

## NO ENERGY EXHAUSTION

By Petr Beckmann

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*Dr. Beckmann delivered this presentation as part of a recent Center for Constructive Alternatives seminar at Hillsdale College, which was titled "Energy or Exhaustion: The Planet as Provider."*

The present malaise of society includes a strong anti-scientific trend. Reputable universities offer courses in astrology while their enrollment in the hard sciences and engineering is decreasing. Science is increasingly coming under attack. Not only from outsiders who do not understand science – that type of attack is as old as science itself – but now also from disrupters within. Holders of scientific degrees are telling us that the trouble with the world is too much science and technology. Nobel prize winners are lending their names to anti-nuclear organizations whose emotional propaganda blatantly disregards the facts. The authors of *The Limits to Growth* fed their computer programs with carefully manipulated data that would bring about the preconceived result of catastrophe under all conditions.

Blatant disregard of the facts is what the various anti-growth and anti-technology movements have in common. At a time when the fertility rate in the U. S. has dropped below the replacement value, we are being scared by the evils of population growth, vividly expounded by those whose attitude is "there's too many of you others." Lake Erie is declared dead at a time when it has more fish than all the other Great Lakes combined. The dangers of nuclear power, far and away the safest form of large-scale energy conversion yet invented, are magnified by those who callously disregard the 50,000 coal miners afflicted with black lung and the 100 times higher

accident rate (per energy produced) in coal mining. Pollution is blamed on technology when, in fact, only more and superior technology can eliminate it.

Among the most cherished myths of the technophobes is the ancient theory of the bottom of the barrel. If we don't watch our step, we are told, we will deplete this planet's finite resources. But what if we *do* watch our step? There is obviously something wrong with this theory, for if we do watch our step, we will merely deplete the barrel somewhat later; why is it better to die over a slow fire since, by this theory, the bottom of the barrel will be reached sooner or later anyway? We are given no answer to this question, for example, by the authors of *The Limits to Growth*, whose most desirable world model shows a semi-starved, semi-polluted world whose resources are relentlessly going down and down.

The fact is that the barrel has a very elusive bottom, for non-renewable does not mean irreplaceable. Moreover, history shows that with very few exceptions (such as whale oil) raw materials were replaced not because they ran out, but because something better became available. The change from glass bottles to plastic bottles, for example, did not come about because the world ran out of sand from which to make glass.

Untenable as the bottom-of-the-barrel theory is for mineral resources, it becomes absurd for energy, for it would violate a physical law: Energy cannot be destroyed, it can only be converted from one form into another. So the enemies of technological advance have taken refuge behind another physical law, the Second Law of Thermodynamics, which, roughly speaking, says that in every conversion of energy from one form to another, some fraction must irretrievably be turned into heat. Therefore, goes the story, if we convert too much energy, we will generate so much waste heat as to endanger the world by changing its climate.



There are, indeed, some problems with high concentrations of waste heat; there are also ways of turning waste heat into useful heat. But the gist of the argument is a colossal exaggeration. To reach even one percent of the energy incident on the globe from the sun, we would have to convert energy on a mind-boggling scale: every American man, woman, child and infant on the breast would have to consume, from midnight to midnight, no less than 2 MW of power, which he could do by running 600 clothes dryers all day and all night, or by cleaning his teeth twice a day with 15 million electric toothbrushes. And the rest of the world would still have to consume twice as much.

But enough of countering unfounded charges. Let us take a look at the amount of energy available to us. The sun will shine for another 50 billion years, and nuclear fusion cannot run out of fuel as long as there is water in the oceans. To bridge the gap of the next three decades before these sources can effectively be harnessed, there is enough uranium to fuel hundreds of nuclear plants, there is enough coal in the U. S. to last for several centuries, and the oil deposits in the continental shelves are estimated at 100 billion barrels, together with trillions of cubic feet of natural gas. There is more oil in the oil shale of the mountain states than in the entire Middle East.

Uranium can be mined in low concentrations at a higher cost, for fuel costs represent only a minor part of the operating costs of nuclear power plants, and breeders running on thorium could extend the supply to some 2,000 years. Coal can be gasified and liquefied with little pollution to produce gas, oil, gasoline, methanol, hydrogen, and other fuels. It can also be utilized *in situ* with minimal environmental effects. *In situ* processing of oil shale is under investigation and appears feasible. As for offshore oil, the technology of preventing oil spills, and cleaning them up quickly if they do occur, has come a long way since the Torrey Canyon and the Santa Barbara oil spills.

Clearly, then, there is no lack of energy; there is not even a lack of clean energy. But the access to that energy is blocked by non-technological obstacles, chief among which are, in my opinion, government interference with free markets, and environmentalist technophobia.

Until last year, the price of oil was controlled at an unrealistically low level, resulting, on one hand, in the rapid decline of exploration and capital investment, and on the other, in making oil so "cheap" that it was burned under the boilers of power plants. Oil now has a two-tier price structure which, broadly speaking, rewards those who produce a little oil and punishes those who produce a lot of it. This year the number of small wells drilled has, for the first time since the 60's, surpassed 30,000; but the total domestic oil production continues to decline. This is not surprising; if government decrees fixed the price of potatoes grown in fields, but allowed a free market in potatoes grown in flower pots, there would be a flower-pot-potato boom, but the total potato production would decline.

The electric power industry is shackled hand and foot by a myriad of regulating agencies. The rates charged are not determined by the need of new capital investments, but in public hearings which have become forums for propaganda against corporate profits, and the regulators find it popular to "pass the profits on to the consumers." Until people wake up to what the so-called consumer advocates

are doing to them, the utilities will continue to do what they are doing now: cannibalize their capital spending budgets under a policy that amounts to save now, run out of power later.

A second obstacle is environmentalism, which originally had the laudable aim of a clean environment, but is now being used as a horse on which to crusade against business, profits, industry, technology, and similar evils that allegedly plague us. It is beginning to border on the impossible to construct a new power plant, oil refinery, coal gasification plant or other energy facility. Much of the blame for this must go to the character of presently required impact statements, which always stack the deck against the innovator who wants to change the status quo. He is required to demonstrate, and rightly so in my opinion, that the innovation will not unreasonably harm the environment or have other undesirable consequences. But he is put on the defensive: his opponents have no comparable responsibility in considering the undesirable consequences of *not* proceeding with the innovation. A judge is required to decide whether a new power plant may harm the marine life of the adjacent river if the plant is built: he is not required to decide how many women might one day die in childbirth for lack of electric power if the plant is *not* built.

And so what we are witnessing is certainly no exhaustion of energy, but blocked access to that energy.

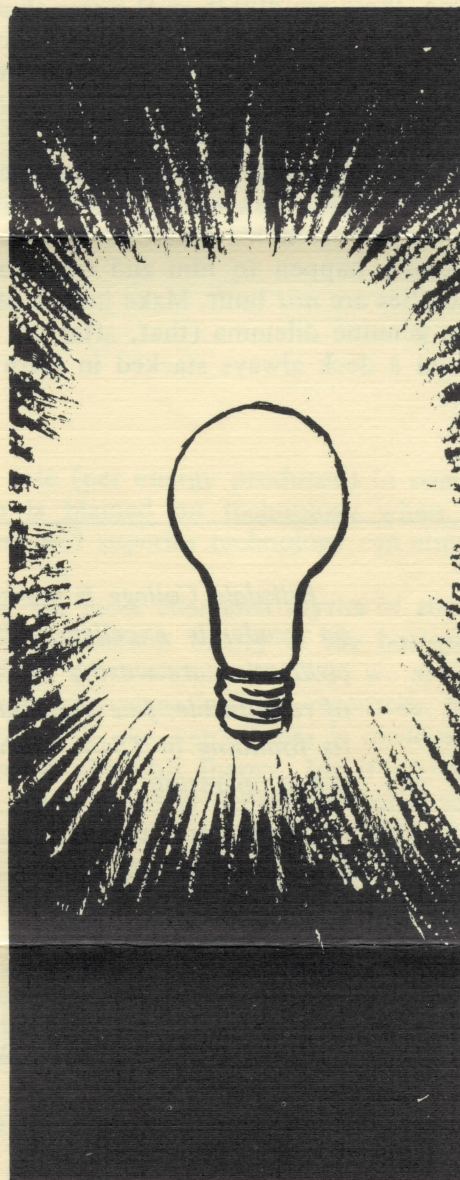
Let me take one more example, the oil imported from the Arab countries, which is produced at an operating cost of about 20 cents a barrel and sold for upwards of \$12 since the OPEC price-fixing cartel has quadrupled the price in a single year. Apart from exposing the U. S. to political blackmail, the flow of \$100 billion to the OPEC countries this year threatens to bankrupt the economies of the industrialized countries and to bring famine to the underdeveloped countries for lack of fertilizers. It won't even do the OPEC countries any good, for their primitive economies are utterly incapable of absorbing such astronomic sums. What can be done about that?

First, one can use strong language, as President Ford and other high U.S. officials have recently done. This could goad the OPEC countries into taking an even stronger stand, but more likely, they will merely laugh it off.

Second, one can wait for the cartel to break up. The same greed that gives rise to a cartel in the first place eventually causes its members to cheat on each other. Libya is already cheating, and Saudi Arabia is chafing at the high prices. Even so, it could be a long wait.

Third, there is a forceful military solution, which is, at present, unthinkable for anybody acquainted with political realities.

Fourth, the oil-consuming countries might band together and take countermeasures. They might, but they won't. Last October, the EEC countries voluntarily rushed in a mad scramble to get what they could each for themselves, leaving, for example, their member country Holland high and dry without oil in violation of all their solemn treaties. Not much hope from that quarter.



And that, I believe, leaves only one alternative to cut OPEC-fixed oil prices: open up the abundant U.S. energy sources until the cartel crumbles under the pressure of supply and demand. How can that be done? It can be done, in my opinion, as follows:

1. Decontrol oil, gas and electric power. Higher prices will work wonders for conservation and for capital investment. The poor, like everybody else, will gain when prices come down again by increased supply. The alternative is an energy shortage with

higher prices, anyway, and that hits the poor even harder. Government taxes on gasoline will not increase the supply; if past experience is any guide, they will be used for further wars on poverty that cure nobody's poverty except that of its administrators.

2. Open up the continental shelves for oil exploration; open up the vast deposits of low-sulfur coal in the West. In North Dakota, the land covering five million tons of coal supports only five cows. Not all strip mining is of the West Virginia kind. In Wyoming, there are 400-ft. coal seams close under the surface, and they do not lie under Yellowstone Park; they lie in desolate and almost uninhabited country. Speed up the development of *in situ* processes to produce oil from oil shale.

3. Make environmental restriction two-sided: consider not only what a new energy facility will do to somebody's view from his window, but also what may eventually happen to him and everybody else if such facilities are *not* built. Make judges sit on the horns of a genuine dilemma (that, after all, is their job), not on a deck always stacked in favor of the status quo.

4. Combat anti-technological and emotional attitudes by taking the facts and figures to the people. Show that pollution is not a necessary by-product of technology, but that more and better technology is needed to combat pollution. Calculate the price tags of abundant energy, and the even higher price tags of energy shortages. Use the facts to dispel anti-nuclear superstitions. Do not let Ralph Nader's phony fables go unanswered. How many people know, for example, that every time Ralph Nader flies to some campus to deliver one of his speeches on the "radioactive society," he gets a 100 times bigger dose of radiation than he will get in his lifetime from nuclear power plants? We are not, after all, in most of these cases, dealing with opinions and hypotheses, but with well defined and measurable quantities.

Let me summarize my position. There is no exhaustion, there is an abundance of energy; but the access to it is blocked by economic, political and ideological obstacles. Reason and technology can overcome these obstacles — though not overnight — and ensure abundant and clean energy for everybody.

*Hillsdale College is marked by its strong independence and its emphasis on academic excellence. It holds that the traditional values of Western civilization are worthy of defense, particularly the values in an open society of responsible, free individuals. The college has remained independent since its founding in 1844, neither soliciting nor accepting government funding for its operations.*

## THE LUDWIG VON MISES LECTURE SERIES

The Ludwig von Mises Lecture Series will continue with John Exter speaking on January 29. A consultant on domestic and international money, Mr. Exter will speak on "Money in Today's World."

Mr. Exter was senior vice president of First National City Bank from 1960 until his retirement in 1972, when he became a private consultant.

The remainder of the series will include:

**Bertel M. Sparks**

"Retreat From Contract to Status"  
February 13, 1975

**R. Heath Larry**

"Renaissance Man and Post-  
Renaissance Management"  
March 19, 1975

**Robert M. Bleiberg**

"Government and Business"  
April 23, 1975