Re: The irony, tragedy and morbid humor of Ayn Rand

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From: Clouseau2 (*eric_at_webmethods.com*)
Date: 01/03/05

Date: 3 Jan 2005 11:01:46 −0800

Eric Gisin wrote:
> *"Clouseau2" <eric@webmethods.com> wrote in message*
> *news:1104648707.802897.297110@c13g2000cwb.googlegroups.com...*
> >
> > *The world oil industry is running at 99% capacity and demand just* keeps
> > *growing. Discoveries peaked 40 years ago, and what new oil fields* are
> > *being discovered each year are more and more miniscule. Coal,* heavy
> > *oils, tar sands, shale, etc., can all be used to replace the oil,* but
> > *are either 1) require way too much energy to exploit and are thus a*

> *Nope. All fossil fuels require energy to extract and refine. Oil sand*

This is true.

> *extraction can use nuclear power.*

It probably can. But will it? Building nuclear power plants is a huge undertaking and is politically loaded.

Do you have any idea of the scale of pollution in Alberta, where they are mining the tar sands? It is mind blowing.

You need to read up on EROEI. There are many articles on this on the internet.

http://www.peopleandplanet.net/doc.php?id=1769

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Production from tar sands now accounts for about 19 per cent of Canada's crude oil supply, and investment in 1996 was over $3 billion. Over the next 25 years, Western Canada's oil industry hopes to increase

synthetic crude oil production sharply, to 1.2 million billion barrels
a day at a cost of up to $20 billion.

The problem is that it takes almost as much energy to produce tar sands
as it generates. Indeed, it almost takes as much energy to mine,
process, refine, and upgrade the bitumen oil out of tar sands as the
oil−energy that would be produced from the tar sands.

In the process much more carbon dioxide emissions are generated getting
the tar sands oil out than would be the case with conventional oil.
There are estimates that 5 to 10 times the amount of greenhouse gas
emissions come from processing tar sands as it does processing
conventional oil.

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Fortunately there is an excellent interview which condenses an
excellent book by Richard Heinberg that addresses this:

http://www.globalpublicmedia.com/transcripts/220

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Richard Heinberg:
Lets just talk about the net energy per say and then we can get into
talking about the consequences of oil depletion. Net energy is is one
of the most important concepts for people to grasp if they're going to
understand our energy reality. It takes energy to produce energy and
this is true at every level from a bacterium on up. A bacterium has to
expend energy in order to get a bit of food. Human beings have to
expend energy in order to get their food and energy. We have to expend
energy in order to search for oil or coal or other energy resources.
And the name of the game of survival is making the amount of energy you
have to invest to get your energy less that the amount of energy that
you ultimately harvest. If the amount of energy that you have to spend
to get your energy is greater than the amount of energy you eventually
get. In the biological world, you die. That's pretty much the end of
the story. Well, when industrial societies discovered fossil fuels, and
that's what industrialism is all about, was the discovery of fossil
fuels. When industrial societies began using fossil fuels they had come
upon a source of energy with an extremely high net profit. This was
true for coal and spectacularly true for oil, particularly in the early
days. You have to remember oil in many reservoirs is under pressure.
There's huge pools of this black energy dense liquid underground and
basically all one had to do was stick a pipe down there and the oil
under pressure would flow up through the pipe and all you had to do
then was find some way of getting it into the barrels or tanks or
pipelines to take it where you wanted to to use it or refine it. This
was natures free gift of energy that had been produced millions of
years ago and stored through geological time, and the net profit on oil
as a form of energy in those early days was way over 100 to 1. In other

words by expending 1 unit of energy in exploration and drilling and so on. One could reap 100 units, 200, 300 units of energy profit. Now other sources of energy don't have such a spectacularly high energy profit ratio. In fact virtually none of them do, and that's true of coal, that's true of nuclear energy, it's true of wind, solar and all the rest. And in fact oil itself has a variable net energy return, and its net energy return is being reduced year by year. Why's that happening? Well, the stuff that's easy to find, the stuff that's under high pressure is the stuff that's being depleted first. It makes sense, if you're an oil company you're going to look for the stuff that's cheapest to extract first and only when that's gone are you going to want to invest in extracting the stuff that takes more time and energy investments. So, we have at this point extracted almost half of the oil that's going to be extracted economically. About 1 trillion barrels, and that first trillion barrels that we've extracted is the easy stuff. It's the stuff that's easy to find, it's under high pressure, you just have to stick a straw in the ground and it comes bubbling up. What's left, the oil that's left is going to be more costly to extract, so the net energy profit from that oil, instead of being, you know, 100 to 1, 200 to 1. Oil exploration and extraction are already down to by some figures 20 to 1, 30 to 1, 40 to 1 in that range. And within the continental US, the activity of oil expolration has an energy profit ratio that by some estimates is down to about 1 to 1. In other words it costs as about as much energy to search and extract a barrel of oil in the continental US as that barrel of oil actually contains. So what this means is the net energy available to industrial societies is being reduced year by year. Industrialism as a way of life, as a pattern of existence on this planet for human being succeeded because of this immensely huge energy profit ratio that existed in the late 19th century and early 20th centuries. That's what permitted us to build the vast infrastructure of agriculture and industrial production and transportation that we have now. It costs energy not just to grow that infrastructure, but just to maintain it, and where's that going to come from? Not only as we reach petroleum extraction peak, but also as we pass. As we have already have passed the peak in the net profit from investment in energy resources. What we're headed toward inevitablity is a much lower energy form of society. Industrial societies, if they're to survive, have to find a way of working on the basis of using vastly less energy per capita then we've become accustom to. Whether they're up to that, whether it's possible for industrialism as a way of life to function in a much lower energy environment is an open question, and I think that's actually the most important question that will be facing us during the next century.

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> > poor replacement 2) cause horrible pollution and environmental
> 60 years ago the major fuel was coal, and its pollution was much worse. We
> survived, and coal is burned much cleaner today.

Coal still contains mercury and other nasty compounds, those have to go somewhere.

> *> > devastation or 3) will also run out quickly if we convert our*
> *> > transportation system to use them. It is simple to show that if a*
> *> Nope, you won't live to see the end of oil and gas, and fuel from* coal and tar
> *> sands will last hundreds of years. Oil prices are causing shifts to* other fuels
> *> now.*

Actually they will most likely NEVER run out. They just won't be able to meet demand. What other fuels? Biofuels from crops that require natural gas and oil for inputs? Gasification of coal will quickly use up that resource, and all the easy coal has been mined out already.

> *> > resource is finite, with a 2% yearly growth rate it will quickly be*
> *> > used up, especially if we are anywhere near using 50% of what has* ever
> *> Population growth has to stop for reasons other than energy* depletion. So
> *> energy use will level off.*
> *> > existed. This would be true even if the entire planet was a* perfect
> *> > sphere made up only of oil. This is not economics, this is*
> *> > mathematics.*
> *> >*

−Eric