

ENVIRONMENTALLY SPEAKING

Peter Schwartzman

Where has all the oil gone?

Short time chaos. Will we ever learn?

So how much energy did you use today? Probably you have little or no idea. You are not alone. Unfortunately, this is just one of many resource-related questions that require our attention yet receive little of it. Others include: Which energy sources did you use?; What was the price of the energy per kilowatt-hour produced?; Where did this energy originate from both geologically and geopolitically?; Is the energy source that you used exhaustible?; What social and ecological damage can result from the use of this energy source and how does this compare with other available ones? All of these questions require our attention if we are going to contribute to the dialogue concerning our national energy policy.

You might recognize that the majority of people know little about energy when it comes to geologic, political and economic dimensions. However, do we know so little because it just isn't important or because we feel that these are matters that our political representatives are expected to grapple with? If it is the former, our collective ignorance does not allow us to make such a judgment. And if it is the latter, aren't the representatives supposed to be informed by their constituents—namely us? Either way, it is incumbent on us to find out more.

Whether the U.S. government is so interested in Iraq and Afghanistan right now primarily because of the physical threat posed by these Middle Eastern countries or there abundance of energy resources is a subject of considerable debate. However, there is no question that our country currently demands large quantities of foreign energy resources. And, the price paid for these commodities greatly influences our ability to maintain the "American way of life" which is the most energy intensive among large industrialized states. Additionally, there is no argument that the primary fuel that we use, namely oil, is particularly important both because it is a limited resource and the U.S. reserves are relatively small (~3%) compared to the world's total. Our President and his cabinet are making some very important decisions right now concerning the energy future of our country and it is essential that the public becomes informed about oil for our representative democracy to operate effectively.

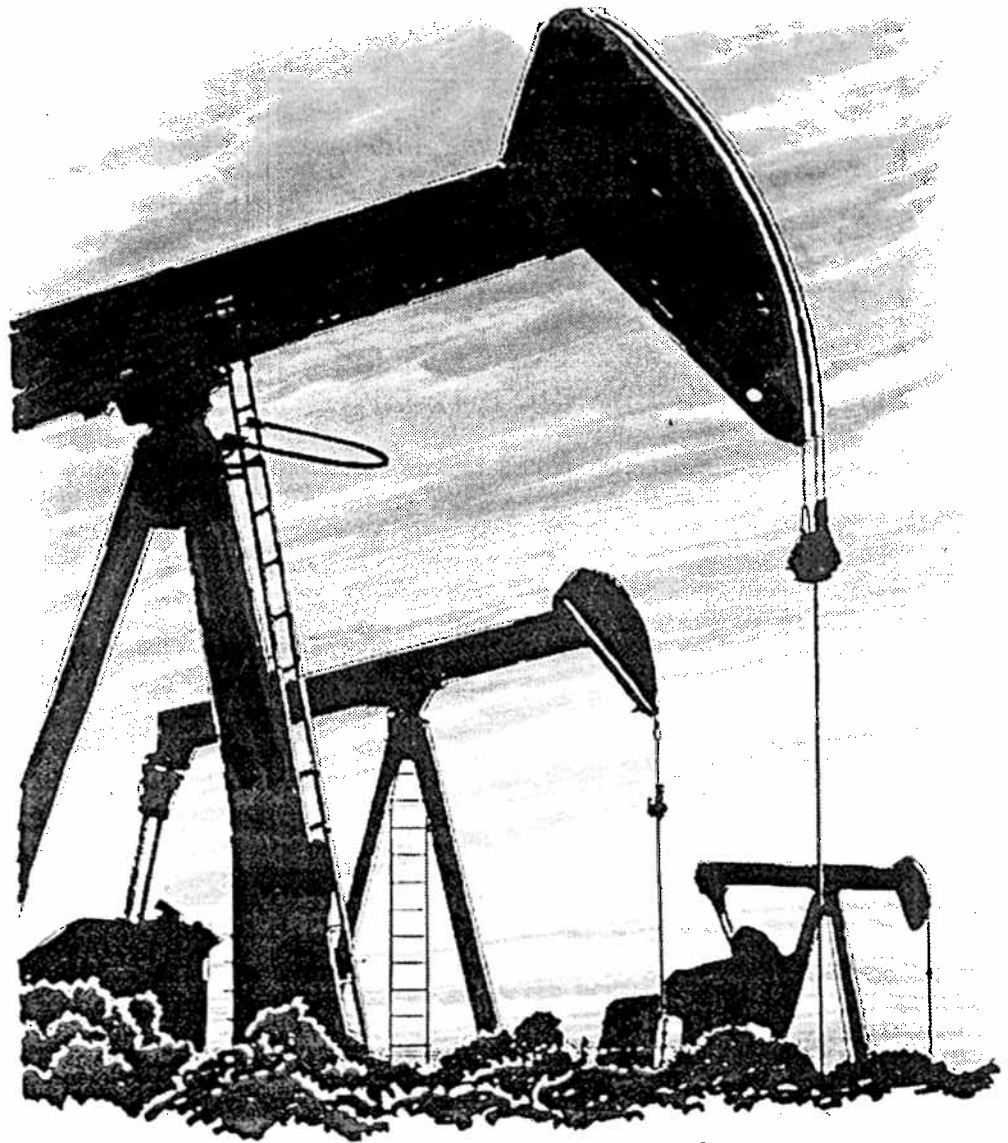
Let's look at our nation's energy consumption for a moment. Currently we consume nearly 100,000,000,000,000 BTUs per year. Wow! In technical terms, a BTU (the abbreviation for British Thermal Unit) is the amount of heat needed to raise one pound of 39°F water to 40°F. Burning one gallon of gasoline produces roughly 123,000 BTUs. So if we only used oil to provide the energy that we consume in just one year, we would need 812,000,000,000 gallons. This amount of oil translates to over 900,000 Olympic sized swimming pools. Actually, the citizens of the U.S. only get 39% of their energy from oil—equivalent to 350,000 such pools. The rest of our energy comes from the following sources (in 1998): coal (23%), natural gas (23%), nuclear (8%), hydroelectric (4%), and biomass (3%). (Hinrichs & Kleinbach) (Notice that we currently get practically none, percentagewise, from wind, solar, or hydrogen.) Since oil (or petroleum to be more precise) is the most widely used energy source currently in the U.S. and in the world, a closer examination of this

material will serve as our focus in an investigation of energy.

We first need to understand where petroleum comes from. As you know probably know, petroleum, and other fossil fuels such as coal and natural gas, represent buried organic matter (i.e., life) which lived millions of years ago. Specifically, petroleum derives from the oceanic deposition of marine planktonic organisms that lived up to 600 million years ago. These underwater cemeteries underwent a series of chemical and physical reactions over many millennia to take on a form that can be extracted and utilized for its energy content. Since the Earth's surface has undergone a tremendous amount of movement and transformation over this long time period, petroleum can be found in many diverse areas, although not always in the form or concentration that makes it economical. However, there are only a limited number of areas around that world where petroleum can be obtained. For instance, there are few petroleum reserves in Africa and South America while there are abundant reserves in the Middle East, Canada, and several republics of the former Soviet Union. Yet, the consumption of one of petroleum's major products, namely gasoline (other products created when petroleum is refined include kerosene, diesel fuel, petrochemical feedstock, lubricants, and asphalt) is so high that global stocks are definitely being depleted unsustainably.

Given that petroleum forms on geological time scales, it is considered a non-renewable resource. And because humans have long had the ability to use this energy resource faster than it can naturally reform, it wasn't soon after the first oil well was drilled in 1859 in northwestern Pennsylvania that people began wondering how much oil remained for our taking. In current discussions on this matter, geologists speak of oil reserves in two ways—those that are proven and those that are estimated. The "proven" reserves are not only known to exist but they are economically recoverable. The "estimated" reserves are much more uncertain because they depend largely on continued exploratory efforts as the efficiencies of the technologies used in the extraction process. However, one respected projection, known as the Hubbert Curve, named after the famous geologist M. King Hubbert who advanced it, expects the U.S. will have exhausted nearly all its oil reserves between 2040 and 2060. According to BP, a major company in the oil industry, at current global consumption levels of oil, all the proven reserves on a global level will be gone in less than fifty years, with Hubbert expecting exhaustion a little later but definitely within the 21st Century.

Yet, since the vast majority of reserves are located in non-industrialized countries, particularly those in the Middle East, the United States is in a greater bind when it comes to oil availability than some. In order to stretch out our oil resources, the U.S. currently imports nearly 60% of the oil that it uses. The main supplier of oil is Saudi Arabia, which supplies over 17% of the oil that the U.S. imports, with other Middle Eastern countries (including Iraq and the United Arab Emirates; yes, unbelievably we are still buying oil from Iraq!) contributing another 13% of the total. (We also get significant amounts of oil from Mexico, Canada, Nigeria, and Venezuela.) About fifty



years ago, the U.S. didn't import much oil at all, so times are definitely changing and the U.S.'s reliance on others is becoming more a necessity than an option. Additionally, the U.S. Department of Energy projects that yearly world oil consumption is expected to increase another 60% by the year 2020, there will be even more competition for this dwindling resource (IEO).

But there are other important reasons to be thoughtful about petroleum's current use. The two most important reasons involve issues of ecological security and human rights. In my view, these two concerns are both equally important and related to the matter of economic security and national well-being.

Ecologically speaking, using petroleum as an energy source creates problems in at least two ways. First, since petroleum consists of between 82–87% carbon when it is burned it produces carbon dioxide which has contributed more to climate change than any other human-produced gas. Human use of fossil fuels since the dawning of the industrial age has already caused a 30% increase in atmospheric CO₂ levels, and a doubling of the preindustrial concentration of 280 parts per million is expected this century. Climatologists from around the world think that continued combustion of fossil fuels will result in a wide variety of changes including, increased variation in weather (i.e., more frequent extremes), enhanced warming, and dramatic rises in sea level. These alterations are likely to make more tenuous the availability of water for food crops. Ecological models that incorporate these climatological changes suggest that tropical diseases are likely to spread to more temperate areas and that many plants and animals may not be able to cope either; animals can be expected to move when faced with unfavorable weather conditions, but the plants they rely on for sustenance

cannot do so as quickly.

Second, the transportation and distribution of oil worldwide over the past 50 years has seen an enormous number of spills. Likely everyone reading this article is old enough to remember the Exxon Valdez disaster on March 24, 1989 which saw 11,000,000 gallons of crude leak into Prince William Sound and beyond. Directly as a consequence of this spill some 300,000 birds, 2,800 sea otters, 300 harbor seals and 22 killer whales were killed. Overall, twenty-eight species of life were severely affected and only two have since recovered. Wasn't that spill a major tragedy? Well, shocking as this may seem, the Valdez event isn't particularly noteworthy compared to many other "spills." In fact, the amount of oil that was released when this single-hulled tanker ran aground ranks as only as the 34th largest release during the 30-year period from 1967–1996. Some of the largest spills were more than seven times as large as Valdez. Worse yet, most oil that "leaks" into the environment doesn't do so when large tankers collapse but rather the vast majority of contamination (88% according to Goldstein) comes from small "spills" and runoffs onto land from leaking transmission pipelines that take oil from remote areas to coastal ports.

Concerning human rights, oil serves as a great source of inequity and suffering. Several countries from which the U.S. obtains oil have been noted for their repressive governments in the recent past — including Nigeria, Iraq, Saudi Arabia, and Gabon. The human rights atrocities associated with the Ken Saro-Wiwa and the Ogoni people's struggle for self-determination at the hands of Shell Oil are well-documented by Amnesty International and the Sierra Club. Ken led a movement to spare the Ogoni from continued community dislocation and environmental despoilment from policies that were favorable to multinational oil

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Five jails, no waiting

companies, in particular Shell. Ken and eight other Ogonis were executed by the Nigerian military dictatorship for what is believed to be a fabricated murder charge. Yet, this atrocity and others like it rarely gather sufficient support in the United States to affect our policy. The United States must begin to recognize that the resources that they import may have blood on their hands. Additionally, the wealth imbalance observed in some of these "developing" countries is much more exaggerated than that observed in the United States. Though huge sums of dollars are taken in by the military and political leaders of these nations via the export of the natural resources of their country, very little of it ever makes it to the masses. Hence, purchasing these commodities often only further intensifies the struggle for livelihood that the poor face. Lastly, oil spills, which have resulted in a tremendous amount of damage to the environment, have also caused millions of displaced and broken families, particularly those that are the most vulnerable because of their economic disadvantage. These impoverished individuals usually have no recourse when such "unnatural" events occur — they have no legal counsel, they lose their ability to provide for themselves (through fishing, in many cases), and they lack the capital to resettle peacefully. For the above reasons, clearly it is important that we, the citizens of the U.S., look at our oil consumption in broader, global terms.

Since the U.S. is currently depending of an energy source that is very limited, dwindling in accessibility, and dangerous to our Earth in many ways, it will need to change its dependence on petroleum. This change might take several forms. Let's examine two major ways this can be accomplished—switching to other energy forms and reducing our consumption of energy.

First, can and should we be looking at alternative energy forms to solve the problems associated with our dependence on oil? Even a cursory look at the varied energy resources available to us indicates that there are an abundant number to choose from. The ones most often mentioned are other fossil fuels, particularly coal and natural gas. And though we have appreciable amounts of coal in Western Illinois, now is **not** the time to begin strip mining again. There are abundant reasons why this is so. First, coal releases significantly more carbon dioxide than oil for the same energy obtained. Second, coal mining produces much more ecological damage than does oil extraction. Third, coal produces many damaging chemicals when burnt, including sulfur dioxide which triggers acid rain. And lastly, the coal that one might obtain from our backyards is among the dirtiest of all, i.e., high sulfur content, and therefore should be among the last coal that we use. Natural gas, which many of us use to heat our homes and power our stoves, is better than coal and oil in terms of CO₂ release. Thus, we should be pleased that natural gas use worldwide is growing much faster than oil or coal. However, since natural gas is limited, as are all fossil fuels, and it still contributes appreciably to climate change, a switch to it is only a short term solution. Nuclear energy, which is the most dominant resource for electricity production in France, has its risks — such as nuclear waste, that no one wants, and others that we "discovered" via the Chernobyl disaster in the former Soviet Union and via fuel-laden planes that can be used as weapons. Add to these risks the public's negativity towards it and nuclear power doesn't appear to be a viable alternative either. Finally, the above alternatives don't readily substitute for oil because of oil's greater versatility and its domination of the transportation sectors—more than 95% of

all transportation energy currently comes from petroleum based products—which drives our economy (Klare).

So what is left? Well, there are renewable energy sources like wind, solar, hydroelectric and hydrogen that have potential. While these forms of energy aren't perfect, their use has remarkably less impact on climate change and ecological systems and at the same time could enable us to become much more self-sufficient and, therefore, less supportive of inhumane governments elsewhere. And while efforts to utilize wind more is picking up speed (pardon the pun) and other renewable energies hold great promise, the U.S. Administration's position towards them has rarely been less supportive. For example, it proposes to spend three times more on "clean coal" (an oxymoron) than what has been set aside for hydrogen fuel cell research (Bayon). Unfortunately, U.S. competitiveness on renewable technologies will definitely suffer because other nations, including many members of the European Union, are dedicating much larger resources in the direction of renewables. Consider that European nations have "over 70 percent of the world's wind capacity," despite the fact that many regions of the U.S. are extremely valuable sites for wind development (Vital Signs). Perhaps the U.S. will soon see the "light."

What about reducing the consumption of oil by improving efficiencies associated with its current use? The most obvious way to do this would be to improve the fuel efficiency of cars. Sadly, our consumer choices are leading us in the opposite direction. The average fuel efficiency of vehicles on the road has actually dropped since 1985. And since almost all vehicles on the road currently require oil to move from place to place and people continue to own more vehicles (including high school students who now think they are entitled to do so), we are clearly depleting a limited resource without sufficient consideration. Why does the public accept this? If we were all still using the computers that were produced in 1985 (rather than the multiple gigahertz machines of today) wouldn't we be complaining, and rightly so? As a first step to reducing our oil consumption, it is time for the public to demand and purchase vehicles that get more miles to the gallon.

In conclusion, I burned the midnight oil for you so that we might take a closer look at the oil that we burn. Hopefully, we will all begin to take our energy policy more seriously given the seriousness of its consequences.

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You may drop off items to be considered for publication at Lacy England Agency, 131 North Side Public Square in Knoxville or email them to lacyengland@grics.net.

If your January phone bill seemed a little higher than normal, it was. January 1st marked the beginning of the collection of the Municipal Communication Tax enacted by the city council last summer. The tax is collected through your telephone bill, remitted to the State of Illinois and then passed along to the city. Knoxville plans to receive their first check in March, for money collected in January.

Things are sure stirred up around town and people are on edge. The announced cuts by the school district as well as the proposed tax rate increase of \$1.00 per \$100 of assessed valuation has people buzzing. Residents were offered opportunities to attend three public forums held by the school board this past week. These meeting came right on top of the consolidation report assembly.

There is much blame casting and finger pointing about who to hold responsible for the school district's financial woes. The April 1st election is sure to receive strong voter turn-out.

The average citizen is getting a crash course in civics on all fronts.

During this same time-frame, the city has been discussing creating a Tax Increment Financing District (TIF), also holding a public meeting for information on Monday January 27th. Seven members of the public joined five council members during the work session to learn more about Knoxville's potential benefits from the TIF district. Mayor Phil Myers and administrator Ron White were also in attendance. A decisive vote is expected at the February 3rd council meeting. Some view the TIF as a way to channel help to the school district.

If these topics did not provide enough for coffee-shop conversation, we can mix in the exciting news about Galesburg's new Industrial Park project — just a stone's throw from Knoxville's northwestern limit. Knoxville leaders with their eye on annexation and development in that area just got a big stick poked in it, what with 400 acres set to be annexed into Galesburg. The situation may work to Knoxville's advantage, though. A map of the intended development shows Galesburg extending their water line along the north side of County 10 nearly to the Knoxville City limit. Development in that area should also boost sales tax revenues at the fast food places and the motel. Additional jobs may well send employees into Knoxville to meet their housing needs.

All this has left hardly any time for

discussion about the county's new jail. Saturday was open house for the people of Knox County and Knoxville residents could be spotted among the curious thousands who toured through the completed facility before it is officially stocked with prisoners. While the cells of the new jail are rather austere, they can't compete with the solitary confinement cells in the Old Knox County Jail in Knoxville built in 1845 at a cost of \$7,724. Deputies leading the tours impressed upon the folk the fact that they cannot leave during their shift and must eat the same food as the inmates. However, the Sheriff and his family no longer live at the jail as was the custom in the 1800s. This is the county's fifth jail and the fourth still standing.

All the talk of economic development has folks speculating about the P.E.O. home ground in the heart of town. The city has not yet had any response from the P.E.O. Home Fund Board about their counterproposal on receiving the land. Looking back to 1909, and the will of Mary H. Jones, it is noted that she was a woman who appeared quite fond of her town. Besides the gift of the land and the money with the express directive to build the Knoxville Old Ladies' Home, which later became the Illinois P.E.O. Home, she remembered other local institutions. The Knoxville Cemetery Association and City Library of the City of Knoxville each received \$1,000. Three of Knoxville's churches: Presbyterian, Methodist Episcopal, and Christian each were bequeathed \$3,000. What would Mary Jones say about Knoxville if she were here today?

Municipal and school district election filings are also taking a back seat. Tuesday was the close of the objection period and local election officials are certifying their ballot listings in preparation of filing those names with the County Clerk's office. There is opposition at this point for all seats coming up at the city level except the unexpired term of two years in Ward Four. The filing period has closed for nominating petitions but write-in candidates still have time to declare their intent. For those wanting to vote in the April election, but not yet registered, time is running short. Voter registration closes the first part of March.

January was declared National Volunteer Blood Donor Month by the American Association of Blood Banks. The eight million donors who supply the 12.6 million units of blood donated in the U.S. each year represent less than 5 percent of the healthy Americans who are eligible blood donors according to the American Red Cross.

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