

“The Energy Crisis Has Arrived”

**Energy Conversation Series
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by
Matthew R. Simmons
Chairman
Simmons & Company International

Modern Energy: Elixir Of Life

- Oil is “transportation” energy.
- Oil’s liquids make all kinds of things.
- Natural gas creates instant heat.
- NGLs create things, too (fertilizers and petrochemicals).
- Coal, nuclear, hydro, wind and solar all create “light.”
- Without these energy sources, we lose a lot.
- Any energy shortage morphs rapidly into PANIC!



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Oil Was Used To Manufacture Every Item In This Photograph



More Products Made From Oil...

Adhesives, air-conditioners, ammonia, anti-histamines, antiseptics, artificial turf, asphalt, Aspirin, balloons, bandages, boats, bottles, bras, bubblegum, butane, cameras, candles, car batteries, car bodies, carpet, cassette tapes, caulking, CDs, chewing gum, combs/brushes, computers, contact lenses, cortizone, crayons, cream denture adhesives, deodorant, detergents, dice, dishwashing liquid, dryers, electric blankets, electrician's tape, non-natural fabrics, fertilizers, fishing lures, fishing rods, floor wax, footballs, glycerin, golf balls, guitar strings, hair coloring, hearing aids, heart valves, heating oil, house paint, ice chests, ink, insect repellent, insulation, jet fuel, life jackets, linoleum, lip balm, lipstick, loudspeakers, mascara, medicines, mops, motor oil, motorcycle helmets, movie film, nail polish, oil filters, paddles, paint brushes, paints, parachutes, paraffin, pens, perfumes, petroleum jelly, plastic furniture, plastic wrap, plastics, refrigerators, roller-skate wheels, roofing paper, rubber bands, rubber boots, rubber cement, running shoes, saccharine, seals, shoe polish, shoes, shower curtains, solvents, spectacles, stereos, sweaters, table tennis balls, tape recorders, telephones, tennis rackets, thermos, tires, TV cabinets, computer ribbons, umbrellas, upholstery, vaporizers, vitamin capsules, volley balls, water pipes, water skis, wax, wax paper, etc. etc.

Defining Some Key Words

- Mistakes occur when “two ships pass in the night.”
- “Terms” means different things to different people.
- Some important terms for tonight’s talk:
 - Satire
 - Gurus
 - Fools
 - Paradise
 - Beliefs
 - Theories
 - Facts
 - Proof
 - Crisis

terms. Language or a mode of expression used <refused in no uncertain *terms*> 5. **a.** A stipulation or condition that defines the nature and limits of an agreement <the *terms* of a treaty> **b. terms.** The relation between two persons or groups : FOOTING <on speaking *terms* with the neighbors> 6. *Math.* **a.** Each of the quantities composing a ratio or a fraction or forming a series. **b.** Each of the quantities connected by addition or subtraction signs in an equation : MEMBER 7. *Logic.* Each of the two concepts being compared or related in a proposition. 8. A post or stone marking a boundary, esp. a square and tapering pillar adorned with a head and upper torso. –vt. **termed, term-ing, terms.** To designate or call <*termed* them cowards> –**come to terms.** To reach an agreement. –**in terms of.** With regard to. –**term'ly** *adv.*

Satire

SATIRE*:

sat•ire (săt'īr') *n.* [OFr. <Lat. *satira*, alteration of *satura*, mixture, poem treating various subjects <fem. Of *satur*, sated.] **1. a. A literary work in which human vice or folly is ridiculed or attacked scornfully. b.** The branch of literature that comprises such works. **2.** Irony, derision, or caustic wit used to attack or expose folly, vice, or stupidity.

▲ **word history:** The word *satire* is from Latin *satira*, a variant of *satura*, which denoted a type of long poem that held human follies and vices up to ridicule and scorn. *Satura* originally meant “a full dish,” and later “a mixture; a poem treating a variety of subjects.” It is derived from *satur*, “full of food,” which is related to *satis*, “enough,” the source of English *satisfy* and *satiate*.

*Satirist: One who writes satirical works.

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Guru

GURU:

gu•ru (gŏŏr'ŏŏ, gŏŏ-rŏŏ') *n.*,
pl. –rus. [Hindi *gurū* < Skt.
guru-, venerable.] **1.** A
personal spiritual teacher. **2.**
a. A recognized guide or
leader. b. An acknowledged
advocate, as of a movement
or idea.

Fool

FOOL:

fool (fōōl) *n.* [ME fol < OFr. < Lat. *Follis*, bellows.] **1. One deficient in judgment, sense; or understanding. 2. One who acts unwisely <I was a *fool* to have taken this job.> 3. A member of a royal or noble house hold who once entertained the court with jests and mimicry : jester. 4. One who has been or can be easily deceived or imposed upon : dupe <made a *fool* of me> 5. *Chiefly Brit.* A dessert made of crushed, stewed fruit mixed with cream or custard and served cold. 6. *Informal.* A person with a talent or enthusiasm for a certain activity <a *fool* for antique cars> 7. *Obs.* A feeble-minded person : idiot. –*v.***

Paradise

PARADISE:

par•a•dise (pă'rə-dīs', -dīz') *n.*
[ME *paradis* < OFr. < LLat. *Paradisus* < GK *paradeisos*,
garden < Avestan *pairi-daēza-* :
pairi, *around* + *daēza-*, *wall*.] **1.**
often Paradise. The Garden of
Eden. **2. a.** Heaven **2. b.** An
intermediate resting place for
righteous souls awaiting the
Resurrection. **3.** A place of ideal
beauty or loveliness <an island
paradise> **4.** A state of delight.

FOOL'S PARADISE: An illusion made by a fool

Theory

THEORY:

the•o•ry (thē'ə-rē, thîr'ē) *n., pl. -ries.*
[LLat. *theoria* < Gk. *theōria* < *thēoros*,
spectator < *theasthai*, to observe.] **1. a.**
Systematically organized knowledge
applicable in a relatively wide variety of
circumstances, esp. a system of
assumptions, accepted principles, and
rules of procedure devised to analyze,
predict, or otherwise explain the nature or
behavior of a specified set of
phenomena. **b.** Such knowledge or such
a system distinguished from experiment
or practice. **2. Abstract reasoning :**
Speculation. 3. An assumption or
guess based on limited knowledge or
information : Hypothesis.

Belief

BELIEF:

be•lief (bĭ-lĕf') *n.* [ME *bileve*, alteration of OE *gelēafa*.] **1.** The mental act, condition, or habit of placing trust or confidence in a person or thing. **2.** Mental acceptance of or conviction in the truth or actuality of something. **3.** Something believed or accepted by a group of persons.

syns:* **1. Belief, conviction, feeling, idea, notion, opinion, persuasion, position, sentiment, view *n. core meaning:* something believed or accepted as true <a *belief* in life after death> <liberal political *beliefs*>

Fact

FACT:

fact (făkt) *n.* [Lat. *Factum*, deed < *factus*, p.part. Of *facere*, to do.] **1.** Something put forth as objectively real. **2.** Something objectively verified. **3. a.** Something with real, demonstrable existence <Travel to the moon is now a *fact.*> **b.** The quality of being real or **actual.** **4.** Something carried out or performed. **5. Law. a.** The aspect of a case at interpretation of law <The jury made a finding of *fact.*>

Proof

PROOF:



proof (prōōf) *n.* [ME *prove* <LLat. *Proba* < Lat. *Probare*, to prove.] **1.** Evidence establishing the validity of a given assertion. **2. Conclusive demonstration.** **3. Proving of something by experiment, test, or trial** <Durability was a *proof* of the tire's quality.> **4. Archaic.** Proven impenetrability. **5. Law.** The whole body of evidence that determines the judgment or verdict in a case. **6.** Substantiation of a proposition by application of specified rules, as induction deduction to assumptions, axioms, and sequentially derived conclusions. **7.** Strength of a liquor in relation to proof spirit. **8. a.** A trial sheet of printed material that is checked against the original manuscript and on which corrections are made. **b.** A trial impression of a plate, stone, or block taken at any of various stages in engraving. **c.** A trial photographic print *-adj.* **1.** Fully or successfully resistant Impervious <*proof* against proving or make corrections. *-v.*

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Crisis

CRISIS:

cri•sis (krī'sīs) *n.*, *pl.* –**ses** (-sēz') [Lat. < Gd. < *krinein*, to separate.] **1. a. A crucial or decisive point or situation**
Turning point. b. An unstable state of political, international, or economic affairs with an impending abrupt or decisive change. **2.** A sudden change for better or worse during an acute illness. **3.** The point in a story or drama at which hostile forces are in the tensest state of opposition.

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THE GREAT ENERGY CRISIS (2006 – 20??)

The History of Crisis

- How this one crept up
- What everyone missed
- Gravity of crisis
- How we conquer it
- Lessons learned

History Is Wrought With Tragedy And Crises

- “Hi-story” records grim tales of crises.
- Most were unnecessary (sadly).
- Armies only march (vs. train) to overcome crises.
- Modern history saw escalating series of crises:
 - Old crises were mostly local
 - Modern crises became global pandemics

Value of Historical Analysis

- History always puts current problems into context.
- Historical events rarely re-occur.
- Mistakes leading to crises are often repeated.
- Best plans usually anchored on rigid historical analysis.
- History of crisis is “Classical Study” at its best.

We Faced Many Crises

Division of tax fairness

- ▶ The Boston Tea Party
 - ▶ The American Revolution
 - ▶ Ignoring Slavery
 - ▶ The Missouri Compromise:

▶ The Great Civil War

(Aftermath: A nation almost destroyed - 600,000 - DEAD)

The vanity of the “Royal Cousins”

- ▶ A Duke’s death:

▶ The Great War

(Aftermath: 20 to 40 million of “the finest we had” – DEAD)

Great War Recess Morphed Into Tragedy

We failed to settle the Great War

▶ Germany's famine

▶ The Nazi march

▶ Peace in our time (18 months)...Then came war:



September 2, 1939: Insanity in Europe explodes into WWII.

December 7, 1941: US Navy sinks – America's fortress crumbles.

May 1945: Europe/UK are gone, but VE Day is here.

August 1945: Hiroshima and Nagasaki are gone, but war ends.

IT ALL COULD HAVE BEEN PREVENTED

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Crises Are Also Not Inevitable

1stQ 1946: General George Marshall traverses Europe, spending six weeks with “Uncle Joe”. He panics... “We will soon be back at war.”

June 1946: “America must go back to Europe or the Depression will return.” (Marshall Plan announced at Harvard)

1947 – 1951: Result: The Four Wise men were wise!

- 2,500 Marshall Planners planned.
- By Korean Crisis, rebuilding Europe was almost complete.

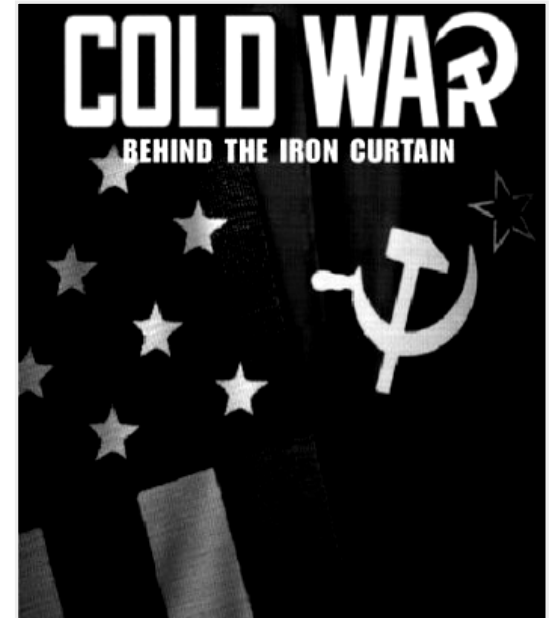
Genuine Peace In Our Time Worked

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Another Crisis Avoided Story...

The “Cold War” Kept The Heat Of War Away

- 1947: Iron Curtain created “Cold War.”
- 1948–1988: Explosion of armies, spies, planning and technology. Despite many “near misses” the Cold War worked.
- 1989: The Wall collapsed. The Russian illusion evaporated.



Billions of wisely spent dollars
saved millions of lives

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The Art Of Crying Wolf: A Time Honored Gift or Mistake?

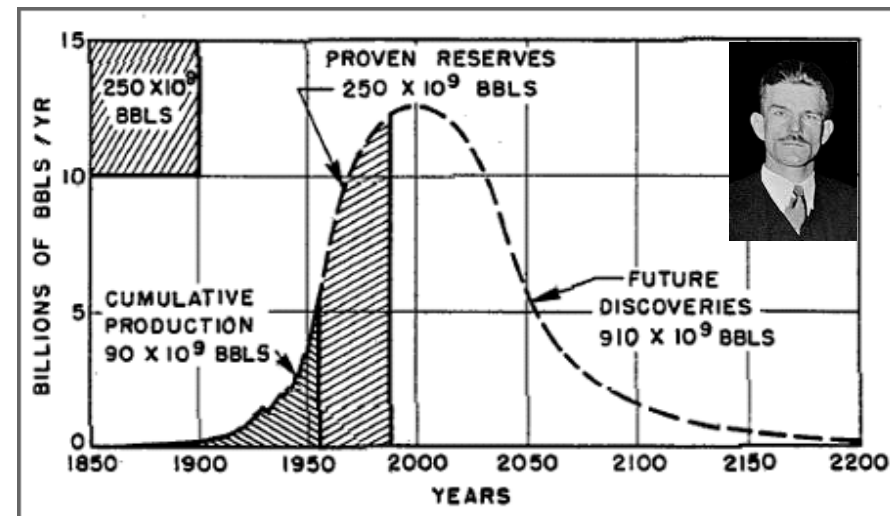
The optimists like to say “They are just crying wolf!”

- “The bombs never fell” (50 years defense spending - wasted).
- Polio did not kill everyone (inoculations - wasted).
- Sputnik was tiny piece of space (all the unneeded engineers and scientists – wasted).
- We easily landed on the moon (the space race – wasted).
- Y2K did not shut us down (approx. \$50 Billion – wasted).
- Maybe climate change won’t materialize (too early to tell).
- Bird “Flu pandemic might not spread (too early to tell).

WHICH BATTLES SHOULD WE IGNORE?

The Energy Crisis Could Have Been Prevented

- This, too, was a crisis we could have solved.
- Planning for post-Peak Oil should have begun in 1970s.
- It would take three decades for a “safe transition.”
- We were amply warned:
 - Hubbert’s cry (1949)
 - Club of Rome (1972)
 - Aramco’s Whistle Blower (1974)
 - The NYT “leaks” (1978-79)



Facts always become crystal clear...after the fact

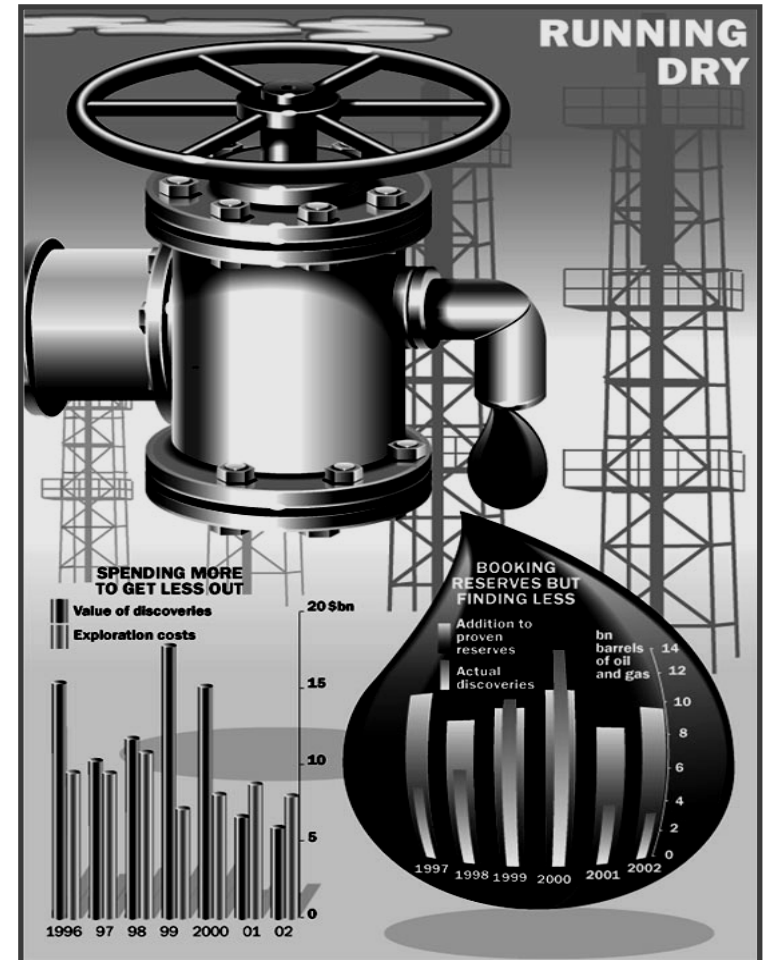
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Tragedies Often Leave A Trail Of Tears (Or, The Riddle Of Lost Opportunities)

- “How easy it would have been to never pick up a single gun...” Winston Churchill in Missouri 1947 (aka “His Iron Curtain Speech”).
- “Remember the chorus of street criers who cried?”
Dr. Colin Campbell, Jean Laherrere, Dr. Fatih Birol,
Dr. Kjell Aleklett, Honorable Randy Udall, Dr. Herman
Franssen, Dr. Edward Morse, Dr. Robert Hirsch.
How could so many energy medics’ voices have not been
heard? (Answer: The laughter drowned their cries.)

What The Optimists Missed

- Awful energy data.
- No proof of “proven reserves.”
- OPEC’s proven reserve game (1980s).
- Decades of lower exploration success.
- No proof that reserves still grow.
- Acceleration of decline curves.
- Limits of oilfield technology.
- Etc., Etc., Etc.

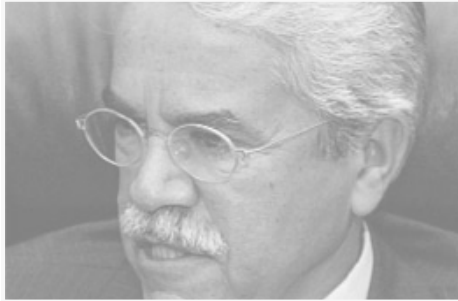


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Why We Slept

- Aramco and others believed Middle East oil was “boundless.”
- Economists believed oil prices would steadily fall:
 - “\$1.25 oil is too expensive.” M. Adelman (Dec. 1969)
 - “Cost to extract all natural resources falls over time.” J. Simon (1980)
 - “Drowning in Oil – Oil prices are falling to \$5 for a decade” The Economist. (March 1999)
 - Energy Crisis? Phooey! – Yergin, Tillerson, Browne (2006)

Current Scoffer Statements



- “No one wants our oil – even our light oil.” (Saudi Arabian Petroleum Minister, June 2006).



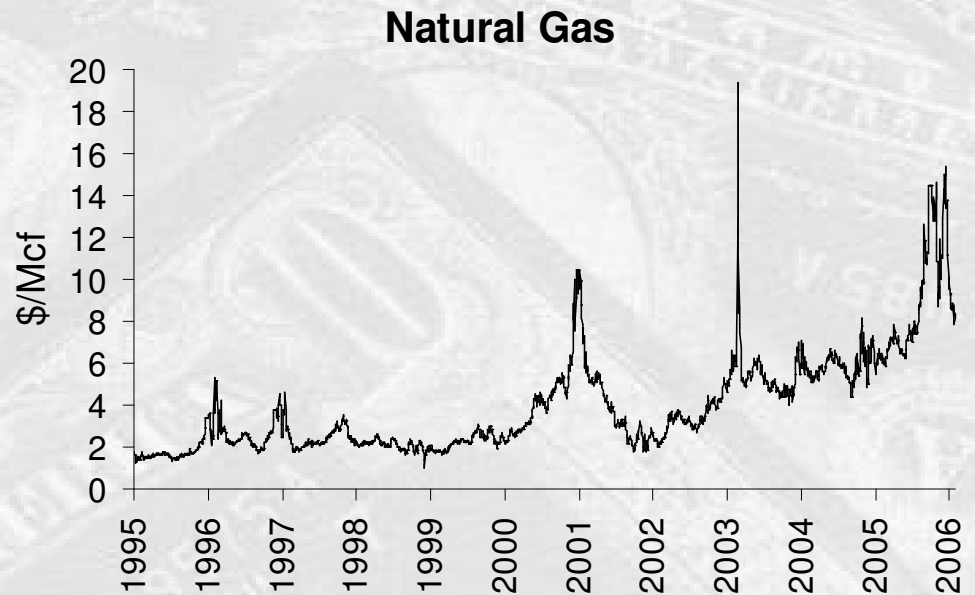
- “While current prices will stay high, oil will then fall to \$40 before falling lower.” (Lord Browne of Mattingly (BP), June 2006).



- “The world has 10 trillion barrels of oil left.” (Rex Tillerson (ExxonMobil) on *Today Show*, May 2006).

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Price Signals: Eyes Wide Shut



Too much volatility destroyed “price signals”

We Had No Fuel Tank

- Can't run out of gas when fuel gauge is "empty."
- World never invented a real fuel gauge for:
 - A town, city or region
- We created *rough estimates* of OECD "stocks."
- We used the Energy Information Agency (EIA) weekly stock report as a proxy for a gauge.



“Reported Stocks” Are Merely Samples Of “Primary Stocks”

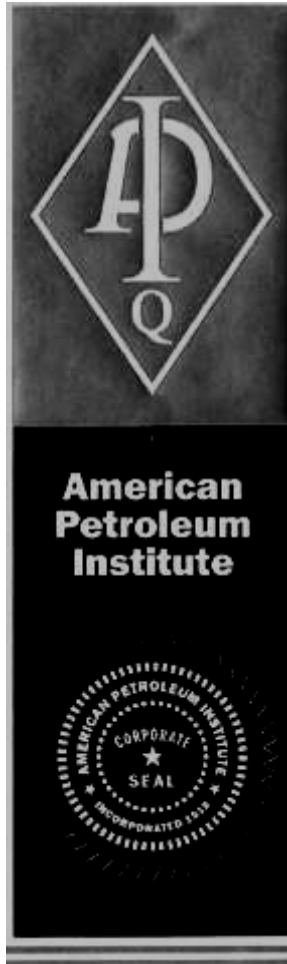
- Total petroleum stocks include:
 - Crude in system (pipelines, tankers and tank farms)
 - Refined products work in process
 - Finished stock

	06/09/06	06/02/06	06/09/05
Crude Oil (Excluding SPR)	345.7	346.6	331.7
Motor Gasoline	213.1	210.3	215.7
Distillate Fuel Oil ¹	122.8	120.7	113.0
All Other Oils	354.8	352.1	373.2
Crude Oil in SPR ²	688.6	688.6	694.6
Total	1,725.0	1,718.3	1,728.2

See Table 3.

- Reported “stocks” are samples of “Primary Stocks.”
- Primary stock is storage exceeding 50,000 barrels.
- Rest of stocks (secondary, tertiary) are probably greater amount.
- Estimates are “educated guesses of samples.”

The War Of “Weekly Reports”



Energy Information Administration *Official Energy Statistics from the U.S. Government*

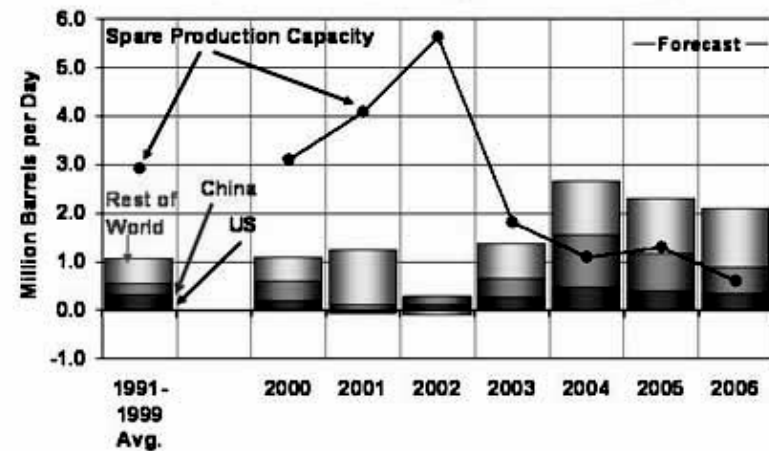
- American Petroleum Institute (API) issued their reports first (until 2003).
- No enforcement of EIA’s sampler reports.
- Few historical revision adjustments were seen.
- No evidence on physical testing ever performed.
- Traders jump on EIA/API numbers like bookies at track.

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Other Data/Red Lights Missed (Whilst We Slept)

- Dwindling rigs.
- Aging workforces.
- Rusting iron.
- Aging refineries.
- Evaporating cushion.
- Accelerating decline curves.
- End of technology – work all done.
- Low prices dissipated a once robust industry.

**World Oil Demand Growth Has Accelerated,
While Spare Capacity Has Dropped**



Source: History: EIA; Projections: Short-Term Energy Outlook, April 2006.

A happy ending was not in the cards

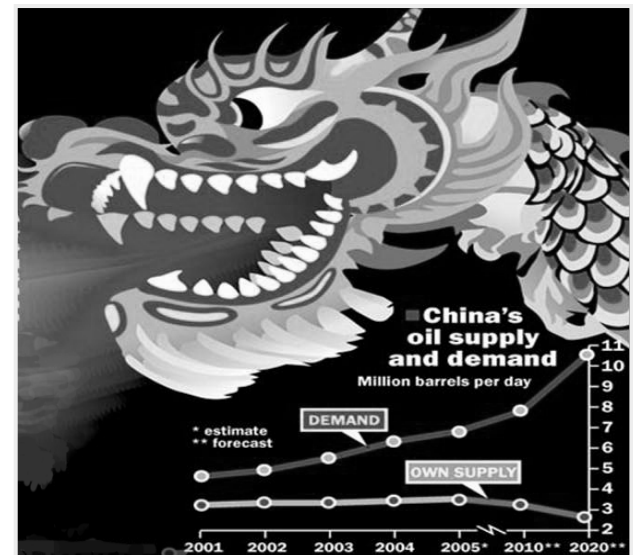
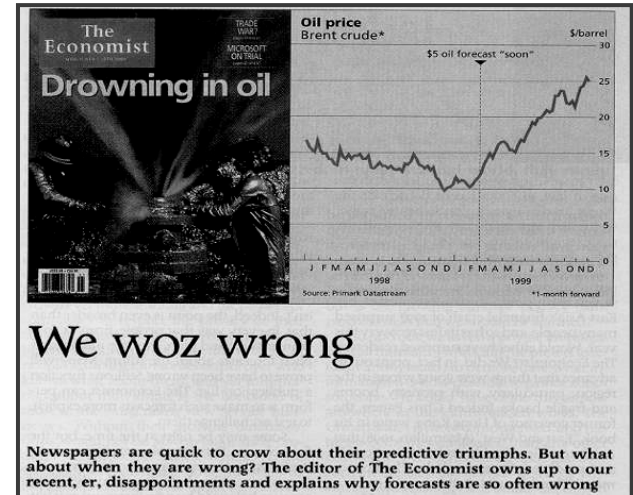
“We Woz Wrong” – The Economist

- While powerful voices of optimism boom, facts are pouring in too fast.

Fact: Out of capacity for:

- Oil and gas supply cushion
- Oil and gas supply growth
- No spare drilling rigs
- No spare refining capacity
- Shrinking pool of skilled workers
- No access to anything good

Fact: Demand still raging ahead

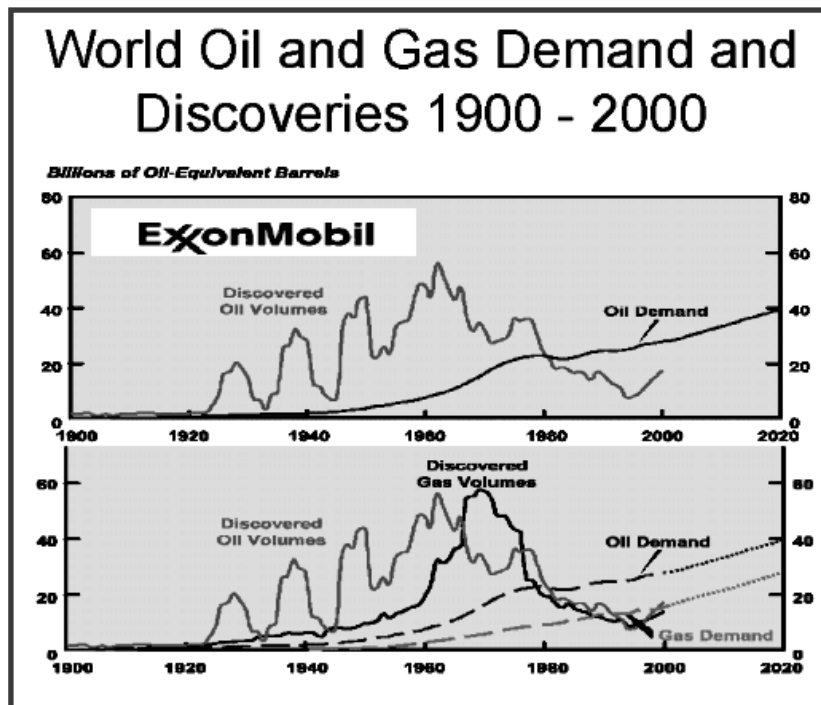


International Energy Agency

Demand Can Be “Anything”

Use = Supply

- “Any person has a right to hope,” even demand.
- “Hope springs eternal.” – Alexander Pope, 1733.

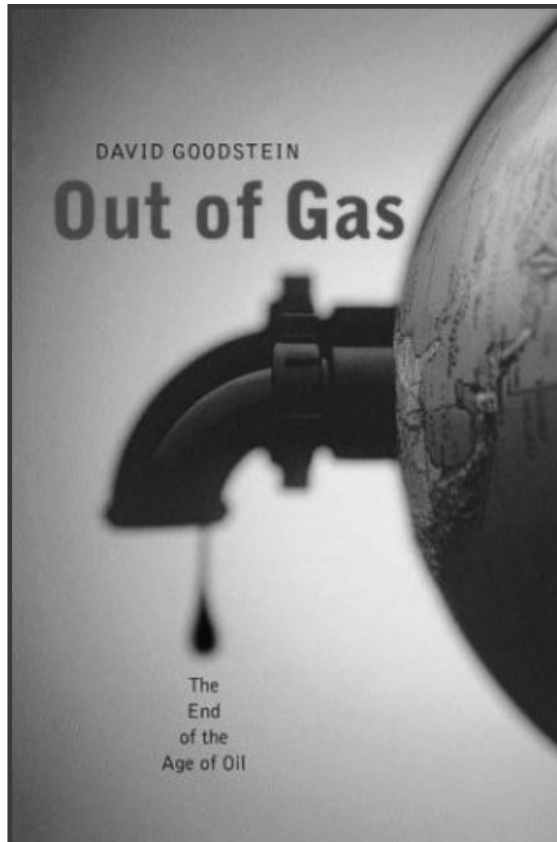


Energy Physics 101 (EP101)
Energy Use = Energy Supply

Caveat to EP101:
“Energy cushion” can bridge a small gap

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The Formula For An Energy Crisis



Step 1: Soaring demand.

Step 2: Use up all spare cushion.

Step 3: Run out of rigs, people and projects.

Step 4: Shrink supply.

**RESULT:
ENERGY SHORTAGES BEGIN**

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One Of Charles Dickens' Great Satires

The Ghost of the Future

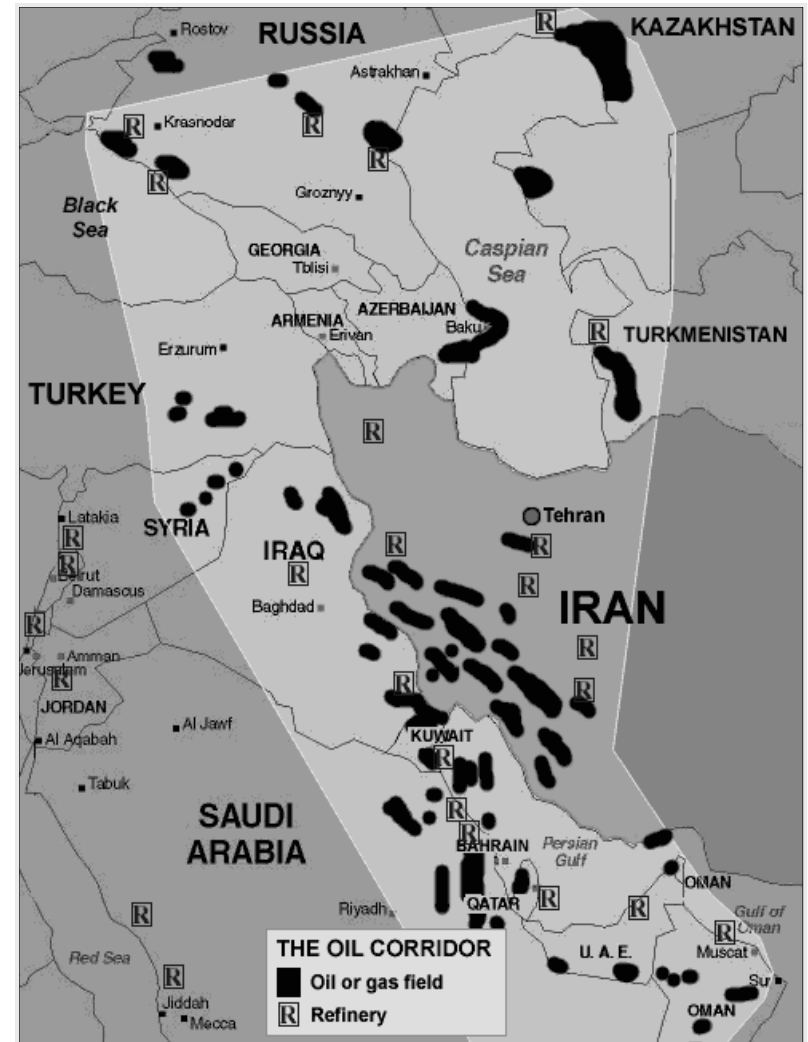
Is this the future or our future unless we mend our wrongful ways?

Have We Run Out Of Time To “Mend”?

- Had we awakened in 1974, we never would have spent three more decades believing oil would always remain cheap because of the Middle East.
- Had we taken Sy Hersh seriously in 1978/79: He told us Saudi Oil was a fable but we thought he was just trying to scare us.
- Had we not destroyed our energy army, the saga of the 25 year oil depression, we would still be strong.
- “If wishes were horses...”

Middle East Oil Will Not Bail Us Out

- Boundless Middle East Oil was a myth.
- 35 – 40 giant fields were found (1927 – 1972).
- All are now “very mature” and involve complicated production:
 - Rising water cuts
 - Steadily tight rocks
 - Heavier and more sour crude
 - Rising corrosion problems
- Abundant natural gas was even more mythical.
- Post 1972, exploration found nothing significant.



Even Saudi Arabia's Great Oil Resources Are Scarce

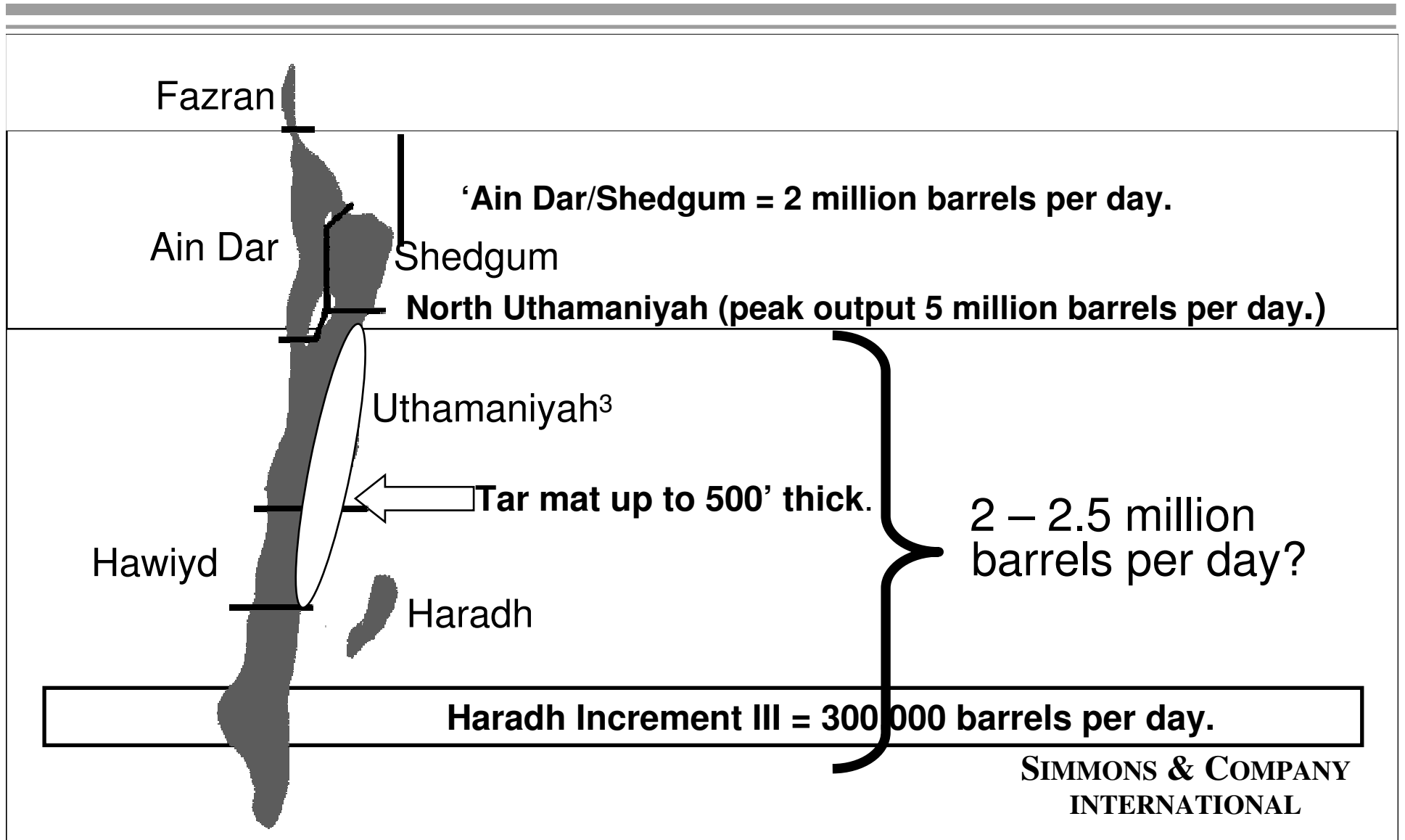
- Seven key fields produce 90%+ of Saudi Arabia's oil.
- Average "life" of this produced oil is 45 to 50 years.
- The sweet spots of these fields are almost depleted.

<u>Field</u>	<u>1994 Production (B/D)</u>
Ghawar	5,000,000
Safaniya	960,000
Abqaiq	650,000
Berri	400,000
Zuluf	500,000
Marjan	400,000
Abu Sa'fah	<u>150,000*</u>
Total	<u><u>8,060,000</u></u>

*Approximate

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Nobody Saves The Best For Last



All Giant Saudi Oil fields Are “Mature”

- Abqaiq’s key producing areas are now “pockets” of by-passed oil.
- Berri appears headed for a “gas blow down.”
- Safaniya/Zuluf/Marjan are losing their great water aquifer and are all old, too.
- Shaybah is a very complex to produce reservoir.
- Far smaller Hawtah Trend was contaminated by injected water.

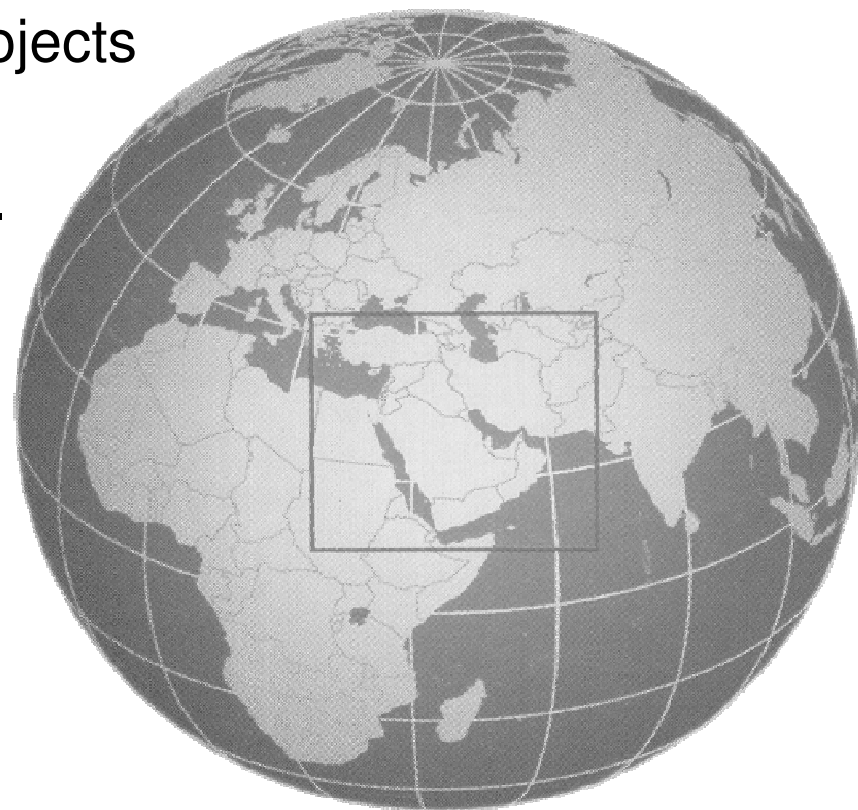
Are There Vast Areas Yet To Be Explored?

- Saudi Aramco has employed state-of-the-art geophysical tools to find new oil sources.
- So far, the only commercial success was in Hawtah Trend (200,000 barrels per day of extra light oil).
- The remaining unexplored areas:
 - Iraq's southern border
 - Deepwater Red Sea
 - Bottom end of Empty Quarter



Saudi Arabia's Real Oil Future?

- Various old field rehabilitation projects have all been put on a fast track.
- Rig activity has tripled in 3 years.
- Each “rehab” project is complex and faces risks.
- “Current” decline rates approx. 8% per annum.
- No proof that oil production has grown in past 4 years.
- The future is “fuzzy” at best.



“TRUST ME” provides no evidence or proof!

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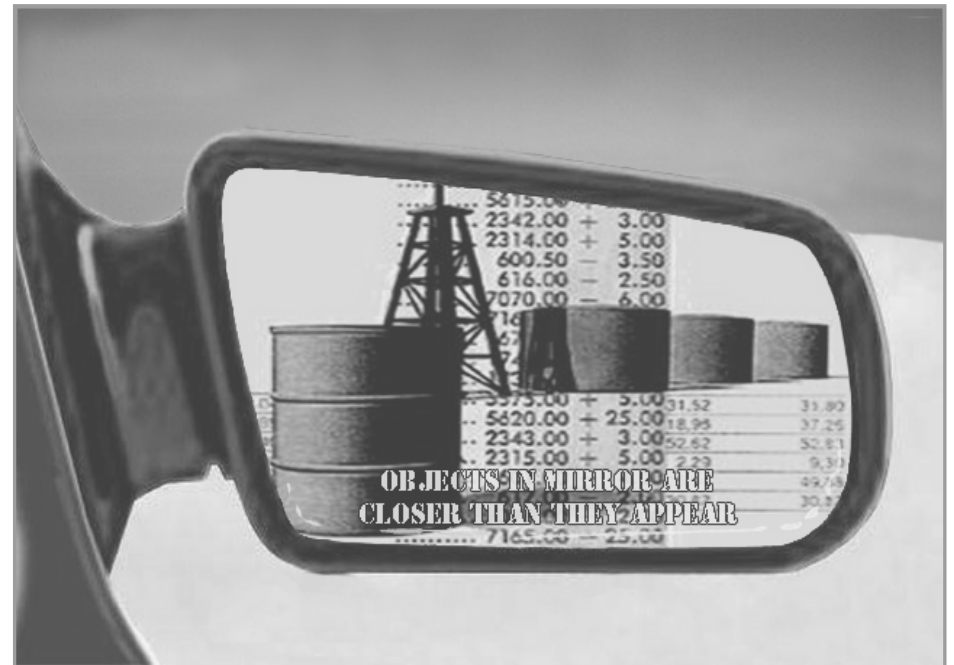
The Middle East Will Always Have Oil

- Middle East oil production will not rise any longer.
- My educated hunch of future decline:

	Crude Oil Only		
	2006	2012	2018
Saudi Arabia	8,000	5,000	3,500
Iran	3,200	2,200	1,500
Iraq	1,800	1,200	800
Kuwait	2,200	1,600	1,200
UAE	2,200	2,100	2,000
Oman	800	500	300
TOTAL	18,200	12,600	9,300

How Will We Know When Peaking Was Real?

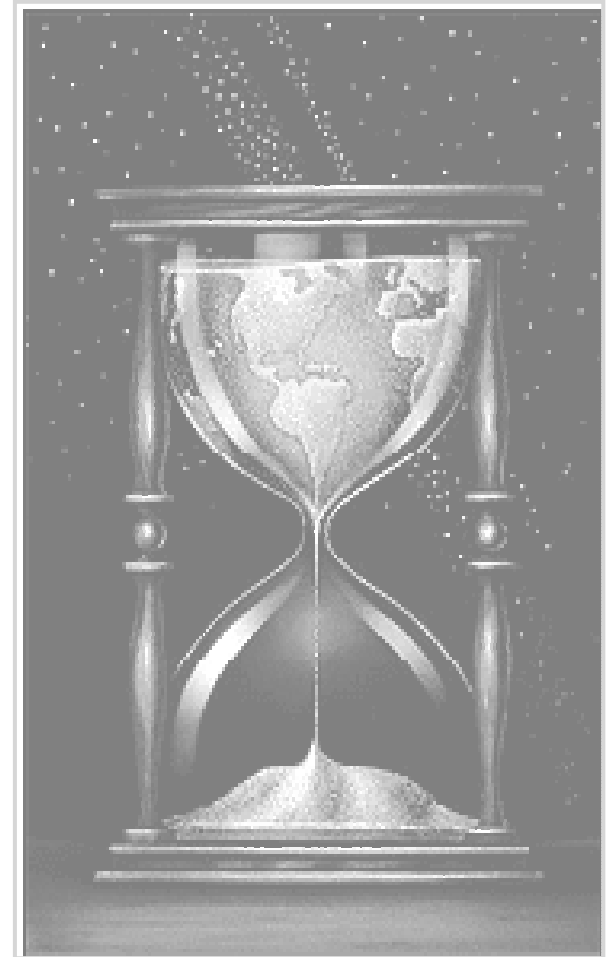
- You only really know after the fact.
- There is no crystal ball or “omen in the sky.”
- Facts only lead to a solid hunch.
- Hunches, backed by genuine, solid data which are integrated into “intelligence,” transform real wars into phony wars.



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Do We Have Any Time Left?

- Not enough to stave off peak energy use crisis. The crisis has arrived.
- If we “wait it out” difficult to stay alive without ample energy.
- What if we simply “go to war?”
 - With what source of energy?
 - Do we even know the enemy?
 - A war without a plan is almost certainly “a lost war.”



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Does It Make Sense To “Call To Arms”

- “Will a bugle call make a difference?” Not sounding the alarm, lets the fools still dream and not realize the coming pain.
- Starting yesterday made far better sense.
- Better to start late than not start at all is a truism.
- “Without ample energy, you cannot invent enough Generals.” (Four star General Richard Lawson in Beijing, February 2003)
- “Without bridges to prosperity, we might as well go home and get into our uniforms!” Brigadier General George Y.B. Yeo, Harvard Business School Alumni Association. April 1997.

An Outline Of A Real War Plan, “How to Survive The Energy War”

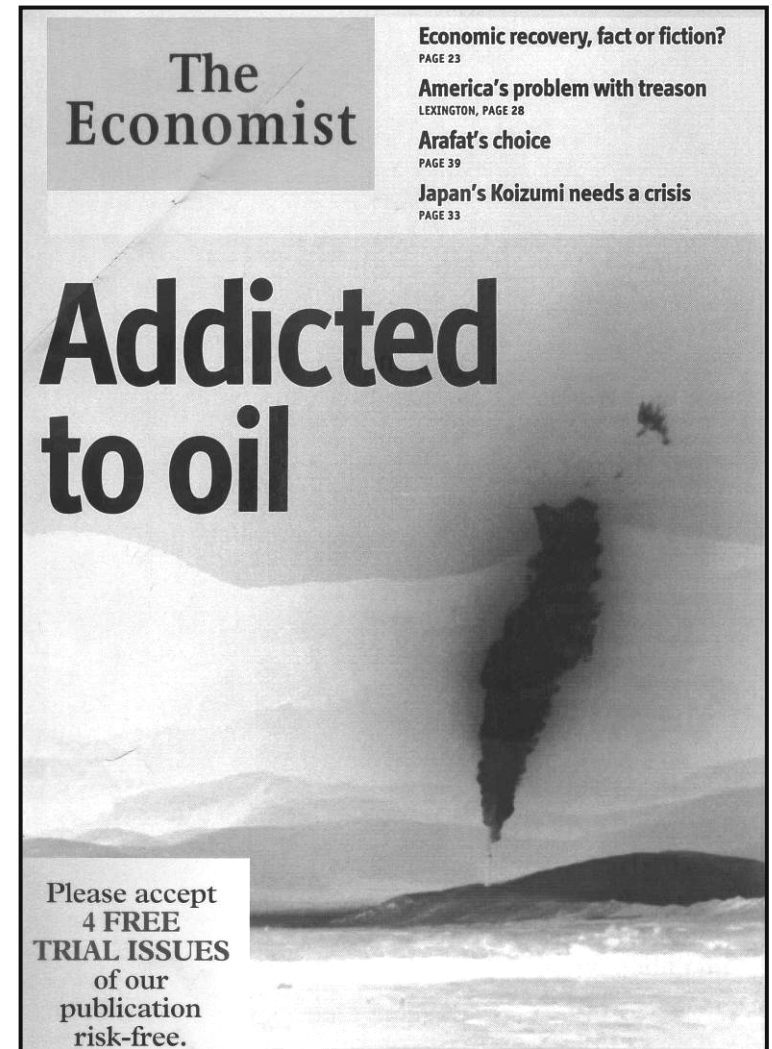
- Plan, plan, plan and fight next.
- Get real energy data even if it takes spies and armed forces to steal the data.
- Panics create instant “call to arms.”
- If we wait a day longer, we risk losing everything we cherish by DEFAULT and then the global lights dim...twilight turns into era of darkness.



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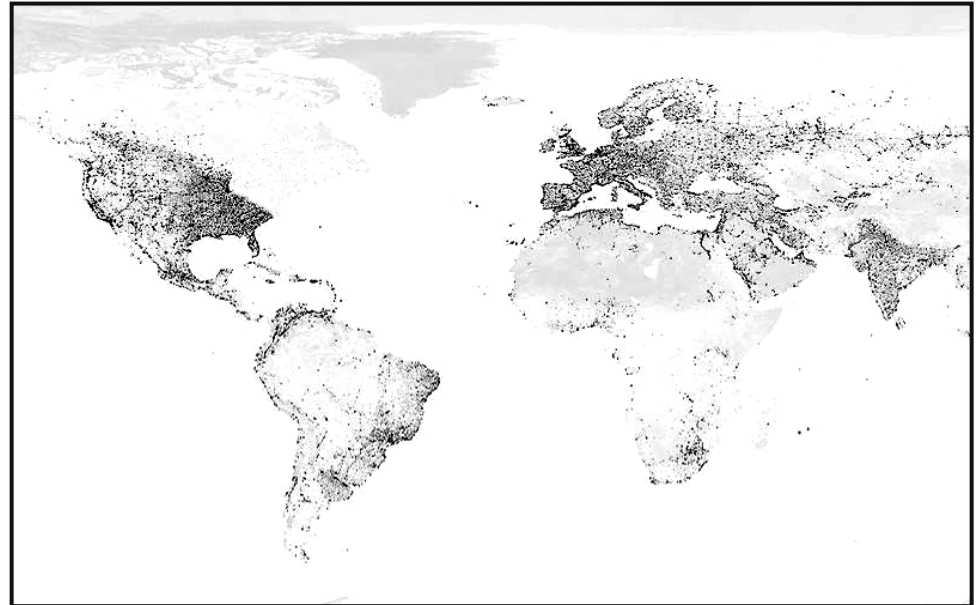
A Truth: Addictions Are Hard To Kick

- Kicking the oil habit means using less transportation energy.
- Solution is simple but complex to “integrate into a forced march out of harms way.”
- Stopping “natural gas addiction” has no working plan.
- Natural gas is our only efficient source of instant heat.
- Natural gas is only way to quickly cool.
- Too much heat kills slowly.
- Too little heat kills elderly in 30 minutes or less.
- High percentage of globe lives outside “moderate zone.”



The “Play” Is Over... The Lights Go On!

- Tonight’s energy discussion had no intended humor or happy ending.
- I used war terms to connote how real the energy war is. The attack was silent, but it happened nevertheless.
- Our military can either fight the last military fight (and probably lose) or:
 - Use its honest force to plan, organize and fight to win the energy war
 - The lights are now on... but not for very long



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Why Do I Fear The Peak Is Here?

- No “verifiable proof” until data reform happens.
- Wide body of strong circumstantial proof does exist:
 - Slowing of new discoveries all getting smaller
 - Most key regions are now in decline
 - Most new projects are heavy oil, deepwater and/or unconventional gas
 - Supply for non-OPEC/non-FSU has been flat or declining for 6 years
 - Demand continues to grow
 - Industry is now out of spare rigs, refineries and people



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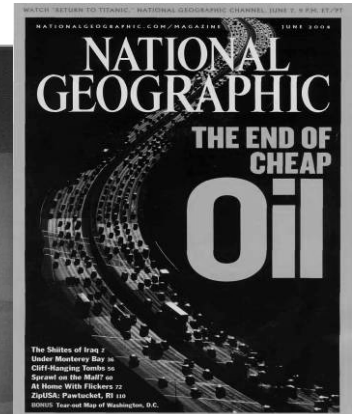
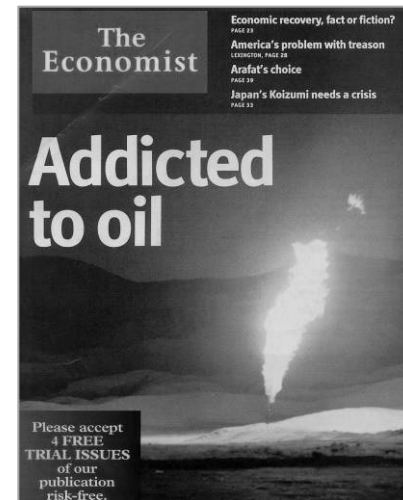
When Twilight Sets On Middle East

- Twilight (peaking of Middle East oil) marks twilight for the world!
- No region in the world is ever likely to replace this gap.
- Finding several North Sea replicas will take decades.
- By 2020, the current 80+ mb/d base could be reduced to 25 mb/d.*
- **THIS IS A BIG DEAL!**

*Schlumberger's 8% per annum estimated global decline

A Clash of Ages Is Just Ahead

- Demand for energy gathering steam:
 - Growth in use outside OECD has just begun
 - OECD use still growing every year
- Supply got too old:
 - Decline curves are high now
 - They will accelerate
 - Too many regions now producing “brine stained with oil”



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Is It Really “Too Late?” (Or Was All This A Bad Dream?)

- The world is probably beyond peak oil and gas.
- If we are still close, turn around and retreat.
- Finding new oil and gas takes decades.
- Building a new energy army of rigs, boats, pipes, tankers, refineries, wireline trucks, seismic fleets, geo steered drilling units, etc., take decades.
- Meanwhile, the Rust Belt needs to be rebuilt.
- There is no army of trained personnel or teachers or recruiters of energy students.



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“The Next War” Will Be The “Last War”

- “We” now are all addicted to oil and desperate for a fix of gas when it gets either too cold or too hot.
- “We” used to be the U.S.A.
- “We” now encompass everybody (6.5 billion everybody) other than tribes in the Amazon or mountains of Papua New Guinea).
- The Big Junkies: OECD = 50 million barrels per day or 23 barrels per person per year.
- The beginners who sample: Rest of world (5.5 billion bodies) = 35 million barrels per day or 2.3 barrels per person per year.

Houston, We Have A Big Problem

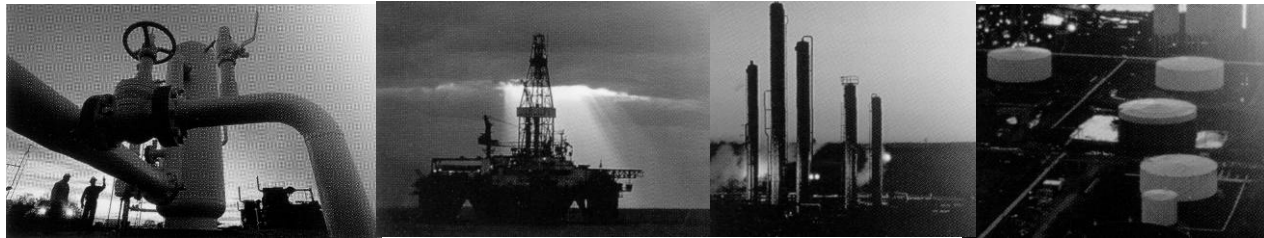
- The earth's energy has peaked and its use will start to disappear.
- It will never “be gone” but will soon be “far less than needed.”
- “No one saw this coming!” (at least almost no one)
- Better get the armies built up.
- This war must be won.

Energy's Twilight Era

- Tonight we had an honest talk about a very real problem: The twilight of fossil fuel.
- We all share the unforeseen consequences of problems too long ignored.
- It is past time for debate, the crisis is here.
- The time to educate, plan, form an energy army and march is **NOW!!**



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Investment *to the* Bankers **E**nergy Industry

For information and/or copies regarding this presentation, please contact Laura Russell at (713) 546-7351 or lrussell@simmonsco-intl.com. This presentation will also be available on our website www.simmonsco-intl.com within seven business days.