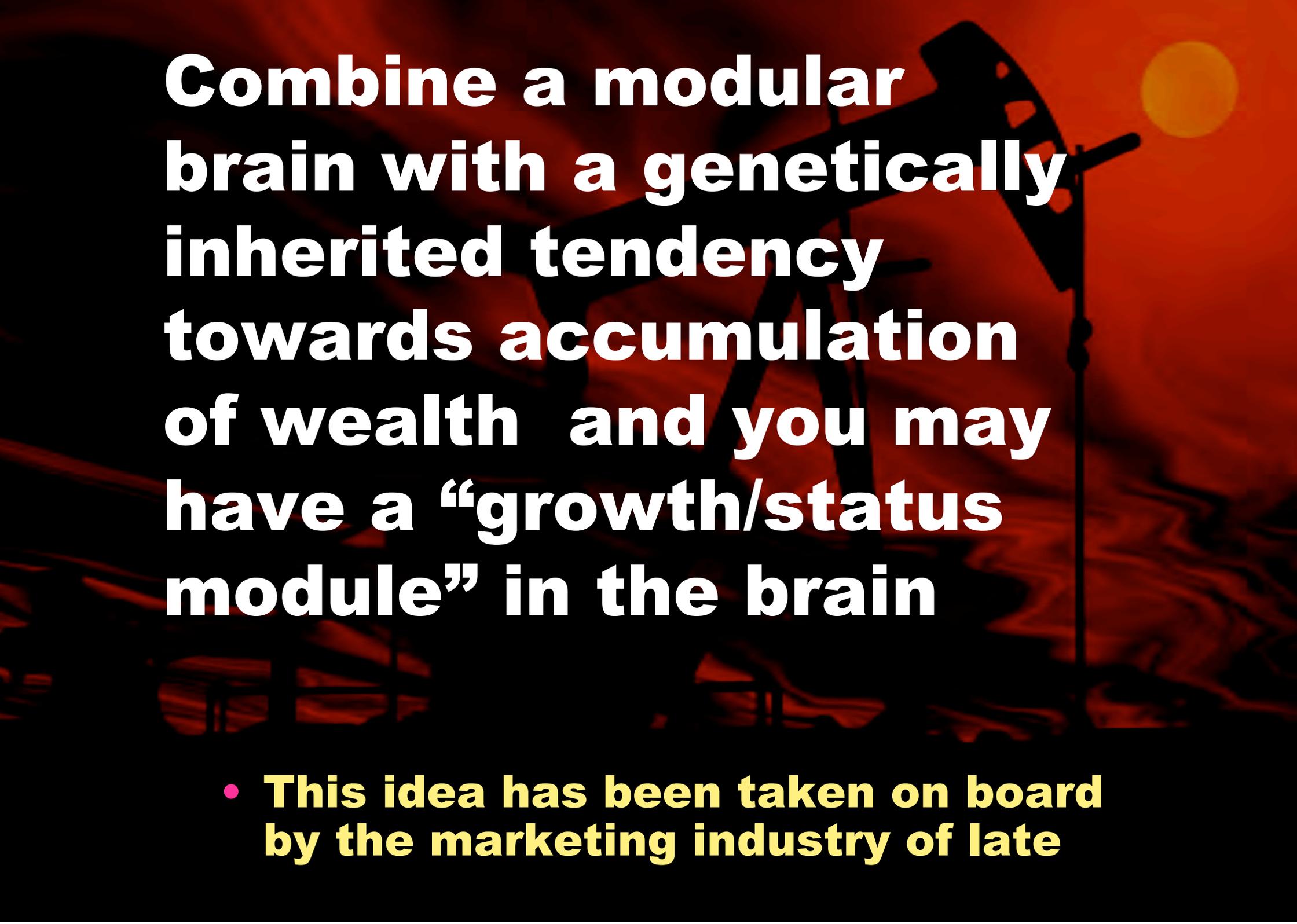
- **Population growth for much of our history before agriculture was less than 0.1% per generation (Catton 1980)**
- **This very low rate is hard to explain as modern demographics suggests that population growth slows with an increase in wealth.**
- **OK so no health care in the Pleistocene but even so-**

Periodic collapse



- **One theory to account for the low population growth is that human societies periodically suffered population collapse Hopcroft (2006) Boone and Kessler (2007)**
- **This theory fits well with genetic evidence which suggest that modern homo sapiens evolved from a fairly small genetic base (a bottle neck)**

- 
- The background of the slide features a silhouette of an oil pumpjack against a vibrant sunset sky. The sun is a bright, glowing orb in the upper right corner, casting a warm orange and red light across the scene. The pumpjack's structure is dark and detailed, showing the characteristic walking beam and counterweights. The overall mood is dramatic and evocative, suggesting themes of industry, energy, and perhaps the challenges of economic downturns.
- **The evolutionary pressures during the collapse periods must have been substantial and according to some researchers - surviving collapse tended to favour some individuals with inherited wealth and status**
 - **Examples from contemporary history**
 - **Boone and Kessler (2007)**

A silhouette of a person climbing a ladder against a red sunset background with a bright sun.

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**

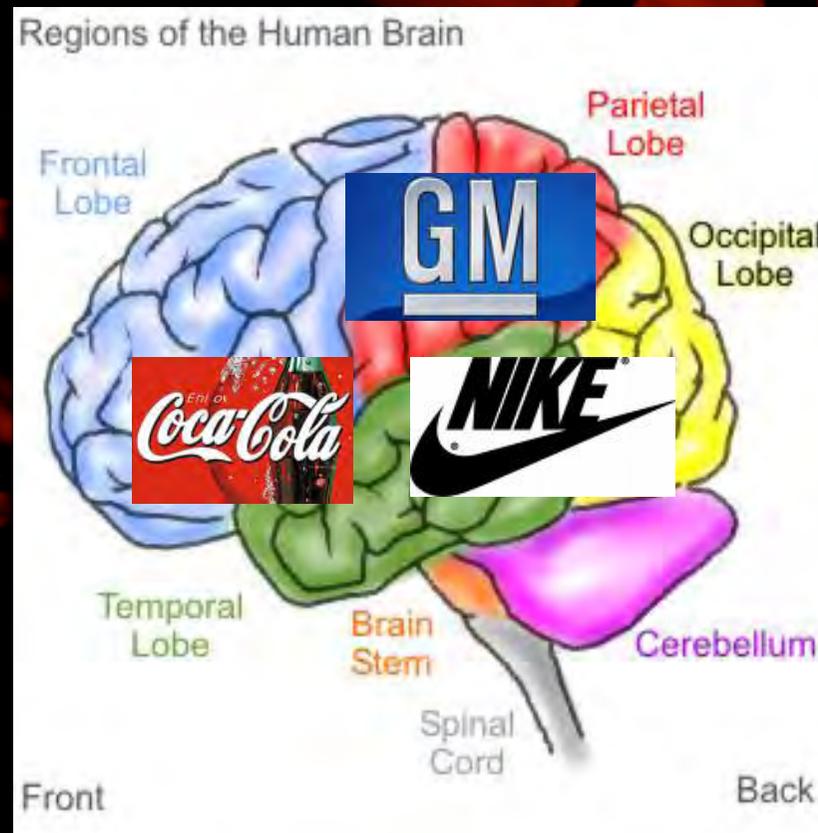
Neuromarketing



- **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**
- **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 not ready for peak oil (or 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 cognitive dissonance – we live in a bubble of our own making**