

**THE ASSOCIATION FOR THE STUDY OF PEAK
OIL
&
THE OIL DEPLETION ANALYSIS CENTRE
ASPO-ODAC**

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To ASPO Members

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The First Year

This is the twelfth issue of the Newsletter, which means that we come to the end of the first year of this endeavour that has seen the creation of the ASPO network and ODAC as a physical entity under the management of Dr Bentley. It is time to ask if it represents a useful foundation and, if so, in what way the rest of the construction might be built.

The ASPO network has so far been a passive organisation, yet useful links have been established. Each member in his different way has both become more aware of the issues at stake, and has been better able to disseminate the message through his own channels and contacts. It is encouraging that the group has expanded to now include representatives from Austria, Germany, Ireland, Norway, Portugal, Sweden and the United Kingdom. It may soon be possible to add France. It is also encouraging to find that members are copying the Newsletter for onward transmission to their own circles of interest, such that the readership may run to hundreds.

One important yet to be achieved objective is for the group to somehow secure access to the industry database, which is essential to any serious study of the subject, given that the publicly reported data on production and reserves are so atrociously unreliable. It remains to be seen if a current initiative in this direction, mounted by ODAC, with the support of ASPO members, will bear fruit.

One idea for members to consider is to hold a conference during 2002 to meet, discuss matters of mutual interest, and resolve future policy. In fact, Professor Aleklett tentatively proposes to hold an ASPO workshop in Uppsala on May 23-27th which is an admirable proposal to be followed up.

ODAC, for its part, has been in operation for shorter period of time, yet has successfully organised a seminar and made representations to the UK government such that its viewpoint is now embedded in the spectrum of advice being formally accepted. Discussions have also been held with the European Union and other entities concerning funding and co-operation for further research, and in solving the eternal data issue. The news media have been influenced through broadcasts and articles in an effort to raise awareness in political circles and for the public at large. The formation of an International Board of Advisors has been important step, developing links with key authorities in other countries, especially the United States, Australia, Russia and Iran.

On balance, it seems that progress to-date provides sufficient encouragement to continue to work on a subject, whose importance certainly cannot be exaggerated.

The New Year

Dr Bakhtiari, an ODAC International Advisor, continues to provide invaluable insight into the Middle East situation, as seen from Tehran. The Afghan War is apparently viewed as but one step in a ladder, with a likely escalation during 2002. Dr Bakhtiari fears that Iran maybe an epicentre of conflict, sandwiched, as it is, between the oilfields of the Persian Gulf and the Caspian.

The Eternal Conflict between Science and Religion

In January 1600, Giordano Bruno stood in chains, having been condemned to death by His Holiness, Pope Clement VIII, to be later tortured and burned to death. His crime was to write about science, explaining that the Earth moved around the Sun and not the converse, as was then religious doctrine.

Two hundred and fifty years later, Charles Darwin and Thomas Huxley, who had pointed out scientific evidence for evolution by natural selection, faced vituperative opposition and political scheming by the well-connected Richard Owen and Bishop Wilberforce, who saw the evidence as blasphemy.

Now, one hundred and fifty years on, we face a comparable outburst by a "flat-earth" economist, who sends the following gratuitous comment to the editor of the oilcrisis.com website in California:

"Dear Mr. Swenson,

I don't recall that we have been introduced - or that I have read anything which you have written on the subject of the future of oil. Forgive me if am wrong and let me have details of your own work on the subject.

Meanwhile, I would suggest that you read my recently published book, OIL AND GAS;CRISES AND CONTROVERSIES, 1961 TO 2000; in this book my work over 40 years on the future of oil is included. It is obtainable directly from the publishers, Multi-Science Publishing, Brentwood, UK

You will find in it a full rebuttal of the validity of both earlier and present claims for an imminent scarcity of oil. Developments since the mid-60s in the oil industry have, of course, already shown the earlier claims to have had absolutely no foundation (as I argued). The recent literature to which you refer and your misguided favourable references to it fall into the same category, viz. no foundation in fact and severe misunderstandings of the economics and the political economy of oil reserves and resources.

Please feel free to copy this message to the other addresses on your e-mailing list.
signed P.R.Odell"

This is a man, who has neither drilled an oil well nor evaluated a seismic survey in his life, yet declares that the scientific evidence for depletion is "without foundation". It transpires that the book in question is an anthology of his own repetitive views and opinions, unsupported by any scientific evaluation of the resource base in Nature.

In 1873, Bishop Wilberforce died from a riding accident in which his head struck a rock. Hearing the news, Huxley remarked: "For once, reality and his brain came into contact, and the outcome was fatal".

Are the principles of classical Economics discredited ?

The following article thinks so:

WHAT'S WRONG WITH ECONOMICS? FIVE FUNDAMENTAL ERRORS

The Short Version, by Jay Hanson

(The Long Version is archived at <http://dieoff.com/page241.htm>)

Any ONE fundamental error in neoclassical theory should be sufficient reason to reject conclusions based upon that theory. Here are five fundamental errors in the theory:

#1. A fundamentally incorrect "method": the economist uses "correlation" and "post hoc, ergo propter hoc" (after-the-fact) reasoning, rather than the "scientific method".

#2. A fundamentally inverted worldview: the economist sees the environment as a subsystem of the economy, rather than the other way around. In other words, economists are trained to believe that natural resources come from "markets" rather than the "environment". The corollary is that "man-made capital" can substitute for "natural capital". But the First Law of thermodynamics tells us there is no "creation" -- there is no such thing as "man-made capital". Thus, ALL capital is "natural capital", and the economy is 100% dependent on the "environment" for everything.

#3. A fundamentally incorrect view of "money": the economist sees "money" as nothing more than a medium of exchange, rather than as social power -- or "political power". But even the casual observer can see that money is social power because it "empowers" people to buy and do the things they want -- including buying and doing other people: politics. If employers have the freedom to pay workers less "political power", then they will retain more political power for themselves. Money is, in a word, "coercion", and "economic efficiency" is correctly seen as a political concept designed to conserve social power for those who have it -- to make the politically powerful, even more powerful, and the politically weak, even weaker.

#4. A fundamentally incorrect view of his *raison d'être*: the economist sees "Homo economicus" as a "Bayesian utility maximizer", rather than "Homo sapiens" as a "primate". In other words, contemporary economics and econometrics is WRONG from the bottom up-- and economists know it. The entire discipline of economics is based on a lie -- and economists know it. Moreover, if human behavior is not the result of mathematical calculation -- and it isn't -- then in principle, economists will NEVER get it right.

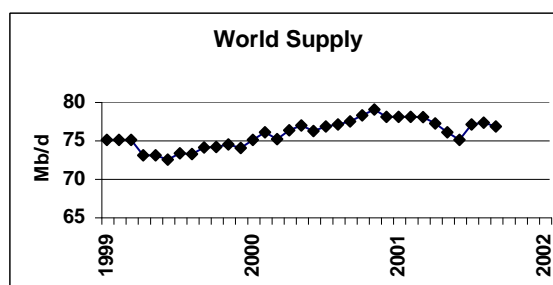
#5. A fundamentally incorrect view of economic *élan vital*: the economist sees economic activity as a function of infinite "money creation", rather than a function of finite "energy stocks" and finite "energy flows". In fact, the economy is 100% dependent on available energy -- it always has been, and it always will be. See a synopsis of the current energy situation at <http://dieoff.com/synopsis.htm> .

What possible role could a discipline as totally screwed-up as neoclassical economics (essentially nothing more than ancient Catholic religious dogma. See: <http://dieoff.com/page243.htm>) play in our society? It's obvious when one thinks about it... The role of the economist is simply to "prevent the American public from achieving a correct understanding of the actual workings of the American economic system." See Robert H. Nelson in <http://dieoff.com/page235.htm> : "The members of the American economics profession, as Arnold contended, performed a vital practical role in maintaining this unique system of corporate socialism - American style. It was their role to prevent the American public from achieving a correct understanding of the actual workings of the American economic system. Economists instead were assigned the task to dispense priestly blessings that would allow business to operate independent of damaging political manipulation. They accomplished this task by means of their message of 'laissez faire religion, based on a conception of a society composed of competing individuals.' However false as a description of the actual U.S. economy, this vision in the mind of the American public was in practice 'transferred automatically to industrial organizations with nation-wide power and dictatorial forms of government.' Even though the arguments of economists were misleading and largely fictional, the practical --and beneficial -- result of their deception was to throw a 'mantle of protection ... over corporate government' from various forms of outside interference. Admittedly, as the economic 'symbolism got farther and farther from reality, it required more and more ceremony to keep it up.' But as long as this arrangement worked and there could be maintained 'the little pictures in the back of the head of the ordinary man,' the effect was salutary -- 'the great [corporate] organization was secure in its freedom and independence.' It was this very freedom and independence of business professionals to pursue the correct scientific answer -- the efficient answer -- on which the economic progress of the United States depended."

Not all economics discredited

We have already speculated that the current world recession was triggered last year when oil demand was hitting the ceiling of supply capacity due to depletion. Demand fell, putting it into better balance with supply. That in turn reduced pressure on prices, which have since collapsed. It demonstrates yet again what an unsatisfactory volatile market it is, over-reacting to small surpluses and shortages. Confirmation for the relationship between recession and oil price shocks comes from the newsletter of the prestigious Argonne National Laboratory, reporting on a study.

It points out that although money supply is normally blamed for recession, the transport sector represents 10% of the economy. High oil prices prompt a fall in the sale of automobiles and products, as well as increasing the cost of transport affecting the entire economic system. The model has apparently demonstrated a close relationship, after a time lag, between all previous recessions and oil price. No other relationship as close has been identified. (see www.anl.gov/OPA/logos19-1/econ01.htm)



World Oil Supply reported by *World Oil*.
Was global peak reached in November 2000 ?

If this is true, the logic is that any attempt at economic recovery will be frustrated in a vicious circle, because it would lead to an increase in oil demand, which would soon again reach the limit of supply capacity, causing prices to soar and re-impose recession. We have already speculated that we may live to

discover that global peak production actually occurred in November last year as a combination of falling demand from recession and progressive depletion makes it increasingly difficult for production to ever again stagger up to last year's level. If so, it would have come only a few years before the midpoint of depletion, which is a normal pattern demonstrated in several mature countries.

The Economist is grasping the truth

The Economist, once the organ of the flat-earth heresy, now sees the oil situation clearly. In another important article *A Dangerous Addiction*, published on December 15th, it concludes that the United States is indeed dependent on Middle East oil as neither technology nor investment can materially increase production from other sources. It tacitly admits to the failure of the open market when it recognises that only higher taxes on consumption can reduce this dependence. It points out that US military expenditure to safeguard Middle East supply is running at \$30-60 billion a year, a charge that can only rise as a consequence of the Afghan War.

Sustainable mobility – a workshop report by Wolfgang Blendinger

-Technical University, Clausthal, Germany

A workshop was held at the Protestant Academy in Tutzing, Bavaria (Germany) between November 19 and 21. The Protestant Academy in Tutzing is well known in Germany for organising high level events on controversial topics of general interest. The workshop was attended by some thirty delegates, in addition to as many speakers from the industry, consulting companies, and academia. ASPO members were represented by Prof. Wellmer from the BGR in Hannover, Jörg Schindler from LBS, and the writer. All three gave presentations.

The main questions addressed in this workshop were:

- undisputed trends and developments in the field of mobility and transport;
- issues which are controversial, and
- the most important open questions.

The lectures could be split into presentations covering the “input” side of mobility, namely: prognoses on the availability of oil and gas, and alternative energy forms such as hydrogen; and the “output” side, namely the climatic issues.

The input side showed, not unexpectedly, the persisting (unfortunately occasionally polemic) controversy between the more independent analysts (and, therefore, often dubbed pessimists) such as Jörg Schindler and the representatives of major companies such as BP's Peter Knoedel. The latter, for instance, submitted that (car-based) mobility is so-to-say implemented in the human genes! An intermediate, but very unpolemic, view was offered by Prof. Wellmer from BGR, who thinks that the time of mid-point depletion will be 2020. The discussions of the presentations did not bring much new, because of the fixed nature of the viewpoints. It is remarkable to the writer that all are apparently using the same database but manage to arrive at such different conclusions.

Also for the input side there were talks by representatives from the main mobility sectors including planning and consulting companies, car manufacturers, the German Automotive Association ADAC, and a government representative. They all agreed in their prognosis that mobility will increase. The main message to the writer was that the population is deemed to be unwilling to restrict individual mobility (this is, usage of cars, trucks) and relies on the hope that technology can offer more efficient use of fossil fuels. The message from the government was that it is not prepared to interfere in any way. The market forces are believed to fix arising problems.

The output side, namely the climatic concerns, were not very amply represented in the workshop. The few presentations stated the importance of meeting international agreements on CO₂ output reductions. While Germany is expected to meet the requirements, it was more than once clearly stated that unilateral action would not be enough. The writer dares to wonder: why?

In conclusion, the workshop was well organised and chaired by Dr Martin Held, an economist by background (but certainly not one of the “flat earth” category). It was an experience to have met high ranking individuals representing such diverse opinions. The talks were generally of high quality, but

occasionally supported by low quality illustrations such as lengthy tables etc. The expected answer to the question: what to do next (in this field of sustainable mobility), was, however, not completely achieved in the writer's opinion.

Dutch Government Sued over Depletion

Although we do not have details, it is understood that the Dutch Government has been sued by a youth group claiming that its Government has been irresponsible in allowing the depletion of the country's gas without making adequate provision for energy-saving and substitution to replace it when it is gone. Evidently, this group accepts the strength of the adage : "*we don't inherit from our parents, but steal from our children*"

The Swedish Government responds

Professor Aleklett reports that his efforts to secure research funding for the study of oil depletion and the resource base are receiving a favourable response from the government, which is becoming aware of the critical impact of the subject on national economic policy.

Report from Australia

Dr Brian Fleay, an member of the ODAC International Board of Advisors, reports on developments in Australia. Immigration is always a sensitive issue, and particularly so in Australia which adjoins a very populous part of the world. The government has commissioned a new study on the level of population that is sustainable in a country where indigenous oil supply is now at peak and set to decline. The issue of oil depletion is also being covered in a new two-year policy review being undertaken by the Premier's office.

Although large, much of the Australian continent is a stressed and sensitive natural environment with limited soil fertility, adverse climate and water shortage. It is both natural and encouraging that the country seems to be taking a leading role in planning for a sustainable, post-materialistic future.

It is also noteworthy that Les Magoon, the maverick member of the US Geological Survey, who warns of an imminent peak of oil production, has made an extensive lecture tour of Australia, briefing Ministers, who in turn have alerted the Premier. Given that another branch of the USGS has put out such a thoroughly flawed study claiming an abundance of oil far into the future, it is perhaps surprising that he has not been subject to the attentions of the CIA. It is especially curious because the USGS seems to go to exceptional lengths to publicise its flawed report, sending emissaries to conferences all over the world and infiltrating the International Energy Agency.

It is encouraging that the CSIRO, the government agency responsible for scientific and industrial research in Australia, puts out a website drawing attention to the impact of oil depletion: <http://www.bml.csiro.au.bigrol.htm>

Excellent report in Le Monde of France

On December 6th, the prestigious Le Monde Newspaper of France carried an excellent article explaining the approach of the post-petroleum age. The article contrasts the bland words of the oil companies and the IEA with the warnings given by ODAC. On balance, the article leans towards a looming crisis.

The Nemesis Report

The study of oil depletion is such a sensitive issue that knowledgeable experts in industry and government find themselves at risk if they should discuss it openly. The Nemesis Report is therefore to be widened to include non-attributed commentary from these muzzled sources.

WINNERS AND LOSERS

The Third World War, which began on September 11 with the tragic terrorist attacks on New York and Washington, will be a protracted, bloody and cruel war. It will engulf the Middle East in a shattering cyclone of violence and destruction. But, there may be a positive side insofar as war can accelerate the resolution of deeper long-term tensions.

The victors and losers can, already, be clearly seen. On the victorious side will be the so-called Allies, with the US taking the lion's share of the spoils of war in the Middle East. Britain will play second fiddle in the Middle East despite having had 400 years of experience in the region; and Russia will have to be content with a back-seat role. She will get more than she deserves, but much less than she had hoped for – having been less useful to her allies than she had been in World War II. All seven 'Stans' --- from northern Kazakhstan to southern Pakistan --- stand to be substantial winners, albeit relative to their starting positions in 2001. Afghanistan will embrace peace after a quarter of a century of warfare, and Pakistan will reap the fruits of its timely co-operation. The central Asian 'Stans' will finally come in from the cold of the old Soviet Empire. Also on the winning' side will be the major oil and gas companies, standing to benefit proportionally to their size, when called in to sign lucrative Production Sharing Agreements. Finally, the very poorest among Middle East groups and individuals will emerge as winners, getting the bare minimum as the Allies launch a 'Marshall Plan', partly financed by the region's crude oil exports.

Both the Israelis and the Palestinians could end up as winners or losers. Their intricate problem is the most convoluted Gordian Knot in the world: and any solution, however limited, could bring a degree of stability to the whole of the Middle East. But the prospects are not good, given that half a century of warfare and negotiations has so far utterly failed to reach even square one.

On the losers' side will be all Middle Eastern regimes supporting (openly or covertly) terrorist activities --- justly reaping the seeds they have sown. Another casualty might be the 'Euro' whose launch has come at the worst possible time; further adding to the woes of the European Union apart from Great Britain who will, however, have to sheath her bid for superpower status.

Also among the losers will be the main oil importers in the Asia/Pacific region, once again denied control of petroleum reserves --- with the behemoths India and China topping the list. But neither of these powers could have afforded not to climb aboard the anti-terrorism train whatever their apprehensions over the consequences --- and however unpalatable these might prove to be, especially for China,. It will now have to bide its time and wait for the end of the present decade to make its gambit for control of oil reserves (at a time when its oil imports have eventually surpassed its domestic output and its muscles are more ready to be flexed). But this will fall outside the scope of the present war; maybe to become the stuff for a Fourth World War --- bearing in mind Walter Lippmann's prophetic words "China on the loose...". Did anyone say there was an "End to History"?

OF MATH AND SEESAW

Most, if not all, of you will have played on seesaws as children - a rather overrated experience as there is little fun to be had unless the two children are of very similar weights. Quite small imbalances produce skyward hikes and spine-jangling crashes. It is a bit like crude prices in the oil industry. However, it is not prices I wish to discuss but production decline.

Of the world's 800-900,000 producing wells, all are experiencing flows that are either rising, roughly constant, or declining. In fact the overwhelming majority are in the static or declining categories. For the present, the declining flows are offset by the increasing flows. However, just like the seesaw this can change very rapidly indeed. Overall decline occurs when the loss of volume from declining wells exceeds the gains from the wells with increasing flows.

To labour the point a little, there can be significant new discovery and development but total output can still be falling. If your boat is shipping water faster than you can bail it out you will sink.

So now to some simple math. At the moment the world is producing around 75 million barrels/day of liquids (oil plus condensates). Typical onshore decline rates are 3-5% while offshore they are double that level at 6-10%. The state of each element in total production is difficult to assess but an intelligent guess would be that around one-third of production (25 million barrels/day) is experiencing decline. Onshore the US (lower 48 +Alaska), much of western Canada, most production in continental Europe plus a lot of older Russian and Chinese production, Syria, Colombia and Egypt fall into this category. The next 25 million barrels/day are in areas struggling to maintain production expanding some years and contracting in others. Examples here would be Argentina, most of the remaining onshore production in Asia, Europe and America with the North Sea now in this category. The final 25 million barrels/day come from areas of expanding production

essentially the new offshore areas plus some but not all Middle East production plus a few new fields scattered round the world.

Now to hold production steady the expanding sector has to match the declining sector. As virtually all the decline is currently onshore getting it to add up is quite easy. The 5% decline is offset by a 5% gain in the expanding sector. If we have a little growth of say 1-2% this can easily be met with growth of 5-6% from the expanding sector.

Now suppose we have no growth at all but all the production that had been holding steady has now slipped into the declining sector. On Colin Campbell's analysis this could be the case as early as 2004/5. Now we have 50 million barrels/day declining at 5% and just 25 million barrels/day of capacity with expansion potential. Just to hold output steady this now has to expand at 10%. This means long before we run out of new fields or even expansion capacity the problem is becoming harder and harder as the remaining expandable fields are called on to produce faster and faster. This of course means more and more of them become depleted and drop into the declining output category, which in turn means that those that are left have to increase output even faster still.

Now if demand growth returns to the historic 2%/year then 2000's 75 million barrels/day becomes 90 million barrels/day by 2010. Suppose 60 million barrels/day was declining by 7%/year (to take account of the faster offshore decline rates) then the expanding 30 million barrels/day would have to expand by a demanding 14%/year. If, as is more likely, only 15 million barrels/day had expansion potential then it would have expand by a fairly ludicrous 30.33%/year (65 divided by 15 times 7%).

The conclusion is simple. At some point between now and 2010 the required expansion of production from fields with expansion potential will be so great as to be effectively impossible. Decline becomes inevitable and like the boat that can't be bailed out rapidly enough nothing can stop it sinking.

Pressure at the Local Level

Government is not by any means all one way, as in many respects central government is fashioned by pressure from below. Efforts to alert local groups about the impact of oil depletion are therefore well worthwhile. In this connection, contact has been established with the Cork Environmental Forum in Ireland. It is an umbrella organisation that co-ordinates the efforts of many entities concerned about the environment, working with the backing of local and national government. It has put out admirable position papers on a wide range of topics, including Energy. The group is being alerted to the dangers of oil and gas depletion, to which Ireland is particularly vulnerable, having no indigenous oil supply and being very much at the end of the line when Europe comes to rely on Siberian gas. No doubt, other ASPO members have opportunities to influence local groups concerned about their future, perhaps finding use for the Presentation described below.

ASPO Presentation

Work is far advanced on the preparation of a Power Point presentation on oil depletion, which it is hoped to distribute as a CD during January, after further checking and editing.

Recent Exploration and Production Highlights

Alaska – Large areas of the Beaufort Sea are being leased.

Algeria – Plans are being made to connect up to Nigerian gas supply with a new pipeline link

Angola – Another deepwater discovery has been made in Block 14 with the Tombua-1 wildcat.

Azerbaijan – The first well on the Azeri Field finds no more than a thin oil zone.

Canada – Canada's oil companies are being bought up by US interests, desperate for new supply

China – a high level of drilling and exploration activity is being maintained

Colombia – Appraisal drilling in the northern Llanos fails to confirm the Siriri discovery, initially estimated to contain as much as 1.4 Gb of reserves

Ecuador – A promising gas discovery has been made in the Gulf of Guayaquil

Faroës – Well 6004/12-1, an important test of the Atlantic Margin, gave negative results.

Iran – Production in the Foroozan-Esfayandar field is set to double to 100 000 b/d by 2005.

Ireland – The Austrian company OMV has decided to explore off NW Ireland

Kazakhstan – A 1500 km pipeline from the Tengiz Field to Novorossisk has been completed

Mauritania – Hopes for an offshore area have been dashed by the 4452 m wildcat Courbine-1A

Sudan- The Bamboo Field has been brought on stream, with 26 wells expected to deliver 30 000 b/d

Vietnam – A gas-condensate discovery has been made in the so-called Swan prospect, offshore

Discovery in 2001

As the year comes to an end, it is difficult to think of any particularly significant discoveries during 2001. Some large deepwater finds were made on the West African margin in well-established provinces, but otherwise there has been nothing particularly noteworthy. No important new provinces have been identified. As a tentative guess, perhaps total discovery will amount to around 10 Gb/a with about half coming from deepwater areas, here defined as Non-Conventional. If so, the long-term downward trend will have resumed after the spikes of last year. Generally modest gas finds continue to be made in many areas. There are some indications that Siberia may have more potential for oil and gas than so far appreciated, but in terms of timing, its main impact is likely to be in ameliorating the post peak decline rather than delaying peak itself.

Depletion Model Update

The Oil & Gas Journal data on reserves and production for 2001 is now available. Work will commence on updating the model, and ASPO members will be invited to contribute further analysis in due course.

The editor of the Newsletter very much welcomes contributions from members and other readers, who may wish to draw attention to items of interest or comment on the progress of their own research.

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