Natural Gas: a Bridge to Nowhere? - Oklahoma's petroleum academia hosts critic

Contributed by Culture Change
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Jan Lundberg, independent oil industry analyst and eco-activist, spoke at University of Oklahoma's Devon Energy Hall on Aug. 30, 2011. From the Summary publicized earlier (see poster at bottom):

Many in industry and government are counting on natural gas -- especially through its less natural fracked derivation -- to propel the present industrial economy for endless growth. Besides the environmental hazards and climate-changing consequences of such a course, as if natural gas' greenhouse-emission relative advantage is sufficient for climate protection, pursuing natural gas to its maximum is a tragic mistake that will not succeed. It is just as tragic and foolish to put massive investment into a national grid for renewable energy. This is because the nation's infrastructure is oil-dependent, and cheap oil is geologically almost gone. Petrocollapse will be triggered by the next major world oil supply crisis. So we need a local-economy emphasis in changing our way of life -- now.

Note: Jan delivers his talks ad lib, so the following synopsis is reconstructed from his outline and notes except for two identified passages he read to the audience. A video of his presentation is being processed as of Sept. 13, 2011. Check back with CultureChange.org to catch the video.

[Jan is introduced by Prof. John Banas of the University of Oklahoma's Communications Department, liaison with the Mewbourne School of Petroleum and Geological Engineering:]

"Jan Lundberg is an international speaker, writer and publisher, and is best known for running what was widely considered 'the bible of the oil industry,' Lundberg Survey Inc. In 1979 the firm predicted the Second Oil Shock. After 14 years there, he left for-profit work to found the nonprofit Sustainable Energy Institute, now Culture Change. For over twenty years he has studied peak oil, energy alternatives, and conservation based primarily on grassroots activism for lifestyle change."

Thank you John for the introduction. I'm grateful for the University's departments and sponsors for having me. I am glad to be here with you all today, so that we can talk. For we are intersecting in our mutual education.

So you know where my ideas come from, my background is that of an oil market analyst who became, thanks to Southern California Gas Company's regulation by the state, an energy analyst, and, finally an "Earth analyst." I learned how the world's systems and the threat to our life support involve everything, not just energy. Some believe energy is where it's at, but if diminishing purchasing power coupled with reaching resource limits accelerate, there will be no more talk of "the energy economy."

I know this school has begun to teach peak oil, but I have to stress my version of it because it determines how I address natural gas. I will get to the supply, price and environmental issues regarding natural gas. There's no risk in your getting repetition if I speak now on peak oil. For the bell-shaped curve you saw for the down slope of oil extraction was false when applied to the whole world; it's an L shaped curve. I guess I am the prophet of petrocollapse.

It's when wishful thinkers make uninformed assumptions about how the oil industry works, without realizing they're doing this, that I speak up. The vertically integrated oil industry is hard to grasp, so one end of it may not understand well the other end, such as supply analysts from their geological standpoint and analysts from their market supply standpoint.

The geologist Marion King Hubbert came up with the bell shaped curve for oil depletion, first for an oil field, then for a region or country. The other side of peak, when countries passed their maximum extraction, resembled a sharper drop-off than a mirror image of the ascent. When the world cannot keep meeting demand from imports, peak oil is the main trigger of petrocollapse.

One reason I foresee an L shaped curve or crash is that the industry is not prepared for contraction. Neither is the growth economy. With cheap oil gone, supply interruption can be sudden and severe, say when a revolution in Saudi Arabia may paralyze the oil market with skyrocketing prices, the public's panic-buying and hoarding. A huge transfer of storage from the oil distribution system to the previously one-third filled gas tanks in cars -- tertiary storage -- is part of what Matt Simmons, petroleum investment banker, called "the run on the energy bank." So how much crude lies below the surface of the Earth becomes somewhat irrelevant if the economy collapses because people cannot get to their jobs or find food at the supermarkets that were not supplied by trucks in a timely fashion. Just-in-time delivery for businesses and factories is common nowadays, and will be disrupted by a severe oil crunch with cascading effects.

The workings of the oil industry mean that availability of crude does not necessarily translate to usable petroleum products the modern world depends on. Besides the distribution and storage issues in a chaotic market, refineries have to maintain their balance of output: light, medium and heavy products, which must find a home. But to slash crude input usually means too low of a utilization of capacity. The loss of facilities or segments of the industry, or partial nationalization, used to be a nightmare about over-regulation by government. "Dismemberment" is frightening to petroleum professionals, for the integrated oil industry has only grown heretofore, and the system is sensitive. You would not know this by the record profits.

Imparting my ideas on petrocollapse has much to do with my message that technological fixes cannot deal with peak oil and climate change at this point, although it might have been true several decades ago. The technofix for replacing cheap oil is now impossible when the oil that built our infrastructure with its high net energy yield has past its peak. Also, renewable and alternative technologies are not scalable for the demands of the consumer economy and our overpopulation. So what is the solution?

Lifestyle change is ahead, voluntary or involuntary. Either way, meeting reality will be a big surprise to many because peak oil was not acted upon soon enough. The body of evidence makes clear that we have to turn around our energy use. But today's leaders don't acknowledge it, and fail to shine in the crucial areas of appreciating efficient use of energy and acknowledging the ecosystem.

Lack of realism is a big reason we are not together as a society. Some of us will not be surprised as change accelerates, and I want to invite you into our widening circle of consensus regarding energy. The end of economic growth from the best energy-dense, cheap-to-extract form of energy and materials known -- oil -- is at hand.

To address the question of the University's petroleum engineering course head-on: Regarding "how different proposed energy sources deal with the dilemma of meeting energy demand without sacrificing quality of life":

There are two problems with this assumption: (1) energy demand has become mostly a function of waste, excess, and overpopulation fed by cheap petroleum. (2) Quality of life needs to be defined. If too many people want too many machines and questionable goods for convenience and status, and if simple living for sustainable subsistence is off the table, then there's a communication problem that has to be sorted out by addressing fundamentals of lifestyle, entropy, resource limits, geopolitics, the danger of infinite "funny money" through debt, and above all ecological carrying capacity. But since this debate and "sacrifice" are not happening to the necessary extent, nature will sort it out. We have used up our credits, and tried her patience. We've just begun to pay the price, and technology and money will not get deliver us from our reality.

Letting the public know this is my work.

When I think of the role for natural gas, it brings up the same question that nuclear energy brings up: Do we really need all this energy? Do we need leaf blowers? Can consumers in the U.S. learn to share ovens as neighbors? Can there be culture change, or only the technofix? These questions can be looked at very differently in terms of today versus post collapse. Same with care of nature: today versus post collapse -- little today, much tomorrow. There will be only rudimentary use of fossil fuels post-collapse when the infrastructure goes down and rusts. Similarly, there is globalism today, whereas post-collapse there will be localism instead, characterized, for example, by sail power and bicycle power. We can look at climate change and overpopulation also from today's vantage point and a post-collapse view of these issues. Attitudes will change, so we cannot simply trust in big business and technology for our only understanding.

Problems of maximizing natural gas

Natural gas is roughly twice as favorable as oil in CO2 output. Let's say the tipping point for absolute climate disaster is X years, with our current mix of fossil fuels in play. Let's say that all the oil was somehow switched to gas overnight. The tipping point would be moved to X years plus Y. This would mean adding CO2 to the atmosphere, even if feedback loops had not already begun to release more CO2 and methane. So I don't look at some increment of natural gas use as a solution to extend the time until runaway greenhouse gas emissions cause an exponential curve that the IPCC dares not release.

The growth of natural gas consumption during hot weather for air conditioning is a cognitive dissonance, because the combustion ultimately raises temperatures that cause demand for more air conditioning. [Note: Oklahoma has suffered drought and its hottest summer in history by far.]

CO2 emissions went up 3.9% in 2010 in the U.S., a larger expansion than in GDP, so we can say society clearly does not have its act together despite all our knowledge and technical ability.

There is other danger of relying on natural gas apart from environmental issues; I will get to the problems of hydraulic fracturing (fracking) for shale gas. First, natural gas supplies at best would only put off collapse a bit. Fossil fuels including natural gas are heavily subsidized, so our actual cost is greater and the benefit less than we perceive. There will be no recovery of the expansion economy since the cheap petroleum is gone. Natural gas can be liquified, at a loss of net energy, and it's still not oil. Peak oil is a liquid fuels crisis. But government and industry are trying to force substitutes regardless of feasibility and safety. The best example may be the tar sands that may get a pipeline from Canada to the U.S. Gulf. But natural gas supply obtained by fracking, besides the harmful risks, is through the kind of cooperation between government and industry involving collusion.

In Energy Bulletin on August 19 of this year, a report came out from Canada's Tyee web publication, titled "Documents reveal industry and government collusion on shale gas." In the report, collusion was revealed between industry and Alberta, and two other Provinces, that covered up contradictions: "environmental concerns" and "lack of complete information" were admitted in the Provinces' suppressed report. But the decision was to proceed with fracking as a practice "well managed."

A worse example of industry-government collusion is the shale gas task force currently headed by U.S. Energy Secretary Chu. This investigatory team came out with some preliminary findings, notably that there is "serious risk" of

environmental problems from fracking. But the heavily industry representation on the task force taints the group by compromising its integrity.

We all need to consider the revised outlook for price and supply for natural gas. This fossil fuel is not a silver bullet. Profitability of the greatly reduced amount of shale gas to be found, according to a new U.S. Geological Survey study, assuming it could all be extracted, would require doubling today's price of natural gas.

Tom Whipple, an analyst I know who writes for the Association for the Study of Peak Oil and Gas publication Peak Oil Review, published also in the Energy Bulletin, stated in his August 27 report:

"The publication by federal geologists of a new estimate that the Marcellus shale contains some 84 trillion cubic feet of undiscovered, technically recoverable natural gas has evoked some interesting reactions. The New York Times notes that the new estimate is drastically lower than the 410 trillion cubic feet publisher earlier this year by the Department of Energy and the 262 trillion reported by the National Energy Technology Laboratory. The EIA says that as a result of the new assessment, the Administration will cut its official estimate by 80 percent, raising all sorts of questions as to how it develops its estimates and the role played by industry-tied consultants.

"In reporting the development, the Oil & Gas Journal points out that the last assessment by the US Geologic assessment made in 2002 estimated that the Marcellus shale contained only 2 trillion cubic feet of recoverable natural gas. The Journal also points out, optimistically, that the new study also says there is a 5 percent chance that the shale contains as much as 144 trillion cubic feet.

"The new estimate of 84 trillion cubic feet is less than four years of U.S. consumption and would take many decades to exploit with unknown, but possibly serious environmental consequences. As with all estimates of undiscovered resources, the new 84 trillion number has a probability of 50 percent of being the minimum amount that can be exploited. The 95 percent probability number is only 43 trillion cubic feet – a real reduction from the official EIA number of 410 trillion. There may not be as much natural gas in our future as some claim."

On August 5, Arthur E. Berman and Lynn F. Pittinger wrote in The Oil Drum and EnergyBulletin.net that the industry's reserves are overstated by 100%, and that prices would have to nearly double to exploit the gas in shale.

The Post Carbon Institute, another source of information I recommend to you, published a report by David Hughes in May, 2011, "Will Natural Gas Fuel America in the 21st Century?" He warns that shale gas is characterized by high-cost, rapidly depleting wells that require high energy and water inputs. I'll read you a critical portion of the abstract:

"Even assuming the EIA forecast for growth in shale gas production can be achieved, there is little scope for wholesale replacement of coal for electricity generation or oil for transportation in its outlook. Replacing coal would require a 64% increase of lower-48 gas production over and above 2009 levels, heavy vehicles a further 24% and light vehicles yet another 76%. This would also require a massive build out of new infrastructure, including pipelines, gas storage and refueling facilities, and so forth. This is a logistical, geological, environmental, and financial pipe dream. Although a shift to natural gas is not a silver bullet, there are many other avenues that can yield lower GHG emissions and fuel requirements and thus improve energy security. More than half of the coal-fired electricity generation fleet is more than 42 years old. Many of these plants are inefficient and have few if any pollution controls. As much as 21% of coal-fired capacity will be retired under new U.S. Environmental Protection Agency (EPA) regulations set to take effect in 2015. Best-in-class technologies for both natural-gas- and coal-fired generation can reduce CO2 emissions by 17% and 24%, respectively, and reduce other pollutants. Capturing waste heat from these plants for district and process heating can provide further increases in overall efficiency. The important role of natural gas for uses other than electricity generation in the industrial, commercial, and residential sectors, which constitute 70% of current natural gas consumption and for which there is no substitute at this time, must also be kept in mind. Natural gas vehicles are likely to increase in a niche role for high-mileage, short-haul applications.

"Strategies for energy sustainability must focus on reducing energy demand and optimizing the use of the fuels that must be burnt. At the end of the day, hydrocarbons that aren’t burnt produce no emissions. Capital- and energy-intensive 'solutions' such as carbon capture and storage (CSS) are questionable at best and inconsistent with the whole notion of

energy sustainability at worst."

Since David Hughes is still a petroleum man at lest more than I am, he believes (unlike me) that we need substantial energy for current uses projected into the future. I became an eco-activist after a petroleum analysis career, so I have found that what is more important is the many environmental and societal downsides of hydraulic fracturing for extracting shale gas. Let's run them down:

When blasting a well in a deep rock formation with 1-5 million gallons of water and tons of sand and chemicals, there are a number of issues right there. Natural gas is called clean, a misnomer, but its extraction is increasingly unclean. Cleaner water-use can only mitigate, but not solve the water problems. There are regions of the country that cannot spare the hogging of fresh water. The contamination and poisoning of ground and surface water for a typical area around the well may be one kilometer. Methane leaks are flammable and represent a powerful greenhouse gas. As shown in the documentary Gasland and in other reports, one can sometimes set tap water on fire in homes. Radon is released from the depths to the surface from fracking; it is a radioactive gas that causes cancer.

So there have been lawsuits, health crises, moratoriums, mobilizations by First Nations (tribes in Canada), and investigations. Although it's not accurate to sum up the future of natural gas with a rallying cry, stopping the community disruption is a strong catch-all argument. Caustic debate is much of what the nation has been getting in the so-called "bridge" to an energy technotopia, thanks mostly to fracking.

Is this a wonderful line of work to attach yourself to?

Let me conclude by insisting that I do not really instill hopelessness. Instead, we're having an awakening to deal with the realities of a small planet. There are lines of work for healthy alternatives to the ravages of expansion and pollution. My own low-energy consuming lifestyle and pursuit of beauty and truth have me happier than when I was living a comfortable life at Lundberg Survey at its most prestigious period. I have a disturbing family history involving oil money, that propelled me, along with what I learned about the endangered ecosystem, to work for a deep change in culture. This book [holding up Songs of Petroleum] is my story that contains a message. I hope that today with you I have gotten my message across and made a good case for questioning the direction our industrial society has been going in. Thank you for your attention, and I'm happy to answer questions and exchange views.

Source material:

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"Gas in the Marcellus shale," Peak Oil Review by Tom Whipple, published by the Association for the Study of Peak Oil and Gas - USA chapter, also in the Energy Bulletin at www.energybulletin.net/stories/2011-08-29/peak-oil-review-august-27, August 27, 2011

"U.S. shale gas: Less abundance, higher cost" by Arthur E. Berman and Lynn F. Pittinger, August 5, 2011, The Oil Drum and Energy Bulletin, www.energybulletin.net/stories/2011-08-05/us-shale-gas-less-abundance-higher-cost

"Documents reveal industry and government collusion on shale gas." EnergyBulletin.net and The Tyee, by Andrew Nikiforuk, August 19, 2011. www.energybulletin.net/stories/2011-08-23/documents-reveal-industry-and-govt-collude-shale-gas

"Will Natural Gas Fuel America in the 21st Century?" Post Carbon Institute report by David Hughes, published May 29, 2011 www.postcarbon.org/report/331901-will-natural-gas-fuel-america-in

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"Fracking Demands Effective Safeguards for All," by Frances Beinecke, NRDC
www.switchboard.nrdc.org/blogs/fbeinecke/fracking_demands_effective_saf.html
"Natural Gas Scam and Folly Again," by Jan Lundberg, August 2009, at
www.culturechange.org/cms/content/view/507/64/ and EnergyBulletin.net

Subsequent findings:
"Switching to Natural Gas Power May Not Slow Climate Change: A new study shows that switching from coal to natural gas might not help combat climate change," by Umair Irfan and ClimateWire, September 9, 2011
www.scientificamerican.com/article.cfm?id=switching-to-natural-gas-power&WT.mc_id=SA_DD_20110909

"Oil industry backs more rules for fracking," by Shawn McCarthy, The Globe and Mail, Thursday, September 8, 2011
www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/oil-industry-backs-more-rules-for-fracking/article2158931/ "British Columbia will force oil companies to reveal the chemicals used in hydraulic fracturing, a move supported by the leading industry association as it looks to head off public opposition to shale gas production across the country."

Aug. 31, 2011, midnight
Students encouraged to live simpler lives at Devon Energy Hall lecture

Angela To/The Oklahoma Daily

Students were encouraged to live a simpler life rather than find alternative fuels at a lecture Tuesday in Devon Energy Hall.

Jan Lundberg, founder of the nonprofit organization Sustainable Energy Institute, now Culture Change, delivered this message to a roomful of students and professors.

Lundberg's lecture, "Natural Gas: A Bridge to Nowhere?" is part three of the seminar series "Bridging Fuels for the Future," which is sponsored by the Oklahoma Energy Education Foundation, Oklahoma Energy Resources Board and RKI Exploration & Production.

Lundberg said natural gas — the focus of this semester's lecture — was a bridge fuel, but once it is entirely consumed, humans will try to figure out what kind of world they want to live in next — whether it be a solar panel or windmill world.

On the other hand, today's culture is very materialistic and families are becoming fractured because of it, Lundberg said.

He said the solution is not in alternative fuels.

"If we're really in a pickle with the consequences and reliance on fossil fuels or any technology that leaves us vulnerable or has problems being brought to market in massive ways, then it is not about solving our energy problems with energy," Lundberg said. "It has to do with how we live."

University College freshman James Wilson said he discovered Tuesday's seminar through OU's email list and wanted to attend because he said felt an eminent need to talk about the subject.

He asked Lundberg during the question-and-answer session if, at the rate our culture is chaning, it would be able to save us in time.

Lundberg said the longer we put off changing our consumer-like lifestyle and/or demand policy change and accountability, it will create a problem for humans in trying to maximize fuels Lundberg gave the metaphorical response, "to wring more blood out of mother earth, to keep the game going, the consequences we face are great down the line."

Alicia Burris, educational psychology graduate student and member of the series' steering committee, said she hopes students will gain the ability to voice their opinions and gain different perspectives from one another through these lectures.

"It's a sharing-to-gain perspective," Burris said. "Bringing all of those perspectives together hopefully provides a unique platform to apply authentic application of trying to find a solution for this quality of life issue with energy."

These seminar series are available for credit to students who wish to enroll and are open to all participants, industry leaders and outside speakers.

Comments: What do you think?

I wonder if Lundberg drove, flew, or walked to this meeting? Curious if the air conditioner was running, were the lights on or was it held outside in the sunlight? Did he eat that day? Was that food grown, transported, and prepared using oil, diesel, and / or gas, or did he just pick some edible flowers and bugs on the way to the seminar?

Seems that people often preach that "others" need to conserve and "consume less" without explaining exactly how this is

to be accomplished. The only recommendation they often have is that society regress back to the dark ages, before all of the modern miracles of science and technology that require energy were available. Sorry, but I refuse to accept this lower qualtiy of life for either me or those that come after.

Alternative solution: Use oil and human ingenuity to find and exploit bridge fuels such as natural gas and nuclear among other (10-20 years). Use the bridge fuels to develop and implement next generation technologies such as wind, solar, cellulosic ethanol, hydrogen, or whatever else we can come up with that becomes economically viable (100-200 years). Use next generation fuels to get us by while we discover and develop other energy sources that are beyond our imagination in 2011... maybe by then we will discover a Jupiter sized planet made of natural gas that we can tranport back to earth, or run everything off of salt water or air or algae, or who knows what.... I can only promise that a regression to a pre-industrial revolution way of life is not only unlikely and undesireable, but would certainly guarantee that these breakthroughs would never occur.

- Posted by anonymous / commonsense on August 31, 2011 at 12:42 p.m.

From Jan Lundberg:

Thanks for the good reporting job, but let me clarify: I'm quoted as saying "once [natural gas] is entirely consumed, humans will try to figure out what kind of world they want to live in next — whether it be a solar panel or windmill world."

It's not quite accurate. We cannot and should not consume all the natural gas. And, prior to such an event even if it were possible, petrocollapse will force us to figure out beforehand how to live with much less energy and far fewer material things. It will not be "a solar panel or windmill world" because the technofix is not scalable for too large a population, and over-reliance on technology cannot feed us or take care of climate protection imperatives at this late, critical stage. Think curtailment of energy use and a return to harmony with nature.

We are still not learning: In recent news, "Car Sales Improved in August; G.M. Up 18% -- General Motors said its sales in the United States rose 18 percent from August 2010; Ford sales increased 11 percent and Chrysler's gained 31 percent." (- NY Times, Sept. 1, 2011.) How inefficient energy-wise and how unfortunate for our air, water, soil, crash deaths, roadkill, urban sprawl, and waste of money.

As for the comment criticizing my message, I suggest sticking to scientific facts for realizing a sustainable world, instead of trying to make the world conform to our material desires. Contrary to what the writer claimed, I do indeed explain how consuming less is accomplished. Overall, the anthropocentric comment was right out of the playbook of those clinging to the status quo in an effort to discourage imaginative change.

- Jan, www.CultureChange.org