

## **Peak Oil and the great unraveling (of modern industrial economies)** **An open letter to the Medical and allied professions**

A former boss of mine used to say that you can teach a monkey to perform angiograms (or implant stents), but the real value of a Cardiologist lies in their ability to make wise evidence-based decisions. My recent observations reinforce the view that there is an inadequate emphasis on the fundamental values of what it means to be a doctor, particularly with regard to specialist training. I believe we are turning out clever technicians and mechanical paint-by-numbers automatons who have lost sight of the basic principles of medicine. As the saying goes, the definition of increasing specialization is knowing more and more about less and less, until the ultimate super specialist knows everything about nothing. We should never lose sight of the basic principles of scientific and ethical medicine:

1. Our opinions and actions should be based on the best peer reviewed scientific research. That is the very definition of evidence-based medicine.
2. Our ultimate purpose is the reduction of morbidity and mortality. If we do not target our efforts towards the reduction of human suffering and premature death, then we are not practicing medicine.
3. When in doubt, we must adopt the precautionary principle. We must protect our patients against the most *dangerous* outcomes, even if they are not the most *likely* outcomes. The practitioner who plans only for the best case scenarios is dangerous and irresponsible.
4. Prevention is better than cure.

Our usual tendency is to focus on issues only within our limited sphere of interest. Short term firefighting or band-aid measures for the handful of patients we see on a daily basis. Then we go home and bury our heads in the sand. But that is not enough. Why? Because there is a tsunami of horrific problems headed our way which will lead to unimaginable worldwide human suffering and death. Such catastrophe is inevitable unless get our act together and use the best peer reviewed scientific research (untainted by commercial distortions) to prevent or at least mitigate the looming disasters.

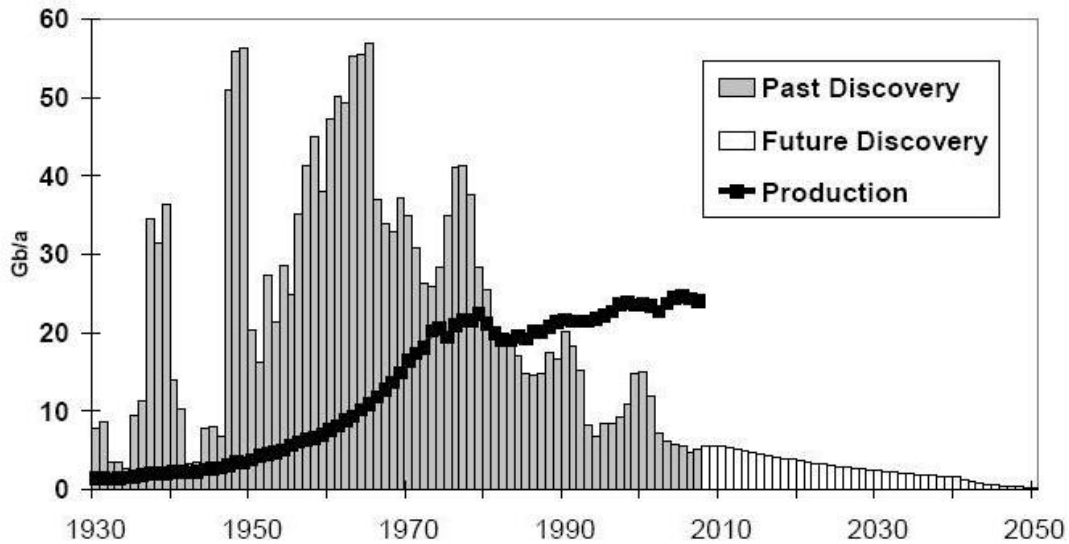
I am not being alarmist. I am making objective statements based on rock-solid scientific observations, measurements and projections by a multitude of top scientists from around the world. As the ecologist Richard Heinberg says, if we were yeast there would be no argument. ***We are headed for a horrific population die off if we continue on this path of business as usual.*** The death of fifty million people in World War II will pale into insignificance compared to what lies ahead. James Lovelock of *Gaia* fame foresees the death of billions of people this century. Martin Rees, president of the Royal Society, reckons there is only a fifty percent chance that human civilisation will survive this century.

I spoke with the British Professor Simon Capewell after his presentation on cardiovascular epidemiology at a meeting in Melbourne in October 2010. I asked him what the major issue affecting human morbidity and mortality was going to be in fifty years time. He immediately replied that it was Global Warming, without any doubt whatsoever the single greatest threat to humanity. I then asked him what the major issue affecting human morbidity and mortality was going to be in ten years time, however he was less forthcoming. When I suggested to him that it was Peak Oil, he agreed. He admitted that the endeavours by his colleagues in the other sciences to mitigate the consequences of Peak Oil are far more important than his own work in medical epidemiology (and certainly far more important than my own work in cardiology). When I suggested to him that his work in medical epidemiology should in fact incorporate and emphasize the public health consequences of Peak Oil, he was non-committal and just politely encouraged me to continue with my own modest efforts ([www.d3sj.org](http://www.d3sj.org)). I failed in my goal, which was to persuade him, a key opinion leader, to engage in and to publicise the vastly more important global issues affecting public health. Perhaps I should be more realistic. After all, no one was likely to sponsor him to visit Australia to talk about Peak Oil.

For those who may not be familiar, ***global Peak Oil occurs when we reach the maximum possible output of oil, following which there is an unstoppable and relentless worldwide decline in the production and availability of oil.*** Petroleum is a finite resource, depletion is inevitable and there is absolutely nothing we can do about these physical facts. Conventional oil is the easy-to-get, cheap-to-process oil we have been dependent on and addicted to for the past 150 years. Non-conventional (or unconventional) oil is hard-to-get, expensive-to-process oil, such as oil from the (burnt down and blown out) Deep

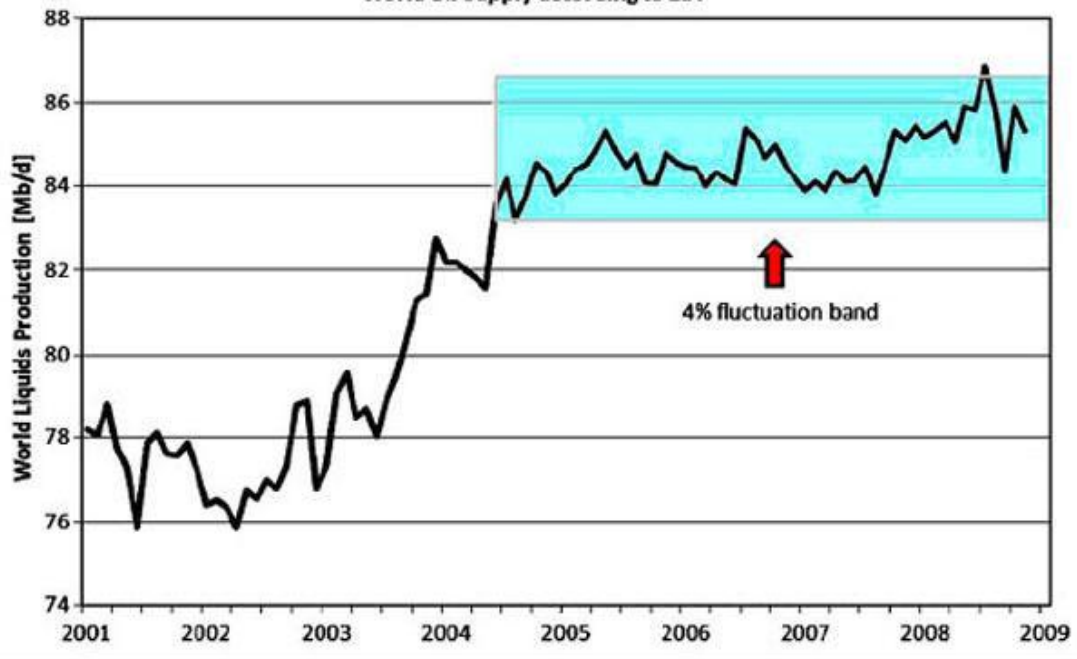
Water Horizon rig in the Gulf of Mexico, or the tar sands of Canada, or heavy oil from Venezuela, or synthetic oil from coal or gas, or biofuels. We will never "run out" of oil, but when we have exhausted the easy oil and when it takes more energy to obtain the difficult oil than the energy content of that oil itself (when EROEI is less than 1)<sup>4</sup> and/or there are unacceptable environmental impacts from producing that oil, it makes no sense whatsoever to harvest that oil, even if there are several trillion barrels dispersed in the tar sands or under the Arctic sea.

### THE GROWING GAP Regular Conventional Oil



Since 2005, worldwide conventional oil output has been declining (now about 72 million barrels per day) and total oil production has been essentially flat (total output has been fluctuating on a plateau at around 85 million barrels per day and peaked at 87 million barrels per day back in 2008). This is a simple fact and there can be no argument about this fact.

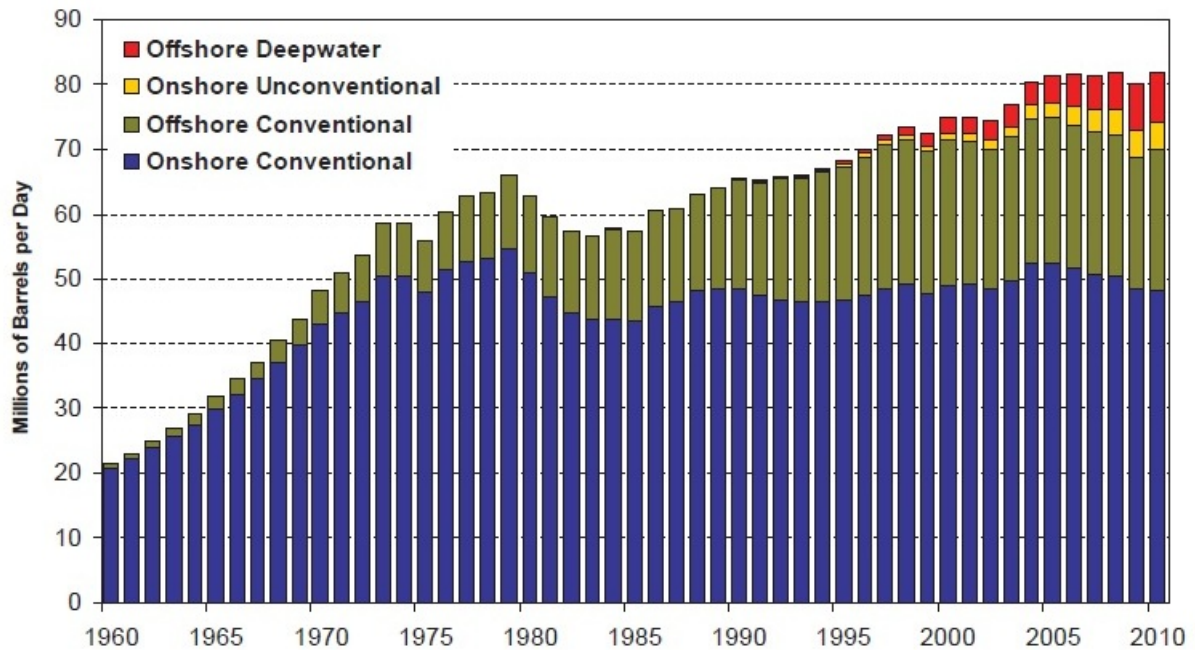
### World Oil Supply according to EIA



Numerous independent studies by impeccable investigators (including peer reviewed scientific papers) were published in 2010<sup>2</sup> with one consistent message. Whereas non-conventional oil output has so far compensated for the decline in conventional oil output since 2005, **there will be an irreversible unstoppable decline in total oil output in the near future. This decline is likely to commence between 2012 and 2015.** The small

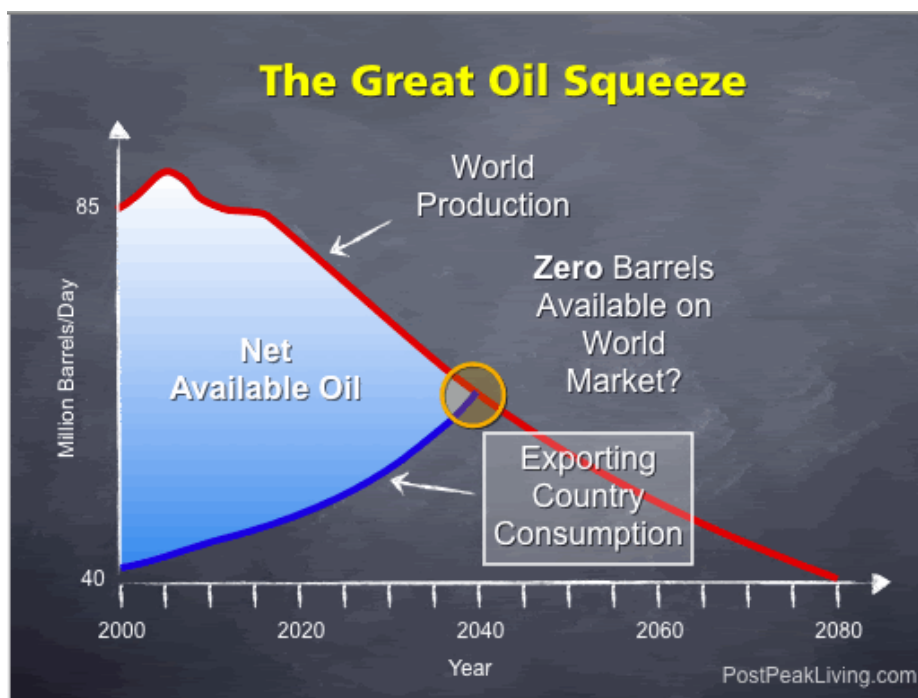
contributions from unconventional oil will not keep pace with the steep decline in conventional oil. Professor Kjell Aleklett of Uppsala University and president of the Association for the Study of Peak Oil and Gas (ASPO) says there is imminent decline of total oil output *right now*. (personal communication, Brisbane, 25 November 2010).

Global Oil Production – Onshore and Offshore, Conventional and Unconventional



Source: Energyfiles, Energy Information Administration, BP Statistical Review of World Energy, Wood Mackenzie As of 12/31/10

The export land model of petroleum availability predicts that there will be NO oil available for importing countries in thirty years time. NONE. Other "experts" may expound cornucopian views of unlimited oil, such as the International Energy Agency or Exxon-Mobil or the Cambridge Energy Research Associates (who have *nothing* to do with Cambridge University), however they have appalling track records of being hopelessly wrong in their past predictions of exaggerated supplies. They repeatedly lie to keep share prices buoyant and to maintain misplaced faith in an endless growth economy. So what should we do? **We should believe the peer reviewed scientific research. We should adopt the precautionary principle.**



I cannot delve into the intricacies of Peak Oil in this brief introduction. Here is a summary overview at <http://www.youtube.com/watch?v=OZzebkWpt0> (or google video "Geoffrey Chia" and "Peak Oil").

**Here are some consequences of Peak Oil:**

1. The collapse of our **transportation** systems (> 95% run on petroleum) will be merely one of our many problems.
2. **Oil prices** are exquisitely sensitive to the oil supply/demand balance. Just a 5% shortfall in oil supply can cause as much as a 400% rise in oil prices, as exemplified by the previous politically determined, transient oil shocks of 1973 and 1979. The upcoming global oil shock will be geologically determined and will be permanent. Prices will be volatile, following a jagged rather than a smooth upward curve. Intermittent "demand destruction" will cause temporary falls in the oil price (as happened after the global financial crisis), but the overall trend will be an inevitable escalation. Industrial economies operate on the back of fossil fuels, primarily oil. A rising oil price causes inflation with resultant higher interest rates<sup>3</sup>, depresses the share market and diminishes the perceived value of paper money<sup>4</sup>. Get ready for pump prices of \$3 per litre, \$5 per litre, \$10 per litre and more. Wages, however, will remain fixed. There will be blowouts of household budgets, starting with the poorest members of our society who will be unable to pay their mortgages or rent and be turned out of their homes. Many oil price sensitive industries (trucking, aviation, tourism) will collapse. Disposable incomes will evaporate, consumption will be curtailed and the retail sector will collapse. There will be widespread unemployment. There will be anger, dismay and confusion among the public as to what is happening and plaintive cries that the government reduce the price of oil, which of course will be beyond the government's control. Even if all petroleum taxes are abolished, the oil price will relentlessly escalate. What we in fact need now are higher petroleum taxes to encourage fuel conservation by the public and to help fund our transformation to a sustainable society (NOT to build more roads and airports). Many Western European countries have imposed two or three times the tariffs on petroleum that we have had, for many decades. They cope with higher oil taxes and so can we.
3. The existing pyramid scheme known as "**the economy**" is built on debt based growth. The bank lends money to a fledgling business which is expected to pay back its debt with interest, which can only occur if the business grows. Multiply that example a hundred million times or so and you have the global economy, which we are told is supposed to grow forever. But infinite growth on a finite planet is impossible. Only lunatics and economic "rationalists" believe in the ideology of endless growth<sup>5</sup>. Real economic growth<sup>6</sup> over the past 150 years has only been possible because of increasing energy availability. When energy availability declines, as will happen soon, the output of goods and services will contract, debts will default, companies and countries will go bankrupt and economies will collapse. Every significant oil price spike in the past has been followed by a recession. We will be facing an economic nightmare many magnitudes worse than anything ever seen before, a permanent global depression. Unless we plan appropriately.
4. Most important of all is the fact that our industrial-scale **agricultural systems** depend on petroleum to feed the 6.8 billion people of the world. Petroleum depletion will mean food depletion and the starvation of billions. Unless we plan appropriately.
5. Hyperinflation, economic collapse, joblessness, homelessness, collapse of our transportation systems and food shortages will lead to chaos in societies and the **breakdown of law and order**. It will be every man for himself when it comes to looting the supermarket shelves. Be thankful you do not live in the USA where firearms are rampant. Martial law will be declared, with the imposition of police states<sup>7</sup> in former democracies. We may see the rise of charismatic "leaders" who promise magical solutions, who demonise and blame minority groups and who invade other countries for their remaining resources. Dick Cheney was well aware of Peak Oil and targeted Iraq as a major source of America's petroleum even before 1999, when he delivered his speech to the Cato Institute. Competition for diminishing resources, particularly oil (which has been described as "liquid hegemonic power") leads to warfare, the displacement of populations and more suffering and death. Our addiction to petroleum has caused us to

behave in a manner no different from that of a violent heroin addict, who will lie, cheat, steal and kill to feed his addiction. Will our last remaining oil supplies be consumed by our military vehicles in the act of seizing the last remaining oil fields? And what will happen after that?

For those of you who refuse to accept the above, the onus is on YOU to prove to US that they will NOT occur if we continue down this insane path of business as usual. The fact of the matter is that the above nightmare scenarios are absolutely guaranteed if we do nothing, but are avoidable if we plan appropriately. Unfortunately it is clear that the present Australian political "leaders" have no plan. They are in denial<sup>8</sup>. ***They are bickering over trivia, while this runaway locomotive we call our civilisation is headed off a cliff.***

Unless you live on a debt-free rural property and can grow your own food without any fossil fuel input, you will be affected by Peak Oil. Even if you can grow your own food, it will be impossible to guard it from plunder. We will all be affected by Peak Oil and we need a national plan. The outlook is not hopeless. Cuba faced abrupt petroleum curtailment in the early 1990s but took hard decisions and negotiated that crisis successfully. We can transition from a delusional endless growth economy to a steady state economy<sup>9</sup>. The adjustments will not be easy but will be far, far preferable to chaos and collapse. We have only two choices: either planned systematic transition to sustainability or chaotic collapse. There are no other choices. ***Those who insistently cling to the delusion of business as usual are in fact promoting the option of complete collapse.*** They are suppressing and obstructing our necessary transformation to sustainability.

The aim of this letter is to raise the hackles of the medical and allied professions, to wake you from your complacent stupor, to rouse you to action. ***This is what we must do:***

1. On a personal level, get rid of debt.
2. Professional education: We must educate ourselves and our medical/professional colleagues about Peak Oil<sup>10</sup>, which is intimately related to other crucial sustainability issues. I call these issues the three horsemen of the apocalypse (Resource Depletion especially Peak Oil, Global Warming and Ecosystem Destruction) and the one big fat elephant of the apocalypse (Overpopulation). They interact with and generally exacerbate each other. We must be careful to ensure the "solution" for one problem does not exacerbate the other problems. For example, harvesting tar sands or oil shale to manufacture synthetic oil causes depletion of valuable natural gas and fresh water while generating 2-3 times more carbon emissions<sup>11</sup>. Ethanol from corn grown in the USA is particularly absurd and unethical, with an EROEI of less than one. Sustainability and social justice studies must be incorporated into the medical curriculum to restore a balanced perspective to medical practitioners and to counter the unhealthy mentality of tunnel-vision ultraspecialisation.
3. Public education and community action: Organise free public education sessions on sustainability and social justice issues in your community and get involved with your local transition towns initiatives.
4. Lobby the local, state and federal governments. As a lobby group, the medical profession can be a powerful force, however organising doctors is akin to herding cats. We must get our act together and speak with a united voice to pressure our governments to act. If the current crop of politicians are not up to the challenge, we must vote in those who are.
5. Support a price on carbon to fund our transformation to sustainability.

### **SOLUTIONS:**

We can consider the solutions at two levels: at community level and at national level.

Here is my take on how we can save ourselves at the community level to restructure the suburbs to sustainability: ***the Gaia Village Project***  
<http://www.d3sj.org/PDF/gaia.pdf>

At the national level, the key to preserving our cities (which are the drivers of civilisation) will be to transform our transportation systems to become petroleum independent. We have only two options: the electrification of our land transportation systems or the collapse of modern civilisation. There is no other option.

For many reasons, the electric car cannot and will not play a major role in large scale transportation of the future. We must encourage the use of mechanical-electrical bicycles, make bicycle commuting safer (establish universal lanes which are physically separate from motorised traffic) and must develop intracity and intercity electric rail services run by renewable energy. A group led by the University of Melbourne Energy Research Institute has produced a comprehensive study on the "**Zero Carbon Australia Stationary Energy Plan**" <http://beyondzeroemissions.org/zero-carbon-australia-2020>

Their report proves the feasibility of transforming ALL of Australia's electricity needs to renewable energy WITHIN TEN YEARS using existing technology. Naysayers will complain that the apparently "high" cost of \$37 billion per year (which translates to just \$8/- per household per week<sup>12</sup>) is too expensive. We must ask them this: too expensive compared to what? Too expensive compared to bailing out banks for their corporate malfeasance? Too expensive compared to a stimulus package which encouraged the consumption of imported goods and splurging at the pokies? Too expensive compared to a national broad band scheme which even the telecommunication tycoon Carlos Slim says is overpriced? Funding Australia's transformation to renewable energy will be an absolute bargain, too cheap by half, compared to the alternative: the collapse of our cities and of civilisation. The fact of the matter is that we cannot afford NOT to do it. The fact of the matter is that we need to do it now. The fact of the matter is that if we do not get started on this project now, when petroleum is relatively abundant and cheap, we will NEVER be able to build such a renewable energy infrastructure when petroleum becomes scarce and unaffordable in just a few years. **The looming spectre of petroleum depletion mandates that we commence this national renewable energy project with the utmost urgency.**

#### **CONCLUSION:**

It has been said that there are three kinds of people: those who make things happen, those who watch things happen and those who wonder what happened.

Here is another way of categorising people:

1. those who know what is happening and who are working towards the common good – the **benevolent realists**.
2. those who do not know what is happening yet, but are willing to learn evidence based facts and to work towards the common good - our **potential allies**.
3. those who do not know and do not care about what is truly happening and desperately, even defiantly, cling on to discredited delusional ideas (endless economic growth, global warming denial) - the **clueless sheeple**.
4. those who know all too well exactly what is happening, but are obstructing our way to sustainability in order to serve their own short term greed and to hold on to corporate/political power at all costs - the **psychopathic liars**<sup>13</sup>.

And so, dear reader, please ask yourself this: who are you and what do you stand for?

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(updated June 2011)

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### **Footnotes/references:**

1. EROEI = Energy Returned Over Energy Invested, also called Energy Return on Investment (EROI)
2. to name a few: reports from The UK Industry Task Force on Peak Oil (consisting of several private companies including Virgin Airlines and Arup) <http://peakoiltaskforce.net/download-the-report/2010-peak-oil-report/>, from Lloyds insurers of London, from the German Energy Watch Group, from Oxford University (Smith school), from Uppsala University (which debunked the exaggerated projections of the International Energy Agency <http://www.peakoil.net/publications/the-peak-of-the-oil-age-analyzing-the-world-oil-production-reference-scenario-in-world->), from the University of Kuwait, from the US military (the Joint Operating Environment report from the US Joint Forces Command), a book by Dr. Robert Hirsch (who updated his original 2005 Peak Oil report commissioned by the US government), a report commissioned by The New Zealand Parliament entitled "The next Oil Shock" and Chris Skrebowski's Megaprojects study. Look them up!
3. the mining, transportation and processing of raw materials, the manufacture and transportation of finished goods and all the plastic contained in those goods (as well as the wrapping and styrofoam packing) are all petroleum dependent. Hence higher oil prices translate to higher prices of ALL commodities (and most services), ie inflation. Inflation means a higher cost of living. Accordingly, the interest rates for savings must also rise, which the banks fund by raising loan and mortgage interest rates. In the Peak Oil situation, those in debt will be in deep trouble as it may prove impossible to ever pay it off and they could end up losing all their assets and ultimately trapped as impoverished indentured workers in a feudal system.
4. the real value of paper money is, of course, nothing.
5. there is a term for endless growth of cells in a biological organism. It is called cancer.
6. as opposed to imaginary economic growth, exemplified by the escalation of various share prices before they collapsed (Enron, HIH, Lehman Brothers, Worldcom etc) which were based on pie in the sky numbers and outright fraud.
7. <http://www.peakoil.net/peak-oil-an-analysis-by-german-military>
8. <http://www.d3sj.org/PDF/PEAKOILcorrespondencewithMartinFerguson.pdf>
9. <http://steadystate.org/> Those who repeat the brainless mantra "the free market will save us" have no credibility whatsoever. The Nobel prize winning economist Joseph Stiglitz soundly condemned the Bush government's dismantling of financial regulations, oversight and safety mechanisms (put in place after the 1929 depression) in the name

of “setting market forces free”, which then enabled the subprime fraudsters to make out like bandits. Stiglitz stated that the reason Adam Smith's “invisible hand” is invisible, is because it does not actually exist

<http://www.abc.net.au/tv/bigideas/stories/2010/08/10/2977548.htm> The respected Queensland economist Professor John Quiggin has outlined how delusional economic theory has consistently got everything wrong in his book *Zombie Economics*

<http://press.princeton.edu/titles/9270.html> and <http://zombiecon.wikidot.com/> and suggests better economic strategies. The environmental economists Dr. Richard Dennis and Richard Sanders have advocated the importance of transitioning to a steady state economy in their paper *Future Economic Thought* commissioned by the Australian Conservation Foundation at:

[http://www.acfonline.org.au/uploads/res/FET\\_Discussion\\_Papers-Roundtable\\_pre-release\\_040609.pdf](http://www.acfonline.org.au/uploads/res/FET_Discussion_Papers-Roundtable_pre-release_040609.pdf)

10. reliable resources include theoil drum.com, the ASPO and the Post Carbon Institute's Energy Bulletin websites
11. this is very much in the realm of medical decision making. In a patient with multiple medical problems (hypertension, diabetes, obesity, coronary disease etc) it is essential we choose strategies and medications which cause more benefit than harm. If net harm is caused, if the adverse effects of a therapy are worse than the underlying disease, then it is madness to choose that option. “Free market economics” do not take such vital considerations into account, they externalise the harm, they export the harm to other countries or to future generations. This is why we must ensure the solutions to our global problems utilise medical decision making strategies and we must abandon the obsolete, destructive and delusional zombie economics of the past.
12. compared to household expenditure on cigarettes, alcohol and the pokies, eight dollars per household per week is exceedingly trivial. Consumers seem happy to pay \$4/- for a litre of bottled water, which confers absolutely no benefit compared to Australian tap water. Surely they would be much wiser placing a modest investment in Australia's future.
13. Ted Turner famously said that “*Rupert (Murdoch)'s view of a better world is a world that is better for Rupert*”. The Murdoch media are a major source of disinformation and distortion as exemplified by the lies about WMDs in Iraq and the *Australian* newspaper's Global Warming denialism. We have allowed liars and crooks to pervert national and international policy, resulting in atrocities and disasters such as the invasion of Iraq and the GFC (global financial crisis). If we continue to allow liars and crooks to determine our national and global agendas; far, far worse lies in store for us.