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2008

Retrieved on 21 September 2010 from
anarchism.pageabode.com
The article is from Red & Black Revolution 12. Its first
publication online was on indymedia.ie

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The politics and reality of the peak oil scare

Andrew Flood and Chekov Feeney

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Contents

including the need for an environment, which can support all of us, becomes more urgent with every day.

Andrew Flood & Chekov Feeney

looked at from the viewpoint of the future needs of the people of the planet. It could well be that the root to securing greatest profit for capital is that of exploiting the unconventional oil deposits. In that context feeding the panic about energy supply, and in particular the idea that renewable energy cannot be an alternative, is a very serious mistake as it would encourage many people to accept what would be a very polluting source of energy over efficiencies and renewable energies.

The greatest threat to most humans is not peak oil but rather global warming. Changing weather patterns and rising sea levels already threaten hundreds of millions of the poorest people on the planet. In that context, there is a real danger of peak oil hysteria simply playing the role of a distraction from the need to make real rational decisions about energy production.

The sort of energy debate anarchists need to be promoting is not that of conspiracy theories and collapseism. In the anti-war movement, conspiracy theories around the 9/11 attacks may grab the popular imagination, but they are a serious barrier to any real discussion of imperialism, the causes of the war and how it can be opposed. So it is with Peak Oil and the struggle that needs to be waged against climate change.

We need to help initiate a debate about a real program that people can fight for in relation to climate change. A program that can offer real solutions to filling our need for energy, but ones that do not lead to severe damage to the biosphere which we share.

In the medium term capitalism's continuous need to grow also means that the danger of some key resource running out before an alternative could be developed will always be with us. As will the danger of some by-product of production resulting in a drastic change in the suitability of the planet for human life. As the world?s population increases, any major sudden change could result in the deaths of billions of people. The need for a rational system of economic organisation based on human needs,

Peak Oil Theory has been around since the 1970s. Some think we have already reached 'peak oil', others think it will happen with the next twenty-five years. The theory argues that when we reach 'peak oil' the rate at which we extract oil from the earth (measured in millions of barrels per day) will reach a maximum and thereafter will start to drop.

As the rate at which we use oil is currently close to the rate at which we extract it, the point of peak oil will coincide or be closely followed by the world consuming more oil than it is producing. As oil reserves are very limited, within months there simply will not be enough oil available.

For this reason Peak Oil Theory tends to come as part of a package which is about more than the production and consumption of oil. It also expresses fears about how society will be affected when the oil runs short. In essence, Peak Oil Theory is both about the economics of oil and a pessimistic vision of the future. In many cases Peak Oil is a theory that catastrophe is about to hit humanity. In the first half of this article, I ask if our future is inevitably pessimistic.

In the second half of the article I will examine the peak oil claims themselves. How bad do things really seem to be? This article will demonstrate that the depth of polarisation over this issue is such that even claimed 'scientific facts' cannot be trusted to be accurate but rather tend to reflect the ideological point of view of those offering them. On the one hand, a decreasing number of people deny there is any problem with oil supply. On the other are a growing number who predict peak within a few years and a cataclysmic effect on civilisation as a result.

Why should anarchists care about this argument? Well, if such a crash were to happen it would be a disaster, not only for the world?s population but also for the anarchist project. Oil provides most of the energy that makes current standards of living possible. The nature of the crash would set worker against worker in the fight for access to the limited resources

the ruling class would allow to trickle down. And, as the various national ruling classes fought to gain control over the resources of other nations, workers would be pitted against each other in more and more destructive wars.

Before we panic though we need to consider how real all of this is.

replaced continent-sized forests with farms, created vast areas of the world in which any impediments whatsoever, whether geological or biological, have been ruthlessly excluded. We have driven most of the species that might compete with us at the top of the food chain to the point of extinction.

Although it would be foolish to imagine that we have reached the limit of our innovations in terms of shaping the planet to our needs, this is an inherently risky route to take from the point of view of our species' survival. The earth's ecosystem and climate are unpredictable complex systems and could, at any stage, undergo dramatic change to arrive at a new point of equilibrium — a point that will probably be far less hospitable to our species — due to the unpredictable results of the dramatic changes that we are forcing upon the earth. In particular, most scientists believe that it is likely the atmospheric pollutants emitted by human industry may cause dramatic changes in our climate through what is known as global warming.

The elephant in the living room

The energy debates provide a useful mechanism for exposing the irrationality of capitalism. For instance, the market will decide the balance between supply and demand solutions to energy needs. Yet the most profitable solutions — like using unconventional oil resources — may also be the ones that require vast quantities of energy to extract and which in themselves, and because of this, will result in massive additional releases of CO2. Almost certainly if the population of the world was to decide on how to best fill our energy needs we would not take the path it looks like the market will dictate.

This is the key point. Whether or not the peak in conventional oil is imminent or decades away, the method in which capitalism will fulfil its energy needs will be irrational when

and that the cost of any solutions will also be imposed on the working class.

The fact that the likes of the BNP see something to be gained from creating a panic around peak oil should also give us pause for thought. Panics are not the atmosphere in which a libertarian society can easily be built. Rather panic and the fear of collapse of civilisation are precisely the requirements of dictatorship and fascism when it comes to forcing populations to accept that the boot on the neck is better than the alternatives.

We have seen Malthus was wrong because he underestimated human ingenuity. However, although it is tempting to attribute the deviation of human population figures from those Malthus predicted as purely being a consequence of the scientific revolution that coincided with it, it would be foolish not to note that the period since Malthus made the predictions also saw the transformation of social organisation in the guise of capitalism, which has today become so pervasive as to be almost invisible. For while the human ability to cooperate and innovate has provided the materials, capitalism determined the way they were used.

Consumerism is based upon people's desire to possess and consume resources and it provides a constant incentive for economic decision makers to extract more resources from the earth and to transform them into a form that is useful to humans. Thus, much of human innovation and scientific thought has been devoted to increasing the supply of resources available to the species and this has worked to such an extent that global food supply has consistently increased faster than the human population since Malthus's time.

This unprecedented increase in available resources can be seen as humans consciously diverting ever more of the world's resources towards themselves. This is not without its costs. Thus the last few centuries have seen our species actively shaping the planet's environment in order to provide this ever-greater supply of resources. We have transformed eco-systems,

Part A: We are all going to die!

The idea that the human population growth would cause it to go into decline is not a new one. An 18th century English economist called John Malthus first made it. The arguments he put forward then are very similar to the arguments made by the Peak Oil theorists. It?s worth going back to the beginning and looking at Malthus? ideas as perhaps the modern day theorists are equally wrong in the assumptions they share about human society.

Why does Malthus matter?

In the late 18th century Malthus produced the first really systematic look at the question of human population. By looking at the patterns of population changes in various species he concluded that, in the absence of predators, the population of any species would increase exponentially, until it exhausts the resources on which it depends, upon which point the population will collapse dramatically. Based upon this theory he predicted that the human population would continue to go through cycles of exponential growth, followed by sudden collapse.

When applying this theory to humans, Malthus added in a strong moral dimension. The lower classes tended to have more children, and he argued this was a sign of their moral degeneracy. Hence the population collapses that would be experienced through famines and environmental destruction were evidence of God punishing the poor for their immoral ways. This outlook

proved particularly attractive to the ruling classes who could present famines among their subjects as part of the natural order of things, or even as an example of God's righteous wrath against sinners.

For example, during the Irish famine of the 1840's, English politicians were able to justify their lack of intervention in Malthusian terms — the famine being, after all, God's natural means of keeping the population in check and simultaneously punishing the sinners, rather than having anything to do with the policies of the government. As Malthus put it, *"this constantly subsisting cause of periodical misery has existed ever since we have had any histories of mankind, does exist at present, and will for ever continue to exist"*. Thus the upper class continued to export food from Ireland as hundreds of thousands starved to death.

Today Malthus is a deeply discredited theorist. His intermingling of scientific observation with highly subjective moralising is obvious to us as nothing more than a crass justification of power and privilege without responsibility. However, perhaps more importantly, he turned out to be wrong. Since the time of Malthus, the human population has not suffered any of his predicted collapses. Instead the world's population has continued to grow and grow. From less than a billion in the 18th century, it has grown to over 6 billion today. This trend has been slowing but all the same the UN predicts that, on current trends, the world's population will be approaching 10 billion by 2050.

However, no matter how discredited the ideas of Malthus rightly are today, it is worth looking at the reasons why his predictions were so wrong. Firstly, we now know that population trends are much more complicated than Malthus imagined. However, we do know that in general, unless they are checked by predation or competition for resources, populations of species do tend to follow a basic Malthusian cycle of steady growth followed by sudden decline. For example, modern evolutionary biology provides plenty of evidence that

Part C: The politics of the choice

The problem for anarchists is that these two separate possible futures are so different that it is hard to know how to judge where the truth might lie. The worst-case scenarios argued for Peak oil theory are essentially the end of civilisation as we know it. On the opposite extreme, there are still those who deny the possibility of any future long-term energy shortage. The complete lack of agreement even on the 'facts' that would seem to be straight forward — the EROEI's for convention and unconventional oils, solar and wind power — illustrate the great difficulty in choosing between these scenarios.

For understandable reasons, some anarchists have embraced peak oil theory because they simply believe the corporations are lying and cannot be trusted. However, for the reasons already outlined, even if this was the case we would expect individual greedy capitalists to be buying up 'cheap' oil futures, and so far there is no evidence for this.

So far the evidence is not there to uncritically support the peak oil predictions. Anarchists need to maintain a critical attitude to the whole debate. In the meantime we can use the debate itself as an educational tool. For instance, very few if any of the peak oil proponents seem to have thought about what the impact of peak oil would be on class society. The most common presentations of the outcome seem to see everyone suffering equally. But the reality that we know from every natural disaster is that most of the suffering falls on the working class,

production) will continue to fall (even in the gas guzzling USA it halved between 1971 and 2002). This allows for limited economic expansion without additional quantities of energy as less energy is used per unit produced.

the human population has collapsed to relatively tiny numbers — as few as thousands of people — on several occasions in the last 100,000 years.

However, modern humans have achieved a mastery over the earth, which allows us to consciously affect and increase our food supply. But Malthus was aware of this uniquely human trait, as he himself put it: *"the main peculiarity which distinguishes man from other animals, is the means of his support, is the power which he possesses of very greatly increasing these means."* So where exactly did he go wrong? Why has the population continued to increase at an ever-greater rate since his time, rather than collapsing as he predicted?

Underestimating the power of humans to innovate

Malthus? basic scientific error was in underestimating the rate at which human ingenuity could increase the amount of resources available to them. Although Malthus and his peers in the ruling class were quite content to allow large chunks of the population to starve to death every so often, seeing this as God's will, many of those people threatened were not. The period since 1750 has been particularly marked out from the periods that came before by an almost constant scientific revolution.

As religion has waned in influence, people became less inclined to write off human catastrophes as God's will and instead were moved to look for the material causes of human suffering and ways to avoid them. Many of these advances have rested upon human beings? unique ability to cooperate in vastly complex social organisations and our ability to consciously adapt our behaviour. So, for example, the doubling of life expectancy in the West owes most to the enormous public health and sanitation infrastructure that has been built up in

the last 100 years in the West, as well as to the collective applied brain-power of some of the brightest human minds over several centuries in order to devise the solutions upon which we depend.

Malthus was wrong, human ingenuity overcame the iron laws of nature he claimed to discover. Peak oil is a new Malthusian panic where access to energy is the limiting factor that access to food once was. In the next section, I focus on energy as a limiting factor. The strongest part of the peak oil argument is that we are reaching the limits of conventional oil — this may be true. However, the arguments are flawed when they argue that there is no alternative to this oil. Making room for the human ingenuity that Malthus ignored, I will look in particular at the role of alternative energy resources and the use of 'unconventional' oil resources.

up in sand or shale deposits. Extracting this sort of oil is an operation more like open cast mining than conventional oil drilling. And the sand or shale extracted then has to be subjected to an energy intensive process to sweat the oil out. This currently gives EROEIs of up to 3[12]. The largest deposits are in Venezuela and Canada, and these are already producing over a million barrels a day. It's estimated that these two deposits contain twice as much oil as all remaining conventional oil reserves, although only some of this is easily reached by strip mining.

Other problems and solutions

It is argued that electric power is not nearly as useful as oil is. Electricity requires power cables, or bulky batteries to be transported. There may be areas of the world's economy where there is no possibility of replacing oil with electricity as an energy supply. But the same factors actually give an advantage to solar and wind powered generation that can be generated on isolated sites of consumption not already on a power grid. The rapid development of plug-in hybrid cars and perhaps hydrogen fuel cells suggests that the use of electricity to power vehicles is a lot more feasible than initially thought.

On the demand side, rising prices have made large cars less affordable and encourage efficiencies in fuel economy. This means that demand for smaller cars and for hybrid cars will rise (home conversions have already demonstrated that up to100 miles per gallon can be achieved with hybrids that can be plugged into the mains). Homes, offices and appliances will become more energy efficient and increasingly will generate at least some of the energy they consume through alternative technologies. The ratio of oil use to GDP (a measure of

[12] Actual figures I've seen claimed range from 0.7 to 17. Shell reported an EROEI for one oil shale extraction of 3.5, see www.csbj.com

power claim EROEI's as high as 17 with payback for panels thus achieved in as little as 1.7 years.[11]

The low estimate EROEI figures are alarming but so in fact would the five fold drop in the EROEI of oil between 1900 and 1970 without the benefit of hindsight. Given these figures alone, and an idea of how important oil was to the economy, an alien observer might well guess that production had crashed by 1970. Instead it massively increased in that period — clearly there is a need for caution in assuming that even a future five fold drop in EROEI would automatically means a similar crash in production.

This is leaving aside that this fivefold drop basically comes from selecting the estimates of EROEI most favourable to the idea of peak oil as a cataclysm. If, instead, you select the sort of estimates that show wind power to have a much better EROEI then oil you start to get a different story. The EROEI figures are massaged to put forward a convincing argument, but the more you examine them the less convincing that argument becomes.

Is there more oil out there?

When you examine in detail the texts on Peak Oil, you realise that the peak predicted is for conventional oil. What does conventional oil mean? Basically conventional oil is what we all think of when we think of an oil field. It is the oil that can be obtained by drilling a hole in the ground and pumping out the liquid to be found there. Part of the reason the EROEI for oil was comparatively high in the 1900s was that the easiest fields then were actually under sufficient pressure to drive the oil out of the wells.

In addition to such conventional oil there are other sources, and the potential reserves in these are massive. They comprise oil that is very difficult to extract, typically because it is bound

[11] Energy Research Centre of the Netherlands tinyurl.com

Part B: Energy and the limits on growth

As some people have applied themselves to the problem of extracting resources from the world and turning them to human uses, others have been working out the basic laws of the universe and trying to understand our place within it. We know, for example, that our species is going to be basically limited to the resources of this planet for the foreseeable future. We also know that one of the fundamental resources upon which humans depend is energy.

The earth ultimately receives all of its energy from the nuclear reactions in the sun. The energy from the sun is generally very hard to efficiently capture and turn into a form that is useful, and the vast majority is either absorbed by the oceans or the atmosphere as heat and or reflected back into space. However, a tiny fraction of the energy that the Earth has received from the sun over the last billion years has been trapped on the earth in the form of fossil fuels. These fuels are particular in that they are extremely easy to extract energy from — just add fire. Their organic nature also means that they are useful in other areas of the process of the transformation of sun-energy into human consumable energy — in particular petrochemicals which are crucial to modern fertilisers. Their nature of being relatively stable and easy to transport in normal atmospheric conditions makes them particularly suitable for transportation — another crucial part in the transformation of sun-energy into human consumable energy.

The big problem is that while we continue to relentlessly expand our use of the earth's resources, we can be absolutely certain that oil production will eventually peak. Based on the best available current data, this will happen sooner rather than later. Although, the exact timing of the peak in global conventional oil prediction — known as "peak oil" is heavily disputed — many credible scientists claim that it will happen within decades and several suggest that it may already have occurred.

Why is Peak Oil a problem?

Of course oil will not suddenly run out one day, leaving all the petrol pumps dry. Instead it will reach a relatively sharp peak of production, beyond which it will be impossible to efficiently extract any more oil, and production will somewhat gradually decline from that point on. Under capitalism "efficiently extract" simply means the ability to make sufficient profit from the extraction. The major oil companies currently abandon productive fields when profit drops below 20%.[1] Oil fields are abandoned before they are empty for this reason.

The theory that peak oil was imminent was first put forward by US geo-physicist, M. King Hubbert as long ago as 1956. He predicted that oil production in the continental United States would peak between 1965 and 1970; and that world production would peak in 2000. His prediction proved slightly inaccurate, as US production actually peaked in 1971 and world oil production will probably peak sometime after 2004. However, aside from the details of exactly when this peak would be reached, his predictions for the patterns of flow turned out to be largely accurate. According to the International Energy Agency's (IEA) World Energy Outlook 2004 Report: *"Fossil fu-*

[1] The hidden agenda; framework for an alternative oil policy, A Norwegian trade union perspective on the internationalisation of Statoil, translated by Laurence Cox

usefully dammed to gain energy is already much closer to exhaustion than the oil supply. This is true for major dams, recently additional power has started to be generated through the construction of minor dams, which are similar to weirs[7].

On the supply side this means that a rising percentage of energy will come from alternative sources. Most importantly wind, wave, bio fuel and solar power. Wind power is already undergoing a rapid expansion — last year Denmark, the world leader, generated 23% of its electricity from wind power. Greenpeace estimates that by 2020 12% of the world's electricity consumption will come from wind power.[8]

Alternative energy

Peak oil theorists alongside the Oil and Nuclear industries have been trying to debunk alternative energy sources. At one extreme of those who seek to gain from the politics of panic and fear, the British National Party claim in their peak oil study that the EROEI of wind has is about 2[9]. Numbers like this tend to be reproduced again and again but they don't bear proper investigation. An overview article which looked at 41 different analyses found an operational EROEI for wind of 18, some 9 times this claimed figure.[10]

A major problem in discussing the feasibility of these sources is the very different facts presented by those who take one side of the debate as against another. Peak oil theorists frequently claim solar panels require almost as much energy to construct as they supply in their lifetime, i.e. that there EROEI is close to 1. On the other hand, proponents of solar

[7] For examples of micro hydro power see www.microhydropower.net

[8] Why Wind energy, Energy Research Centre of the Netherlands, www.ecn.nl

[9] www.bnp.org.uk

[10] Energy return on investment (EROI) for wind energy at www.eoearth.org

ated by other means, on their own they consume rather than supply energy. So while they may provide solutions to enable mass transport without oil in the future, hydrogen cells cannot provide energy per se.

EROEI is, of course, difficult to measure since the total amount of energy expended in the process must be considered. For example, one must include the amounts of energy expended in construction of dams, windmills, power stations, power cabling, access roads or nuclear plants. The fact that the industries concerned with generating this power have a vested interest in producing research that shows their technology to have a particularly good EROEI does not help in estimating this. And, on the other hand, proponents of Oil and Nuclear energy have a vested interest in showing 'alternative energies' not to be an alternative. However, regardless of how one looks at the figures, it is clear that oil was once in a class of its own.

Plummeting EROEI

Oil discoveries in 1900 had an EROEI of over 100, meaning that for every barrel of oil that you used to find the oil, refine it and transport it to the customer, you got 100 barrels out of the ground in terms of energy. With fresh oil fields, little more was required than to drill a hole in the ground and pump the oil out. By the 1970's, as the oil in the most accessible areas became depleted, the EROEI had fallen to about 20[6]. In other words the 1970's EROEI of oil was 20% of its 1900's value.

In terms of electricity production, hydro-electricity produces a significant net gain of energy, with an estimated EROEI of 10. However, the supply of rivers that can be

[6] Although an EROEI for oil of 20 is commonly given it may not be accurate. Middle Eastern oil has the highest EROEI and I've seen estimates in the range of 10–20. I've seen figures for Oil produced in the USA on the other hand as low as 2!

els currently supply most of the world's energy, and are expected to continue to do so for the foreseeable future. While supplies are currently abundant, they won't last forever. Oil production is in decline in 33 of the 48 largest oil producing countries, ..."

Capitalist speculations

A clue that we are not facing the end of civilisation is found in the markets of capitalism. Oil is the major global commodity and, like other commodities, it is bought and sold on the markets years before it even comes out of the ground. If any section of capitalism secretly knew that a peak oil crisis was coming in the sort of worst case scenarios that are predicted, we can be sure that section would be seeking to make enormous profits out of this knowledge.

In the futures market this would be very simple to do. At the time[2] of writing, for instance, I can buy a barrel of Light Crude Oil on the New York MEX market for 65 dollars[3]. This actually gives me that barrel of oil in December 2012 — 6 years away. And the price is only 3 dollars more than the price quoted for a barrel in January 2007.

Individual capitalists have made vast fortunes through spotting under priced future items and buying these in order to resell when the prices rises. In September 1992 George Soros sold short more than $10bn worth of pounds sterling because he reckoned it was over valued. He was right, Sterling was forced out of the European Exchange Rate Mechanism and it is estimated Soros made at least $1.1bn profit! In July 1997, with other speculators, he did something similar to Thailand triggering *"Asia's worst financial crisis in decades"*. This illustrates that, even if the cost to capitalism as a whole through such be-

[2] December 2006

[3] You can see current prices on the NYMEX futures market at futures.tradingcharts.com

haviour will be a major economic crash, individual capitalists will still engage in such trades.

If any capitalist believed that oil supplies were going to crash they would realise that by buying say 100 million barrels today for 65 dollars they could make 1280 million if those barrels were worth say 200 dollars in 2012. And if the 2004 peak predictions are right, 200 dollars would be very little to pay for a barrel by 2012 — it could be that very much bigger profits could be made.

So why is it that no capitalist seems to believe in peak oil enough to put their money where their mouth is? Up to a couple of years back, ignorance might have been claimed as an explanation. But in recent months the idea of Peak Oil has been discussed in 'The Economist', probably the major international business magazine. Mathew Simmons, an energy adviser to George W. Bush, has published a book advocating Peak Oil theory, which has been widely reviewed in other publications. There is no longer any grounds to claim that peak oil theory is being hushed up.

So why is the future price of oil not shooting through the roof as capitalists speculate with the aim of making billions? Probably because very few are convinced, some even argue the opposite. The Economist in its article on the subject cites a report by Cambridge Energy Research Associates which *"concludes that the world?s oil-production capacity could increase by as much as 15m barrels per day (bpd) between 2005 and 2010 .. the biggest surge in history".*[4]

From this and other articles, the counter point to the Peak Oil argument can be sketched as follows. The expansion of oil reserves in the future will rely on smaller fields and on technology extracting a much greater percentage of oil from existing fields — this is already happening in the North Sea. Rising oil

[4] "Why the World is not about to run out of oil," *The Economist*, April 20th, 2006

prices will mean that it becomes economic to also access the vast unconventional Oil Deposits. Already major production has started out of the Oil Sands in Alberta and current prices of over 50 dollars a barrel mean that the vast Venezuela heavy tar deposits are now economic to exploit.

Why is oil so important

The big scare claimed with peak oil theory is that there is absolutely no realistic prospect of us simply replacing all oil-sourced energy with an alternative energy source in the near future. But why call this a scare? Because replacing "all oil sourced energy" is not what is required. What is required is for a mixture of other fossil fuels (gas, coal), unconventional oil sources, alternative energy, and greater efficiency in energy use being able to take up whatever shortfall occurs when peak oil is reached. As the peak in conventional oil supply will really be a plateau, the point at which all or even most oil would have to be substituted will not occur for many decades.

To understand why oil is such an important substance to us, we need to examine the basic energy equation that defines the usefulness of fuels. Fuels are substances from which we can extract energy. However, it also costs a certain amount of energy to extract the fuel and to deliver it to where the energy is needed. The ratio between the amount of energy extracted in the fuel and the energy expended in extracting it is known as the Energy Returned on Energy Invested (EROEI)[5]. If it takes more energy to extract the fuel than can be extracted from the fuel, the EROEI is less than 1. For example, hydrogen fuel cells have a EROEI of less than 0.9 — meaning that you can only get at most 90% of the energy back out that you put into making it. This means they are only of use for storing energy gener-

[5] There is a useful explanation of EROEI on Wikipedia at en.wikipedia.org