America: A frog in the kettle slowly coming to a boil

BY RICHARD C. DUNCAN, PH.D.

Abstract

The peak of world oil production has possibly pased. The Olduvai Theory looms large. Mexico is sweeping its people and problems into the United States. If we don't solve these problems ourselves, then Mother Nature will solve them for us. The first two sections focus on the work I've done over the past thirty years. The next two sections relate the insights of many diverse specialists about how Mexico's problems are fast becoming America's problems. Are there the time and the will or is it too late?

Peak Oil

The peak of world oil production ("Peak Oil" for short) might already be a historical milestone for industrial civilization, as shown by the curve in Figure 1.

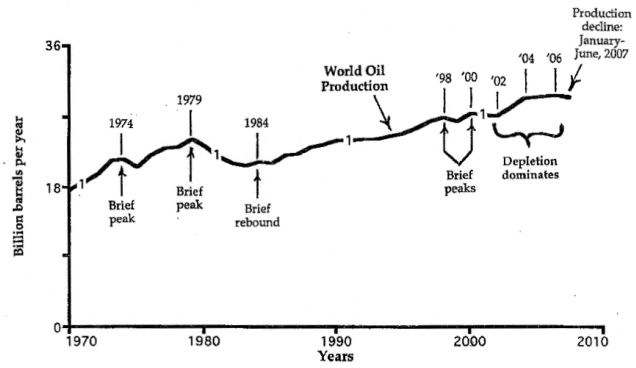


Figure 1:
World oil production may have peaked in 2006.

Figure 1. The first glimpse of Peak Oil? Shown are the annual world oil production data from 1970 through 2006 (BP, 2007) followed by data for the first half of 2007. (OGJ, 2007a)

Note in Figure 1 that five maximums appear; namely in 1974, 1979, 1998, 2000 and 2006. However the first four are very brief. And three of them are sharp peaks: 1979, 1998 and 2000. But the most recent maximum in 2006 is tellingly different. Production increased rapidly in 2003 and 2004, and then tapered off in 2005 and 2006. This was followed by a decline from January to June 2007. Hence it's likely that the maximum in 2006 is dominated by the depletion of the oil still in the ground. In other words, the increasing production from new wells can't keep up with the decreasing production from old wells. *Hereon geology is destiny*.

The rates for Figure 1 follow: Oil production increased by 3.6 percent in 2003 and by 4.0 percent in 2004; next it slowed to 1.1 percent in 2005 and further to 0.3 percent in 2006. This was followed by a half-year *decline* at 0.4 percent from January through June 2007. (OGJ, 2007a) [2]

Of course we'll have to wait for several years to confirm (or reject) a long-term decline in world oil production. However the decline during the first half of 2007 could be a harbinger of things to come. Time will tell. [3]

Geological reality and numerical clues about Peak Oil have been emerging for many years, but most were ignored or flatly rejected. Selections follow.

"Commercial oil production from shovel-dug wells was underway before 1833 in the Chechen Republic. Hence, if we assume it began in 1833 and grew exponentially up to 1859, then world oil production grew exponentially at an average of 8.8 percent annually during the 137-year interval from

1833 to 1970. Then production slowed to various linear rates of growth and decline from 1970 to 2003." When I discovered this in 2004, I postulated that the end of exponential growth was the most reliable clue that Peak Oil was nearing. (Duncan, 2005-2006; Figure 1, curve 1, p. 138)

"The peak of world oil discoveries occurred in 1965. [Moreover] world oil production exceeded world oil discoveries in 1981 and the gap is still growing. I suggest the downward trend of oil discoveries is imposed by nature and it has nothing much to do with any human endeavor." Campbell (2005, "Real Discovery Trend"

Walter Youngquist and I, in 1996 and 1997, used System Dynamics and a graphic-heuristic method to make our first two forecasts of world oil. Both indicated that Peak Oil was dangerously near. Our first forecast put the peak in 2005 and our second in 2007. Forecast #2 (peak in 2007) was published in a scholarly journal. [4] (Duncan & Youngquist, 1999)

Our first five forecasts put Peak Oil successively in 2005, 2007, 2006, 2005, and 2006. Thus we realized that 2006 was also a strong candidate for Peak Oil. So our Forecast #5 (peak in 2006) was the focus of my invited talk at the Pardee Keynote Symposia: Geological Society of America, Summit 2000. [5] (Duncan, 2000; GAO, 2007)

Eventually we (Youngquist & Duncan) made a series of nine forecasts of world oil production — updated annually as new data became available. Two of the series put Peak Oil in 2005; three put it in 2006, three others in 2007, and one in 2008. Hence our series of forecasts clearly converged on 2006/2007.

During a recent (2/1/07) talk I presented several clues that Peak Oil had *possibly* occurred in 2006. I focused on the same curve as shown in Figure 1 (above) except that the data stopped at end 2006. The key clue was that the year-over-year changes in world oil production had gone 'gracefully' from strong growth to near zero growth during the four-year interval from 2003 to 2006. (Duncan, 2007a; GAO, 2007).

Many of us recall that virtually everybody in the U.S. was either oblivious to, or else in outrageous denial of, the possibility that our oil production might peak anytime soon – until it happened in 1970.

"We live in an age of converging crises. The depletion of freshwater supplies, the devastation of fish populations in the oceans, the destruction of topsoil and growing climate change are just a few of the issues we face. Until this point, industrialized society has been able to deal with these issues by making use of cheap and widely available fossil fuels. … But the crutch of cheap energy won't always be around. In fact, the consensus among retired and independent petroleum geologists is that the crutch is about to be yanked out—and soon." (McBay, 2006, p. vii)

"With global oil production virtually stalled in recent years, controversial predictions that the world is fast approaching maximum petroleum output are looking a bit less controversial. … And if [the pessimists] are right, many efforts right now may be the only way to avert a new Dark Age in an overheated world." (Linden, 2007, p. 94)

"With Saudi production falling despite these new [investments], the situation could be serious. … And if Saudi production continues to decline, even as world demand keeps growing, in a few years we will look back at the summer of 2007 as the last of the days when gasoline—even at $3.50 a gallon—was still plentiful and cheap." (Hamilton, 2007)

Testing the Olduvai Theory

Ackerman's Law: "We shall define as a 'social steady state' any society in which the quantity of energy per capita *[e]* … shows no appreciable change as a function of time. … On the other hand a society wherein … the average quantity of energy expended per capita undergoes appreciable change as a function of time is said to exhibit 'social change.' … Upon this basis we can measure quantitatively the physical status of any given social system. … The energy per capita [equals the] total amount [of energy] expended divided by the population. [6] (Ackerman, 1932, p. 18-19)

The Olduvai Theory (OT) states that the life expectancy of industrial civilization is approximately 100 years. World energy production per capita ***(e)*** defines it. The duration of industrial civilization begins when ***e*** reaches 30 percent of its 'stagnation value' (plateau) and it ends the year that ***e*** falls back to that value. [7] (Duncan, 2007b)

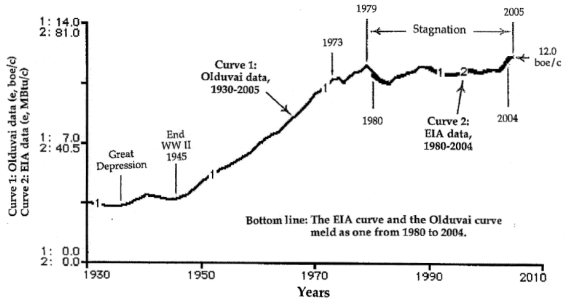


Figure 2:
Test of OT data against EIA date: 1980-2004.

We can now (1) show that strong growth ('social change') occurred in world society from 1945 to 1979; (2) next stagnation (a rough 'social steady state') set in from 1979 to 2005; and (3) finally we test the Olduvai Theory against the U.S. Energy Information Agency (EIA) data from 1980 to 2004. The two datasets are graphed in Figure 2.

Figure 2. A test of the OT against EIA data: 1980 to 2004. "MBtu/c" means million British thermal units per person. "boe/c" means barrels of oil equivalent per person.

The Olduvai data for ***e*** (curve 1) and the EIA data for ***e*** (curve 2) were purposely graphed on different vertical scales to see if they agree (i.e., overlap) from 1980 to 2004. (Duncan, 2007b; EIA, 2006)

As you see in Figure 2, the Olduvai curve melds nicely with the EIA curve. Hence the OT cannot be rejected by the EIA data from1980 to 2004.

Since my WW 31 talk, however, the EIA published an ***e*** value for 2005 that is 2.1 percent higher than their value for 2004. (EIA, 2007) This compares to the OT ***e*** value for 2005 that is 1.4 percent higher than my value for 2004. Hence the two curves still meld as one in 2005.

But a more significant fact is that the U.S. ***e*** (material standard of living, 'MSL') in 2005 was about 58.0 boe/c compared to the world average ***e*** of about 12.0 boe/c. It follows that the average world ***e*** would have to increase by nearly four times (four hundred percent) to raise it to the U.S. level in 2005. Hence the current U.S. ***e*** would appear as a point far above the graph of Figure 2. Details are given in my previous essay. (Duncan, 2007b)

The beginning of terminal decline of industrial decline, as postulated by the OT, will begin circa 2008-2012.

Of course I hope the Olduvai Theory is wrong. I have children and grandchildren. It gives me nightmares. But wishful thinking has no place in science or engineering.

"The Second Half Dawns: (1) Marked by the decline of oil and gas – and all that depends on these energy sources, and (2) Physical decline is gradual but the perception of its relentless nature may come as a shock. ‡ Stock market crash? ‡ More resource wars? ‡ Social and political upheaval?" (Campbell, 2005)

"The Olduvai Gorge theory has much basis of fact. And it is very relevant." (Youngquist, 2007, Aug 15)

"[The rapidly declining grades of world coal] parallel the situation in oil; where high quality oil is easier to produce and easier to process into higher quality end products. [Thus it] is exploited before the lower quality oil (e.g. oil sands, heavy oil) is extensively produced. The sum of both situations is that the quality of both oil and coal,

the current two major world sources of energy, are declining and are more costly to produce … These facts have profound implication for the future of the industrialized world and of society in general. Energy cost and availability largely determine physical living standards, which are almost certain to decline in the coming decades." (Youngquist, *GeoDestinies,* 2nd Ed.)

Reese R. Raybon, a finance and psychology graduate, recently described a highly relevant and very timely theory that—in my judgment—helps explain the great resistance to Peak Oil and the Olduvai Theory. His words follow.

"People's reluctance to accept or adopt the warnings of Olduvai Theory is best explained by basic human psychology. People don't want to hear bad news and in the case of the Olduvai Theory, bad news has some really bad consequences for the world, as we currently know it.

When people hear news that's in conflict with a belief or an existing idea they develop an uncomfortable feeling or a dissonance and when people have two or more thoughts which are inconsistent with each other they take on a state of cognitive dissonance or clashing thoughts (Leon Festinger, 1957) and people in this state of mind will be motivated to reduce these uncomfortable thoughts.

In the case of the Olduvai Theory and the negative future it presents, people will reduce their cognitive dissonance by either taking the warnings to heart and plan for a future of reduced oil availability or by simply ignoring it to a state of blissful ignorance. …

In Adam Smith's words from *The Theory of Moral Sentiments* (III.4.6) it may be due to our inability to see ourselves from the perspective of an indifferent spectator or from the outside: "This self-deceit, this fatal weakness of mankind, is the source of half the disorders of human life." …

How we manage this gift of oil, the finite energy bank account, known as the World's Oil Reserves, will determine our future. Now is the time to wake up to the fact that we need an oil age end-game strategy!" (Raybon, 2007)

Mexico: A failed nation

Facts and figures about Mexico

***International Energy Outlook 2007*:** "The EIA's new version of Mexico's oil arrived today (IEO, 2007). After thoroughly going into it, it is clear to me that they have already peaked in oil production unless the deep water does great things for them—which they cannot afford to try to get apparently. And deep water may not even hold the answer.

It is also clear that Pemex is the national 'Cash Cow' and the Mexican government is milking it for all they can—and more. Pemex has no money to invest in oil development in a serious way." (Youngquist, 2007)

***Crime-ridden, smog chocked*:** "Mexico's capital of nearly 20 million people exemplifies chaos. More than 4 million drivers snarl its potholed streets each day. The city is notorious for 'express kidnappings.' In which victims are forced to drain their bank accounts from automated tellers at gunpoint." (Associated Press, 2007)

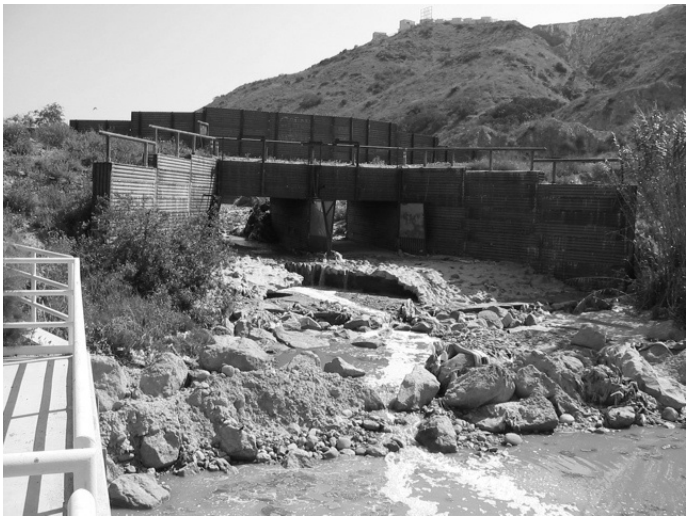
***Sabotage*:** "The Mexican government said the coordinated attacks on oil and gas pipelines … caused hundreds of million dollars in damages … 'At a time when Mexico's oil production is declining rapidly due to natural production declines in the country's Cantarell field, the country can ill afford to spend hundreds of millions of dollars on repairing pipelines from terrorist attacks, …'" (Fletcher, 2007)

***Insolvency*:** "Some 40 percent of [Mexico's] generating capacity is over 35 years old and is due for replacement, … approximately $58 billion will be required over the period 2005-2014 … As a consequence, management of the electric power

system in Mexico bears implications for the overall health and welfare of the energy sector in general." (CEE, 2006)

***Blackouts*:** "[Neither] the World Bank nor the Mexican government is prepared to put up the tens of billions of dollars needed to upgrade and expand the power grid and distribution system. … Mexican energy policy in electric power will be noted for blackouts, …" (Baker & Ramirez, 2002)

Southern tsunami? — "If you thought the influx of immigrants from Mexico was bad before, it's about to get much worse. … Cantarell has gone into steep decline (at lest 15 percent per year) which means that Mexico's economy is going off a cliff. Guess which country is going to be the recipient of large numbers of Mexicans? (Butler, 2007)



Raw sewage pollutes a small tributary near Tijuana, Mexico.

***EIA lowers its forecast*:** "Projections for Mexico's crude oil production in the *International Energy Outlook 2007 (IEO2007)* are much lower than those in *IEO2006*. … In 2004, Cantarell held more than 26 percent of Mexico's total remaining oil reserves and produced 2.1 million barrels per day, accounting for more than 61 percent of the country's total crude oil output. Since its peak production in 2004, Cantarell has been in decline." (IEO, 2007)

***Pemex plummets*:** Mexico listed its "proven" oil reserves at 48.5 billion barrels in 1996, but then reduced them to 12.9 billion in 2006. (BP, 2007)

***Exports ditto*:** "Mexican crude exports to the United States are down 13 percent in the first four months of this year." (Ellsworth & Bremer, 2007)

***Most polluted*:** "Mexico City's air has gone from among the world's cleanest to among the dirtiest in the span of a generation. … The average visibility of some 100 km in 1940s is down to about 1.5 km. It is now the most polluted mega-city in the world." (Yip & Madl, 2000)

***Illegal drugs*:** "According to a U.S. State Department report, Mexico is: the principal transit country for 70 to 90 percent of cocaine entering the United States; the supplier of 30 percent of the heroin; and the largest outside source of marijuana and methamphetamine." (Nauman, 2006)

***CIA provides information*:** A concise summary of Mexico—its people, population, poverty, out-migration, illicit drug trade and much more—is available online from the U.S. Central Intelligence Agency. (CIA, 2005)

***Labor dumping*:** "For nations like Mexico, it's far easier to push jobless workers abroad than to reform a sick economic system. There is little chance of stemming migrant inflows, as long as the countries supplying immigrants embrace policies that effectively mandate labor dumping. …

Today Mexico is the world's largest labor dumper and the source of much of the contentious U.S. immigration reform debate. … Like Yugoslavia, Mexico can't produce enough jobs.

Rather than modernize the economy, Mexico's politicians use Tito's broom. Mexico's 47 consulates in the U.S., more than any other country has, facilitate the sweeping by issuing passports and offering assistance when Mexican immigrants run into trouble. Thus 30 percent of Mexico's labor force is working in the U.S., and in 2006 they sent home $23 billion, 12 percent of Mexico's exports." (Hanke, 2007)

***Sinking city*:** "Mexico City's latest urban ill stems from its unique geography and history. Built on a drained lakebed after the Spanish destroyed the Venice-like city of Tenochtitlan, Mexico City

has been sinking steadily for centuries, sinking the equivalent of a three-story building since 1900." (Schwartz, 2007)

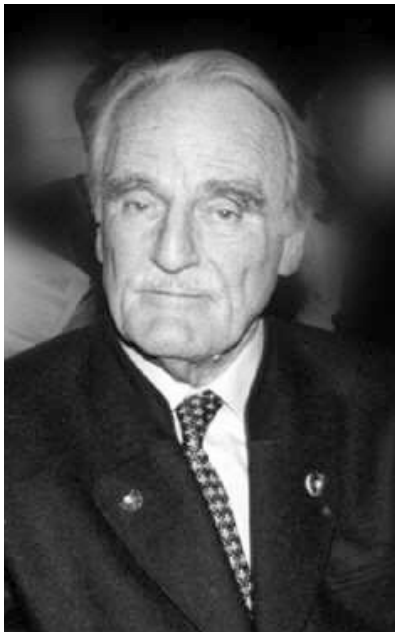
***Non-payment*:** "Water costs in Mexico City have escalated dramatically, and existing revenues do not come close to paying the marginal costs … a majority of water bills go unpaid." (National Research Council, 1995)

Not to be missed: The *National Geographic* abstract for its video "Sewer Diver in Mexico City, World's Worst Job?" reads:

It's a dirty job, literally. But Carlos Barrios, a former accountant in Mexico City, thinks he's the one to do it.

As workers across the United States take a day of rest this Labor Day, Barrios will likely be swimming the Mexican capital's sewers. He'd be submerged in the toxic brew of garbage, bacteria, excrement, and dead animals—even the occasional murder victim.

His job is to clear blockages and ensure these contaminated waters don't gush into city streets, subway tunnels, or people's homes.



Author Jean Raspail's novel *The Camp of the Saints* vividly describes the "silent invasion" of Third World immigrants.

Watch as his team responds to an emergency call, and try not to hold your breath [and nose] as Barrios dives into the bowels of one of the most polluted cities on Earth.

The National Geographic's 4 minute and 3 second video is — Um, how to put it? — *memorable.* (YouTube, 2006)

***Finis*:** "Mexico is broken." (Navarette, 2007)

America: A failing nation

Facts and figures about America

***Silent invasion*:** "This, I think is the most telling point [economist Jan] Tinbergen has to make. The process of takeover by uninvited guests has indeed started, and there is little sign—yet—that Americans are going to resist. Technically, it is easy to control immigration; politically it is not so easy. All too many of the rich suffer from a moral ambivalence, which has been vividly described in Raspail's chilling novel, the *Camp of the Saints*. Will America, like invaded France in Raspail's novel, continue to be immobilized by ambivalence in the face of a silent invasion? If we cannot muster the will to protect ourselves we will find that we have shared not wealth, but poverty with our invaders. This fate, if it comes, will not be peculiarly American; it is the fate that awaits any nation that refuses to take the tragedy of the commons seriously." (Hardin, 1980)

***U.S. immobilized*:** "A friend of ours recently returned from Germany, her daughter is married to a German. And I heard this before from a German young fellow in Bolivia—the Turks are taking over Germany the way the Mexicans are taking over America: by the much higher reproduction rate. At this time there is nothing to stop this process, so the trend will continue. The Germans are very concerned about the increasing Turk minority— they don't know what to do! They have overreacted against the spirit of the '40s and are immobilized." (Anonymous, 2007)

***Letter to a Senator*:** "You either do not understand the problem [of overpopulation], or like most public officials, chose not to recognize it. …

The Rockefeller Commission in 1972 … said there was no advantage to the US having more people—population then 260 million. Now we have more than 300 million and more pour across our borders every day.

We do not have the resources now to take care of those who are here—much less more and more. The U.S. Census Bureau predicts 400 million by 2050. The Population Reference Bureau says 450 million. That is a disaster. Why is this not recognized and something done about it now?" (Youngquist, 2007)

***Infrastructure in disrepair*:** "[A] report underscores the broader disrepair of transit, power and

water systems in the U.S. In 2005, the American Society of Civil engineers graded as 'poor' the condition of the nation's transit infrastructure as well as power grids, dams and systems for drinking water and wastewater. The U.S. faces a $1.6 trillion deficit in needed infrastructure spending through 2010." (Herrick, 2007)

***Fiscal anarchy*:** "What have Americans gained from their nation's mountain of debt? … Supply-siders ignore the crucial distinction between, on the one hand, debt employed as an investment vehicle to enhance competitiveness and, on the other, debt used to pay off current expenses and to create even more debt." (Varzi, 2007)

***Dream ends*:** "Part of the reason people are spending beyond their means is because they are—in a way—witnessing the end of the American dream." (Abdelal, 2007)

***House of cards*:** "Only way to pay off all the debt—public and private—is by continued inflation. The 1945-dollar now has the purchasing power of 9 cents. It is coming—clear signs as the dollar hits 15-year low against Pound—diving also against other currencies." (Youngquist, 2007)

***Lemmings*:** "USA going right down the tube! Bush is leading the charge. Total disaster! Will take USA decades to recover and I don't think it really ever will. Stay in Iraq 10 years—or beyond —huge drain on our resources for nothing. We're being bled white in many ways." (Youngquist, 2007)

***Blackout 2003*:** "More than 50 million people in Canada and the U.S. lost power for some several days. Everything in society that we cherish ended when the blackout came. If it wasn't a fire drill for how important energy is, I can't imagine. But you know what? People didn't get it. It wasn't a yellow light—it was a big red light." (Simmons, 2004)

The Mother of all grids: "The greatest technological achievement of the twentieth century, … was not the Internet, the airplane, the artificial heart, the refrigerator or the assembly line. The greatest technology was one that powered all the others—the electric grid.

Electricity became America's primary source of energy, powering GDP growth and an improving standard of living. The grid performed so consistently that electricity, like water and sewage treatment, came to be noticed only in its absence." (Karn, 2007)

***Electricity theft*:** "Energy theft in the United States costs consumers billions of dollars each year. ... Across the United States approximately 80 percent of the revenue protection cases investigated are residential. The other 20 percent are industrial, commercial, and agricultural. However, 80 percent of the dollars lost to energy thieves is lost at industrial, commercial, and agricultural accounts. … Honest customers then pay for what the few dishonest customers are stealing." (Seger, 2005)

***Gold & spilling*:** "The price of gold is a report card on how a nation is managing its currency. It hit $738 today. All paper money tends to zero in the long run. Invest in natural resources.

Mexico will keep spilling over people—and they'll keep coming, but their oil won't. In 8 years they're likely to be an oil importer.

Mexico can't make up for the loss of Cantarell. Thus there won't be any extra money coming from Pemex. No more government subsidies to their burgeoning population." (Youngquist, 2007)

***Control has never worked*:** [The Kennedy-Kyl bill, now in limbo, assumes that the U.S. fed-

eral government will control the borders.] "The thing that is arousing so much fiery opposition to this bill—embittered cries of 'amnesty'—is that we have tried something like this before, and it didn't work.… Pollster Scott Rasmussen reports that voters aren't dead set against legalizing current illegals. But they must be convinced first that this time border control security is for real." (Barone, 2007)

***Gutierrez bio*:** "Professor Jose Angel Gutierrez is on the state of texas payroll at the University of Texas—Arlington. He founded 'la raza'—the group of mexicans openly dedicated to taking over at least the southwest portion of the united states. He notes that by the differential birthrate of Mexicans versus white Americans that the Mexicans will inevitably take over, and it is only a 'matter of time' before the Mexicans have control. Whether by this he means just the Southwest United States or the whole country is unclear." (Youngquist, 2007, Jul 12)

Prof. Jose Angel Gutierrez

***We are nice*:** "If the hot weather hasn't got you steamed, this [items 16 & 17 below] will do it.

Those people will kill us if necessary to take over the USA. But we have one on the state payroll supported by the taxpayers of Texas. And we meekly put up with these statements. If WE said we were going to kill the Mexicans think of what an uproar that would be.

But we are nice and civilized and so we submit to this sort of threat without a protest. Given present trends, they will indeed take over." (Youngquist, 2007, Jul 12)

***Gringos must go*:** "We have got to eliminate the gringo, and what I mean by that is if the worst comes to the worst, we have got to kill him." (Gutierrez, 1969)

***Reconquista*:** "The border remains a military zone. We remain a hunted people. Now you think you have a destiny to fulfill in the land that historically has been ours for forty thousand years. And we're a new Mestizo nation. And they want us to discuss civil rights. Civil rights!! What law made by white men to oppress all of us of color, female and male. This is our homeland. We cannot—we will not—and we must not be made illegal in our own homeland. We are not immigrants that came from another country to another country. We are migrants, free to travel the length and breadth of the Americas because we belong here. We are millions. We just have to survive. We have an aging white America. They are not making babies. They are dying. It's a matter of time. The explosion is in our population." (Gutierrez, 1995)

***Loss of sovereignty*:** "People use energy. More people use more energy. We're presently importing more than 65 percent of our oil and about 16 percent of our natural gas. And since 2002 we've been a net importer of agricultural products. The point is that we already have more people than we can support with our resources.

The U.S. is the only industrial country with a growing population. And 80 percent of the growth is due to immigration and the rest to the babies of immigrants. Their weapon is their babies.

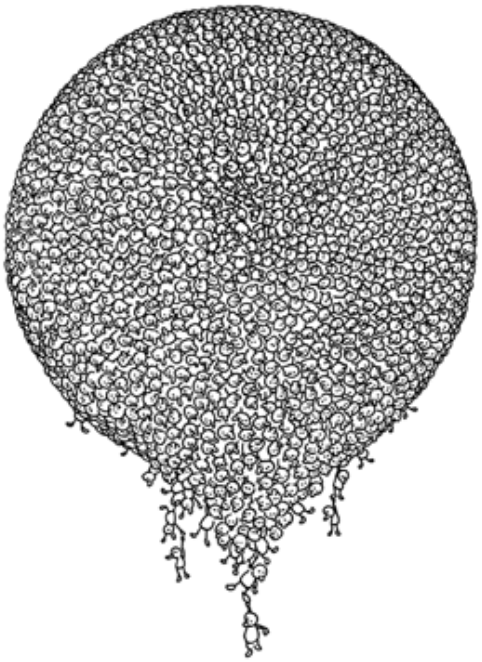
The U.S. now has 302 million people and Mexico 107 million. Further we're projected to have 350 million and Mexico 125 million by 2025. We're importing a lower standard of living by taking in immigrants.

Mexican drug cartels operate in every region of the U.S. This amounts to 23 billion dollars a year. And the Mexican government is helping the cartels. A country that doesn't control its borders has lost its sovereignty and identity as a nation." (Youngquist, 2007, Sep 21)

***The Problem: Too Many People*:** "Califor-

nians know what's happening to our state because we're forced to face the worsening consequences on a daily basis: impossible traffic, unbreathable air, endless urban sprawl, badly overcrowded schools, a dangerously depleted health care system, loss of open space and habitat, depressed wages, heavier taxpayer burdens, and more. Too many people and too few resources. America's open-door policies have left California, and the nation, with a continued and unsustainable flood of immigration. And something must be done." (CAPS, 2007)

Who wouldn't walk? — In the U.S., according to the World Bank study, natural capital is $15,000 per person, produced capital is $80,000 and intangible capital is $418,000. And thus, considering common measure used to compare countries, its annual purchasing power parity GDP per capita is $43,800. By contrast, oil-rich Mexico's total natural capital per person is $8,500 ($6,000 due to oil), produced capital is $19,000 and intangible capita is $34,500 — a total of $62,000 per person. Yet its GDP per capita is $10,700. When a Mexican … walks across our border, they gain immediate access to intangible capital worth $418,000 per person. Who wouldn't walk across the border in such circumstances? (Bailey, 2007)



Mexico's debt: Whose crisis? — "I have just [1983] returned from a 2,000-mile trip to the Mexican heartland that zigzagged through the oil-rich stretch from Veracruz to Campeche Bay. The situation is foreboding. An optimist might give the Mexicans a fighting chance. A pessimist could only conclude their plight is hopeless. Sitting somewhere between these extremes, I sound the alarm 'Watch out, America!' and hope for the best." (Duncan, 1983)

Conclusions

World oil production either peaked in 2006 or else the peak is near.

Hereon the depletion of the oil still in the ground will dominate all human efforts to increase production.

U.S. EIA data from 1980 to 2005 cannot reject the Olduvai Theory.

Olduvai Theory Postulate #3 states, "The terminal decline of industrial civilization [i.e., $e < 0.0$] will begin circa 2008-2012."

Mexican oil production peaked in 2004 and Mexico is likely to be an oil importer by 2015.

Mexico's collapse could send hundreds of thousands of desperate people surging across our borders every day.

Despite long-established Federal laws, the U.S. borders are still not secure and more people pour across daily.

Public officials refuse to recognize the problem of overpopulation.

Our backs are against the wall; it may be too late to do anything about it.

The material standard of living (MSL) of the world can never be raised to the current U.S. level. But the U.S. level can fall precipitously.

Acknowledgments

Walter Youngquist has contributed to this essay by a thorough prepublication review. Michael T. Bunker has sent crucial information via DVDs and URLs. Reese R. Raybon's tutorial on 'cognitive dissonance' is an eye-opener. Francis de Winter forcibly asks, "Why are taxpayers being mislead by their government?" Information from groups like CAPS, CUSP and ASPO has been most helpful.

End Notes

1. After my presentation at Writers Workshop 31, Denis McCormack commented: "I recall a radio science broadcast I heard a few years back that straightened out the non-jumping boiled frog myth.

By experimentation, they proved that frogs do in fact jump out before it's too late. And that should give us some hope! So I think your original subtitle, 'The perfect storm,' was better. Not that the title matters anyway."

2. Since my presentation, new data show that the fall in world oil production accelerated to 0.5 percent from January to July 2007. (OGJ, 2007b)

3. Michael T. Bunker recently sent me a report by the German-based Energy Watch Group that states, "Global oil production peaked in 2006 and will now fall by 7 percent a year." http://www.guardian.co.uk/oil/story/0,,2196435,00.html

4. We actually completed Forecast #2 in 1997, but it was not published until 1999.

5. I was told beforehand that as many as 1,000 people might attend my talk – but then only about 30 showed up. This was just another roadblock that I've encountered in trying to convey a dissonant idea.

6. Frederick L. Ackerman was a close friend of M. King Hubbert.

7. Back to the future: Imagine that you have just run a movie that shows the past 10,000 years of human history. Now stop the projector and run the movie backwards. That conveys a rough idea of the Olduvai future.

The above article is based on a presentation to the Writers Workshop, in Washington, D.C., on September 30, 2007.

Definitions

"OT" is short for Olduvai Theory. Average energy production per capita ***(e)*** is also a surrogate for the average material standard of living (MSL). "Gridloss" refers to a complete blackout that lasts for a week or more. ■

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