

# Comparative Economic Advantage In the War on Terror



Debate about the War on Terror primarily focuses on applications of military force and police power. This paper presents a case for an alternative approach which would arguably be more effective. It also posits the approach would spin-off significant economic and environmental benefits.

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## Abstract

It is argued that funding and support for world wide terror would largely dry-up if Western nations, the USA in particular, stopped importing oil. A case is made for removing certain artificial barriers that prevent American entrepreneurial prowess from marketing substitutes for imported oil. Success would produce significant economic benefit, including a 40-50% reduction in the current account deficit. To the extent that oil substitutes consist of alternative energies, environmental problems such as global warming would be mitigated.

# Comparative Economic Advantage In the War on Terror

Merle A. Coe

The media portrays the War on Terror as cultural competition between modern civilization and a Thirteenth Century ideology. The characterization fails to appreciate the extent to which the struggle is with an ideology that was perverted by opportunists whose main purpose is to grab power – or how much the grab for power approximates a corporate takeover of existing governance structure.

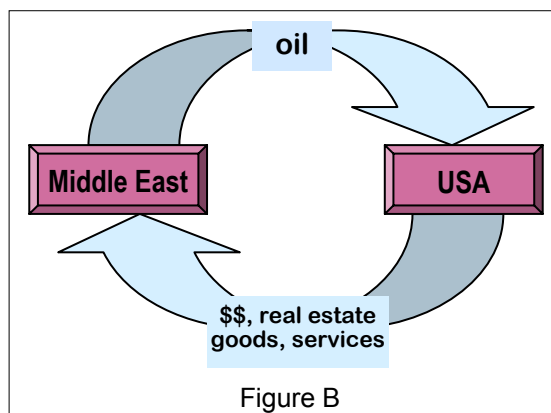
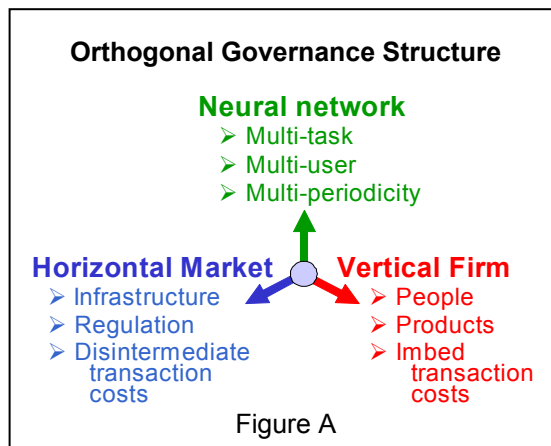
Communism is an example of a movement that was shrewdly manipulated to seize and maintain power. In the hands of al Qaeda, Islamism is becoming another.

### Structure Does Matter

Broad labels such as “culture,” “society,” “religion,” and “market” suggest people have notions about what the terms mean. Yet, few are able to precisely articulate them. Vagueness of terms enables journalists, politicians, and policy makers to disseminate beliefs with a minimum of discussion.<sup>1</sup> The lack of precision characterizes much of the discourse about the War on Terror and contributes to polarization of public opinion.

In his new book *The World is Flat*, Pulitzer Prize winning author and New York Times columnist, Thomas L. Friedman argues value-creation is shifting from vertical to horizontal models. Not only does governance structure move from vertical to horizontal, but the essence of governance changes from “no” to “know.” This paradigm shift transforms *Industrial Age* proscriptions for command-and-control to *Information Age* prescriptions for collaborative commerce and connectivity. Friedman believes this will alter the world, as we know it.<sup>2</sup> It was an issue much on Secretary Rumsfeld’s mind as he realigned U.S. force structures to deal with tomorrow’s threats.

The good news is that Friedman’s credibility will change the specificity of terms and tenor of the discussion. He believes the U.S. “just had an election that history will look back on and laugh, because the world basically went from vertical to



Compare & Contrast Radical Alternatives					
	Agenda	Avowed Benefit ( <i>Disinformation</i> )		Governance Model	
		Mass Audience	Naive Audience	Claimed	Actual
<b>Fascism</b>	<b>Seize Power:</b> <i>Europe, World</i>	National Pride, Better Life	Master Race	Fuehrer	Centralized Vertical Command Structure
<b>Communism</b>	<b>Seize Power:</b> <i>Russia, Soviet Union</i>	Better life via more effective practices	Egalitarian Utopia	Comrade	
<b>Fundamental Islamism</b>	<b>Seize Power:</b> <i>Saudi Arabia, Middle East</i>	Return to early, higher morality	Moral Imperative	Jihadist Insurgency	Centralized Network

Table 1

horizontal during the election and nobody talked about it.”<sup>3</sup> The bad news is that by the time an individual of Friedman’s stature writes a current-event book for today’s e-world, the information is somewhat dated.

While agreeing with much of what Friedman posits, experience counsels adding precision to accuracy by differentiating “flat” from “horizontal”. “Flat” suggests a degree of interdependence resulting from collaborative commerce, whereas “horizontal” implies a non-hierarchical system. A “horizontal” system is peer oriented, allowing economic actors to transact from any endpoint to any other endpoint without interference. The Internet’s horizontal nature, for example, bestows connectivity far exceeding what first was imagined.<sup>4</sup>

As globalization combined horizontal structures with hierarchies and **neural networks**, enterprises became three-dimensional orthogonal structures with vertical, horizontal, and perpendicular axes. Neural networks process information similar to **the way** human brains do. Networks, composed of countless **interconnected elements**, enable numerous tasks (**multi-task**) and numerous users (**multi-user**) to conduct transactions (process) at any time (multi-periodicity). Neural networks and conventional algorithmic computers complement each other.<sup>5</sup> Tasks of the “if-then” variety are more suited to neural networks. Arithmetic operations are more suited to the algorithmic approach. The combination of the two approaches enables enterprises, including terrorist networks such as al Qaeda, to improve efficiency.

In the **search for understanding**<sup>6</sup> about the War on Terror, it is helpful to compare the three radical alternatives to the British model of modernity that have been able to gain some degree of traction: Fascism, Marxism, and Islamism (Table 1). Fascism and Communism were characterized by vertical governance structures in contrast to the industrial revolution’s flatter, horizontal model. Islamism’s network structure is distinguished by a resemblance to the more efficient orthogonal model to which modern Western economies are evolving. U.S. military leaders, for example, frequently mention al Qaeda’s decentralized network structure as a challenge.

### ***Productivity Begets Dominance***

Widely praised before WWII as a paragon of efficiency, Fascism’s Thousand Year Reich and repellent Italian and Japanese imitators were ground down and destroyed after a few wretched years by the overwhelming production firepower of a messy, democratic industrial model originally evolved in 18<sup>th</sup> century England.<sup>7</sup> The model – a fortuitous blend of entrepreneurial opportunism and broad based democracy – has repeatedly demonstrated supremacy; beginning with the casual ease Britain ruled those outside the model.

An economic policy theory to transform industrialized societies into classless utopias, Marxism ironically worked best as a technique to hijack developing countries. The USSR operated as a firm with Stalin as its CEO and never developed a market economy.<sup>8</sup> It, too, was ground down by superior Western productivity.

### **A Worst Case Scenario**

Visualizing simultaneous occurrences of the following events gives a rough idea of the potential consequences of shutting down supplies of imported oil: closure of U.S. airspace following 911; regional power outage of 1980; nationwide teamsters strike; and, gasoline shock of 73/74.

Depending on the scale and duration of the stoppage, economic loss could exceed that of the Great Depression. Casualties from crime, food and water shortages, waste borne disease, emergency services disruption, and hypothermia and could rival the effects of a nuclear explosion.

The good news is that the Republic’s survival is not at stake: today’s worst case is less severe than the Armageddon Americans faced during the Cold War. The bad news is that risk of oil disruption may exceed the earlier risk of Armageddon.

Figure C

### **Relative Scale of Oil Imports** (financial figures in \$ billions)

	Actual 2003	Projected	
		2010	2025
<b>U.S. Oil Imports:</b>			
Barrels (billions)	4.1	4.9	7.0
Dollars (billions):			
at \$30/barrel	\$ 123	\$ 147	\$ 210
at \$50/barrel	205	245	\$ 350
at \$80/barrel	328	392	\$ 560
Military Protection	100	200	300
<b>Total (at \$50/barrel)</b>	<b>305</b>	<b>445</b>	<b>650</b>
Indirect Cost	?	?	?
<b>Comparisons:</b> (all figures in \$2000)			
GDP <sup>1</sup>	10,381	13,084	20,292
gov spending	1,909	2,135	2,647
exports	1,032	1,917	4,956
imports	1,550	2,387	5,094
Foreign Aid <sup>2</sup>	9	13	--
SS Surplus <sup>3</sup>	153	235	--
National Deficit <sup>2</sup>	(353)	(164)	--

<sup>1</sup> DOE/EIA Annual Energy Outlook 2005, Table A20

<sup>2</sup> U.S. Budget, Fiscal 2006

<sup>3</sup> The 2003 OASDI Trustees Report, SSA

Table 2

Productivity is cited as frequently as U.S. military capability by USSR military officers in *The Destruction of the Soviet Economic System*, an insiders' account of the USSR's collapse.<sup>9</sup> The former deputy chief of the General Staff, for example, states the USSR built 64,000 tanks not to surge across Europe, but to compensate for the West's vastly greater production capacity to replace combat losses.

While the agendas of Fascist, Communist and Islamic brigands share similarities, the nightmare Islamists provoke in Westerners is different. For some years, the worry was that Fascism and Communism might out-produce capitalism. Westerners now worry Islamists may wreck capitalism if they lay their hands on a means of doing so. Not even Islamists, however, believe Islamists will *produce* their way to dominance.

The point is, al Qaeda and **Wahhabism** merely offer a model of appropriation as an alternative to the West's model of innovation. Neither promises a more productive economic engine or a higher standard of living. They advocate, rather, the opposite. Despite the message's silliness from Western perspective, underestimating its devotees' resolve is a mistake. Not long ago gullible Americans devoted their lives to a communist fairy tale – clinging to it through Stalin's pact with Hitler and proof of genocide. Abandoning communism merely meant parting company with a blood stained paranoiac: abandoning Islamism means contradicting god.

If reason and cultural sensitivity are unlikely to convert camp followers, what core issues can be leveraged? What's al Qaeda *really* after? What sustains al Qaeda? Where is it vulnerable?

### ***A Vicious Cycle's Dilemma***

Cultural tension and al Qaeda's agenda are inexorably entangled with Western dependence on imported oil (Figure B). Modern civilizations depend on imported oil. Middle East rulers depend on petrodollars and special favors<sup>10</sup> to stay in power.

As reliance on imported oil increases, so does the share of U.S. military resources devoted to supply chain protection.<sup>11</sup> (The scope and scale of oil protection services are briefly sketched in *A Profile of Subsidy* in Figure D). Slowly, but surely, the U.S. Military is being transformed into an oil protection service.

Therein is a vicious cycle. Half of all oil consumed in the U.S. is imported. Terrorists could wreck havoc without crossing the border or acquiring weapons of mass destruction. A sudden break in the supply chain would be devastating: protecting the "pipeline" has become as vital as protecting cities from weapons of mass destruction (Figure C). The dilemma is that "payments" made for foreign oil (dollars, favors, military protection) tend to increase the risk that supplies will be disrupted.

### **PIPS: A Profile of Subsidy *The Petroleum Import Protection Service***

It began with FDR bending lend-lease to supply aid to Saudi Arabia during WWII. The relationship was reportedly cemented in 1945 when Democracy's passionate champion met aboard an American cruiser with absolute monarch, **Ibn Saud**, whose entourage included slaves and a royal astrologer. Soviet incursion and Arab nationalism subsequently led to the **Truman, Eisenhower, and Nixon doctrines**.

Eisenhower sent troops to protect Lebanon's pro-Western government. Kennedy sent combat planes when Saudi Arabia was attacked from Yemen. Under Nixon, the flow of aid became a torrent of advanced weaponry with 10,000 U.S. military advisors in Iran and Saudi Arabia training surrogates to use weapons. The SANG headquarters in Riyadh (**an early bin Laden target**) was built; the shah of Iran spent \$14 billion on arms during the 1970's.

The "special" relationship did not prevent Saudi Arabia from joining the oil embargo in 1973 – or nationalizing **Aramco's** Saudi interests. In 1979, the shah abdicated when his military turned their US supplied weapons against him. His fall led to reassessment and the **Carter Doctrine** of taking-on direct responsibility for defending oil supplies instead of relying on surrogates – and to the **RDJTF** (Rapid Deployment Joint Task Force) and such bases as **Diego Garcia**.

Reagan expanded the Carter Doctrine ("...there is no way we would standby and see Saudi Arabia taken over by anyone who would shut off the oil"): upgraded RDJTF to a **unified command**, the **Central Command**; armed rebels (including bin Laden) to combat Soviet regimes in Afghanistan and Nicaragua; sold **AWACS** planes to Saudi Arabia; helped Saddam Hussein battle Khomeini's regime; and, defended **re-flagged** Kuwaiti tankers.

The Gulf War, Iraqi Containment (including its 240,000 sorties), and Iraq War are recent history. Today, the primary mission of an entire unified command, Central Command, is to sustain oil flow from the Middle East. Other Commands with significant oil protection missions include: **European**, Caspian oil fields and pipelines; **Southern**, Columbian and Venezuelan resources; **Pacific**, Indonesian tanker routes.

Sources: *The Mission*; Dana Priest (2003); *The Prize*; Daniel Yergin (1993) *Guardians of the Gulf*; Michael A. Palmer (1991); *Iraqgate*, Joyce Dattle: National Security Archive, 1995; "Gathering Storm," David Morrison, *National Review*, August 20, 1994. *Search for Security*, Aaron D. Miller (1980);

Figure D

Petrodollars benefit small cliques in oil exporting countries with pernicious effect. The resultant gap between have-lots and have-nots breeds resentment, often characterized as cultural or ethnic. “Free money” distorts economies, discouraging normal economic development. Power hungry thugs use the U.S. production and military presence as a scapegoat to rally the underprivileged. Seizure and destruction of infrastructure, justified by spinning the Koran,<sup>12</sup> become attractive goals for power seekers who often finance their rise by blackmailing the privileged elite.<sup>13</sup> Additional dollars, favors and military resources poured-in to counter these forces feed more envy, more violence.

To al Qaeda, controlling Saudi oil by overthrowing the present regime is a twofer. It could frustrate Western societies by messing with oil flow – and, use its larger share of petrodollars to invigorate religious police at home and kindle mischief abroad.

The stakes are immense. The U.S imports 4.2 billion barrels of oil annually (Table 2). At \$50 a barrel, oil exporting countries receive \$210 billion from the U.S. Another \$200 billion is spent on military services protecting the pipeline. Billions more fund incentives and foreign aid to sustain the flow (though consequential, these costs and those related to environmental damage are excluded from Table 2 as subjective.)<sup>14</sup> USA foreign oil expenditures dwarf the total amount spent on foreign aid; exceed the budget deficit, approach the trade deficit; and, are a sizable percentage of Gross Domestic Product.

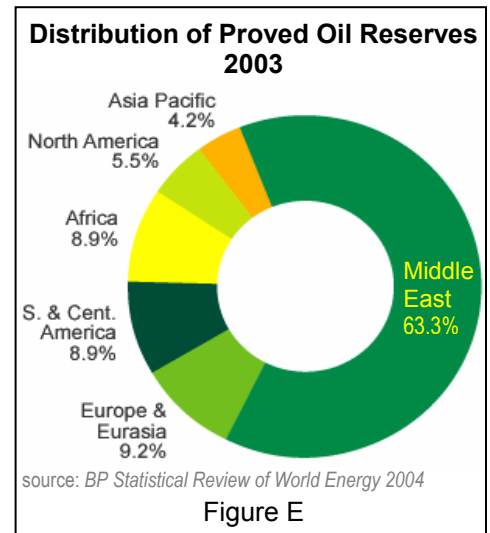


Figure E

**Projected Trends Work Against the West**

Confrontation is likely to escalate. DOE forecasts 68% of U.S. petroleum consumption will be supplied by importing 7 billion barrels of oil in 2025 (Table 3). Most proven reserves are in unstable areas (Figure E).

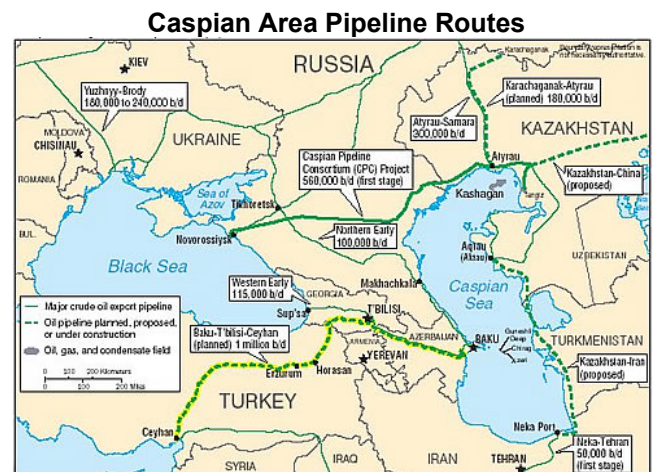
By 2025, world consumption is anticipated to increase 16 billion barrels from 2002 levels (Table 4). Some 70% of the new supply relies on hotspots in OPEC and former USSR countries where tribal warlords, global powers, al Qaeda-like groups, and multinational conglomerates contend. Chechnya, one of numerous challenges, lies at the center of the Caspian area where new production infrastructure is especially vulnerable (Figure F).

Depleted reserves and stagnating production capacity in non-OPEC countries heighten dependence on OPEC. By 2025, consumption in industrialized countries is projected to increase more than 5 billion barrels: production capacity only 0.5 billion. Mexico’s 500 million barrel production capacity increase is more than fully absorbed by 600 million barrels of additional domestic consumption.

	Actual 2003	Projected			
		2010	2015	2020	2025
<b>Domestic Supply:</b>					
crude oil	5.68	6.02	5.49	5.21	4.73
other	3.41	3.60	3.78	4.00	4.10
Total Domestic Supply	9.09	9.62	9.27	9.21	8.83
Total Consumption	20.30	22.98	24.67	26.32	27.93
<b>Petroleum Imports:</b>					
million barrels/day	11.23	13.37	15.40	17.11	19.11
billion barrels/year	4.1	4.9	5.8	6.2	7.0
% of consumption	55.3%	58.2%	64.5%	65.0%	68.4%

source: DOE/EIA Annual Energy Outlook 2005; table A.11

Table 3



DOE/EIA Country Analysis Briefs: Caspian Sea Region

Figure F

Spare capacity is projected to shrink as demand increases and supply consolidates into the hands of fewer producers. OPEC production, for example, is expected to reach 90% of capacity by 2015 and remain at that level through 2025.<sup>15</sup> Without standby capacity to tap during emergencies, the supply chain grows less robust. Iraqi-like sanctions are rendered unrealistic, shutting off one of the few options to fighting more “Pipeline Wars.”

There are causes for concern beyond terrorism. Without new discoveries, Table 4 suggests proven reserves will last 40 years at 2002 consumption levels: 26 years at 2025 levels. Fortunately, exploration does find more oil and techniques are invented to extract more from existing fields – 1,669 billion additional barrels from these sources by 2025 are forecast.<sup>13</sup>

Nevertheless, the pace of discovery is slowing. Proven reserve estimates are sometimes written down. As British Petroleum caveats, “The reserves figures shown (in Table 4) do not necessarily meet U.S. SEC definitions and guidelines for determining proved reserves...”

Production capacity is more problematic. In juggling the balance between 2025 consumption and capacity, DOE forecasts an additional 8 and 3 billion barrels of capacity respectively in Persian Gulf and former USSR countries. Gulf States have the financial resources to fund additional capacity, though it is difficult to see how projects of such scale could be accomplished without help from Western personnel. Considering the political capital the royal family pays for the presence of unbelievers, Saudi Arabia might well adopt a less aggressive production expansion than that forecast by DOE.

If the Saudi regime topples, all bets are off. Domestic inconveniences caused by cutting Saudi production 90% would not distress miscreants who send children to die with bombs strapped to their waists.

The cost of increasing capacity world wide to meet total (all forms of) energy needs in 2030 is estimated at \$16 Trillion<sup>16</sup> by the International Energy Agency (IEA). Cost aside, Herculean legal, political, cultural, and environmental obstacles remain (Figure G, *Challenge in the Caspian*).

Finally, there are questions of governance structure and subsidy that affect price volatility, forecasting accuracy, and overall energy market efficiency.

### Industrial Age Model Hampers 21<sup>st</sup> Century Response

The oil industry retains characteristics of the early 20<sup>th</sup> century vertical industrial model from which it evolved. Government and corporate participants tend to hold their

Production Capacity, Reserves, Consumption (in billions of barrels)						
	Production Capacity <sup>1</sup>			Reserves 2003	Consumption	
	Actual 2002	Projected 2010 2025			2002	2025
<b>OPEC</b>						
<i>Persian Gulf</i>						
Iran	1.4	1.5	1.8	131		
Iraq	1.0	1.4	2.4	115		
Kuwait	0.9	1.1	1.8	97		
Qatar	0.2	0.2	0.3	15		
Saudia Arabia	3.7	4.8	8.2	263		
UAE	1.0	1.2	1.9	98		
<i>Total Persian Gulf</i>	8.2	10.2	16.5	719		
<i>Other OPEC</i>						
Algeria	0.6	0.7	1.0	11		
Indonesia	0.5	0.5	0.6	4		
Libya	0.6	0.7	1.1	36		
Nigeria	0.8	0.9	1.4	34		
Venezuela	1.2	1.4	2.0	78		
<i>Total Other OPEC</i>	3.7	4.3	6.0			
<b>Total OPEC</b>	<b>11.9</b>	<b>14.5</b>	<b>22.4</b>	<b>882</b>		
<b>Non-OPEC</b>						
<i>Industrialized</i>						
USA	3.3	3.5	3.1	31	7.2	10.3
Canada	1.0	1.3	1.8	17	0.7	0.9
Mexico	1.3	1.5	1.8	16	0.7	1.3
Australia	0.3	0.3	0.3	4	0.4	0.6
North Sea	2.3	2.2	1.7	5	0.6	0.8
Other	0.3	0.3	0.2			
<i>Total Industrialized</i>	8.4	9.1	8.9		16.0	21.1
<i>Eurasia</i>						
China	1.2	1.3	1.2	24	1.8	4.7
Former USSR	3.2	4.8	6.3	87	1.4	2.3
Eastern Europe	0.1	0.1	0.2			
<i>Total Eurasia</i>	4.5	6.2	7.7			
<i>Other Non OPEC</i>						
C. & S. America	1.4	1.7	2.5			
Middle East	0.7	0.8	1.0			
Africa	1.1	1.5	2.5			
Asia	0.9	0.9	0.9			
<b>Total Non-OPEC</b>	<b>17.0</b>	<b>20.2</b>	<b>23.6</b>	<b>179</b>		
<b>Total World</b>	<b>28.9</b>	<b>34.7</b>	<b>46.0</b>	<b>1,147</b>	<b>28.1</b>	<b>44.1</b>

<sup>1</sup> DOE/EIA International Energy Outlook 2004, Table D1

<sup>2</sup> BP Statistical Review of World Energy 2004, June 2004

<sup>3</sup> DOE/EIA International Energy Outlook 2004, Table A4

Table 4

cards close, concealing policies and embedding transactions.<sup>17</sup> As a result, petroleum markets are less efficient than they might be. Improvement can be expected as the industry goes “Flat,” to use Friedman’s metaphor, and ultimately adopts a network model.

Wal\*Mart’s grocery business illustrates what can happen when vertically organized players adopt the network model. Conventional supermarket chains are highly vertical, embedding transportation, warehousing and other transaction costs internally. Hidden inefficiencies are sheltered. Most supermarket chains, for example, never know in-store inventory levels unless they do a physical count.<sup>18</sup>

Wal\*Mart **disintermediates** transaction costs by setting-up “markets” within the four walls of its stores. Realtime inventory levels and movement information are shared with suppliers who compete for share. The result? Wal\*Mart carries 7 days of inventory as opposed to Kroger’s 17 days –freeing-up \$2.3 billion in cash that would otherwise sit on shelves. Despite the lower inventory, Wal\*Mart is out-of-stock on individual items less than 5% of the time versus the industry’s 15%.<sup>19</sup> In 2002, its operating cost was 17% of revenue as opposed to 26% for Safeway and 22% for Kroger. Compared to the industry’s **P/E ratio**, its stock typically trades at a 50% premium.

In Wal\*Mart’s network model, **transparency** enables each value-adding element (brand mangers, private label manufacturers, traffic managers) to optimize its contribution. Suppliers, for example, are now experimenting with placing goods on consignment and receiving payment as items are rung-up at checkout. Each thus has a stake in reducing **shrink** and optimizing product assortment.

Financial markets are another example of advantage gained by converting to horizontal and networked governance structures. Typical trades cost \$300 when the vertically organized **NSYE** and **AMX** held a virtual monopoly. In that era, 10 million share days swamped back offices: only 20% of the public owned stocks.

**NASDAQ** exploited an opening in small caps to horizontally link market makers, broker dealers, and institutions on NASDAQ. When NASDAQ moved upscale, its model overpowered AMX. NASDAQ, in turn, was overrun when **ECN**’s drove trades to \$10 by establishing true network models and disintermediating broker dealers and market makers.

Broader participation and realtime information characterize the newer governance structures. Billion share days are routine: 80% of the public participates in the market. NSYE

### Challenge in the Caspian

While the Caspian region is unlikely to become another “Middle East,” most observers consider it comparable to the North Sea. With the collapse of Soviet-era logistics and the transition to market economies, governments lack funds (total cost may be \$200 billion) to develop the resources. Oil from the area could compete strongly with Russian crude in European and Mediterranean markets. Gas exports could face strong competition in almost all markets from established, closer suppliers.

Shortage of export infrastructure may be the most difficult problem facing investors. Existing pipelines were designed to serve USSR needs and often cross boundaries of its successor states. All pass though Russia. Exports from the region are capped because existing pipelines were poorly maintained.

New pipelines are a priority. Most routes face technical, financial, legal, and/or political difficulties and must pass though or near troubled areas, including Chechnya.

Much of the reserves lie under the Caspian Sea. Questions of ownership, including the right to license and tax, are being debated by the Caspian states.

Most oil leaves the region via Novorossiysk, a Russian Black Sea port. Several pipelines being built also terminate on the Black Sea. From there, oil passes to markets through a single chokepoint, the **Turkish Straits**, raising concerns about security, accidents, and environment damage. The Straits could be avoided by bypassing the Mediterranean and sending oil via Russia, Iran, China, or Pakistan. A pipeline could also be built to the Mediterranean around the Straits which would involve additional loading and unloading of tankers.

Domestic oil product prices are regulated. They appear based on cost-plus, which may not recapture inflation or capital cost. Investors may be expected to pick-up some Soviet era employee social costs such as retirement, housing and education. Laws relating to incorporation, employment, and property rights vary from country to country. The process of converting from Soviet era accounting to Western standards is ongoing.

Liability for past environmental degradation is uncertain. In many older fields, damage has been severe. Rising water levels of the Caspian Sea exacerbates problems by flooding coastal on-shore fields, many of which are surrounded by oil “lakes.” Oil companies that have worked to earn a “clean” image may be reluctant to invest in fields with substantial damage.

source: International Energy Agency, *Caspian Oil & Gas*, 1998

Figure G

specialists rely on memory and slips of paper to track inventory; then, settle-up at session end. Supermarket shelves are eyeballed to place orders. In contrast, Wal\*Mart, NASDAQ market makers, and ECN’s always have the numbers at their fingertips. The difficulty in getting numbers needed for decision making in older vertical industrial models is exemplified by what DOE/EIA must go through to report energy use and trends. The data gathering process is similar to end of year inventory drudgery supermarkets do to prepare annual reports. It’s time consuming and complex – and subject to error because human intervention and data rationalization (“data scrubbing”) are required.

Publication dates of DOE’s *Annual Energy Overview* and *Annual Energy Review* indicate the difficulty. *Annual Energy Review 2003*, for example, was not released until September, 2004. Lack of transparency and reporting delays on top of normal market uncertainty, make weather forecasting look easy compared to energy trend forecasting as Table 5 illustrates. Predictions made in both 2000 and 2003 about 2005 oil and gas prices missed the mark by 100% and 50% respectively. Opacity does more than set-up hurdles for DOE/EIA. It amplifies price swings, reduces market efficiency, and raises investment barriers. In the previous supermarket example, lack of transparency contributes to excess inventory and frequent out-of-stocks. Such inventory fluctuations create price volatility in inelastic markets.<sup>20</sup> (Shoppers buy chicken if Safeway runs out of beef: service stations don’t offer substitute fuels<sup>21</sup> if they’re out of gas.)

DOE/EIA Price Forecasts <sup>1</sup>				
Published 2000 <sup>1</sup>	2005	2010	2015	2020
Oil (\$/barrel)	20.49	21.00	21.53	22.04
Gasoline(\$/gallon)	1.29	1.29	1.29	1.28
Published 2003 <sup>2</sup>				
Oil (\$/barrel)	23.27	23.99	24.72	25.48
Gasoline(\$/gallon)	1.28	1.31	1.33	1.33

<sup>1</sup> 2000 figures shown in '98 dollars; 20003 in '01 dollars  
<sup>2</sup> DOE/EIA Annual Energy Outlook 2000, Table A12  
<sup>3</sup> DOE/EIA Annual Energy Outlook 2003, Table A12

Table 5

Volatility and investment are inversely related. High volatility reduces investment: low investment increases volatility. Volatility is thus a barrier to additional capacity and lowers the probability that production capacity will come online as forecast.<sup>22</sup> To quote IEA’s *World Energy Outlook 2003*, “...since current oil prices contain little information about future oil prices during periods of high volatility, rational agents will be more reluctant to invest since the uncertainty associated with future returns is higher.”

While oil price volatility is a greater barrier to investment in renewable energy capacity than to investments in petroleum capacity, we argue that investment in renewable energy tends to reduce volatility more than an investment in comparable petroleum capacity. As in the supermarket example, alternatives dampen oscillations by increasing elasticity in addition to increasing inventory.

### ***Subsidizing Terrorists and European Motorists***

Subsidies may be the single largest worldwide barrier to energy market efficiency. To quote IEA’s *Looking at Energy Subsidies*,<sup>23</sup> “Energy price subsidies that encourage energy consumption by keeping prices below cost impose heavy burdens on economic efficiency, environmental quality, and government budgets.” Types of subsidies, and their effects and trends, are extensively analyzed in the 210 page document. Curiously, no consideration is given to the largest subsidy –supply chain protection by the U.S. military.

The PIPS (“Petroleum Import Protection Service”) subsidy (Figure D) is particularly inefficient from a U.S. perspective. Like other subsidies, it discourages investment in alternative energy sources and encourages excess consumption by not including oil’s full cost in prices at the pump. But unlike many subsidies, PIPS also subsidizes consumption in other countries. In effect, U.S. taxpayers subsidize European motorists. It could be argued, for example, that U.S. taxpayers pick-up half the tab when a Frenchman tops-off his tank. Certainly, oil prices would be higher (and consumption lower) if the U.S. were not committed to preventing terrorists from seizing control of oil supplies – from reduced investment in capacity, if for no other reason.

Determining PIPS's cost is tricky because expenditures are embedded in the overall military budget. Many Central Command assets would likely be reassigned to other commands if the U.S. no longer needed to protect Middle East oil supplies. Achieving consensus on a number will not be easy. For sake of illustration, assume the cost is presently \$200 billion annually. Given that the U.S. now imports approximately 4 billion barrels of oil, the subsidy amounts to \$50 dollars per barrel.

Eliminating the subsidy will be more difficult than measuring it. Considering the stakes, PIPS activities must be continued. In the short run, there are no options. Oil supplies must be protected, despite the cost in blood and money. And yet, the PIPS subsidy is perhaps the largest obstacle to two highly interrelated goals: reducing U.S. dependence on foreign oil and winning the War on Terror.

### ***Budgeting \$16 Trillion for Energy Related Capital Expenditures***

According to IEA, \$16 trillion will be invested in additional energy production capacity between now and 2030. The \$16 trillion will be spent. The question is: where to make the investment.

Will the investment be in capacity to extract wasting resources; or, in long term sustainable capacity? Will a trillion dollars be invested in Middle East and Caspian Sea petroleum production capacity as IEA projects? And, how much of the \$16 Trillion will end-up in the hands of al Qaeda? Could trillions instead be invested in wind, solar, and hydrogen capacity in the U.S.? Will the U.S. continue to subsidize the world's supply chain for certain forms of energy and not others?

What criteria will be used to make decisions? Will full cost models be used? Will cost models incorporate such related expenses as: supply line protection; additional acts of terrorism funded by "leakage" of expenditures for imports; and, environmental degradation?

### ***A U.S. Free of Imported Oil***

Consider a world in which the U.S. replaced *all* imported oil with domestically produced renewable energy. In military terms, it's equivalent to cutting-off enemy supply routes. Billions now spent by bogus charities and schools to indoctrinate future terrorists drop to a relative trickle: as do funds for arms, travel, and training camps. Risk of dirty bombs and 911's – and the expense and casualties of energy wars – plummet. Non-military options, such as economic sanctions, against rogue states gain viability with the U.S. no longer held hostage by addiction to oil.

Economic benefits, beyond military benefits, would accrue. The \$200 billion now spent on imported oil would be spent domestically, reducing the trade deficit, creating jobs, and potentially spawning new technology. The drain on industrial capacity, including some of the more draconian **Patriot Act** provisions<sup>24</sup> that are now necessary, would be reversed, strengthening the entrepreneurial engine for future challenges.

The rewards of energy independence were immense before the War on Terror. Now they are doubly so. Several administrations have officially recognized the issue. None followed-up with effective action.

Projects that have been undertaken tend to nibble around the edges. Air conditioner and heat pump efficiency mandates are an example. After years of political wrangling and litigation, higher standards (13 SEER specifications) take effect in 2006. Equipment that meets the new standards is more expensive. As a result, consumers are projected to pay \$8.9 billion more for equipment between 2006

<b>Air Conditioner &amp; Heat Pump Standards Impact</b>			
<i>13 SEER vs. 12 SEER</i>			
		<u>Cumulative Effect</u>	
<u>Projections</u>		<u>2006-2015</u>	<u>2006-2025</u>
Consumption savings (billionkilowatthours)		59.6	211.7
Energy bill savings	} billion '04 dollars	5.7	12.6
Equipment cost increase		5.8	8.9
Net Savings		(0.1)	3.7
source: DOE/EIA Annual Energy Outlook 2005, page 13			

Table 6

and 2025 – but, pay \$12.6 billion less for electricity (Table 6). Cumulatively, 211 billion fewer kilowatt-hours of electricity will be consumed.

SEER results would appear to justify the years of effort to develop standards, pass legislation, issue regulations, and prevail in litigation – until one considers that *total* U.S. consumption is expected to approach 100,000 billion kilowatt-hours. The savings are an insignificant 0.2%. There simply isn't enough political capital or court time to push through the 250 projects of this size needed for a 50% savings. The scale of the challenge is measured in trillions, not billions. Bolder ideas are needed.

### ***Multi-Trillion Dollar Gambit***

It is not generally perceived how deeply the U.S. is engaged in two mammoth ventures that, taken together, are perhaps as large as any in its history. Like it or not, the U.S. is poised to spend trillions on energy infrastructure and trillions more on the War on Terror. In large part, the two endeavors are treated as separate policy matters.

We advocate treating the two highly interrelated missions as a unified multi-trillion “War on Terror/Energy Independence” project: bigger than the [Manhattan Project](#), bigger than NASA’s original mission of sending a man to the moon and returning him safely. Despite its size and importance, however, the War on Terror/Energy Independence (“WT/EI”) is less of a challenge in many respects. Furthermore, the required governmental action consists more in getting out of the way, rather than in gearing-up new activities.

WT/EI is characterized by risk rather than by the uncertainty of the moon and Manhattan projects. Few theoretical problems must be solved. Most enabling technologies are not only proven; they have been prototyped, moved into production, and put in the hands of end users. Unlike the Manhattan Project which largely had a single thread path to success,<sup>25</sup> WT/EI benefits from having multiple ways to achieve success. The challenge is selecting the best “product mix,” building capacity, and increasing consumer demand – tasks ideally suited to the market. To skeptics questioning whether the risks can be overcome, we argue that the technical risks facing energy independence are less than the uncertainties described in *Challenge in the Caspian* (Figure G) that face developers of Caspian petroleum reserves.

WT/EI’s greatest obstacle is the U.S. energy industry’s early 20<sup>th</sup> century structure – highly regulated, vertical command driven, subsidized, and more reminiscent of Soviet central planning than the horizontal model described by Friedman. WT/EI’s most powerful potential change agent, entrepreneurial energy, is hamstrung by subsidies and regulation. Eliminating oil subsidies would remove much of the uncertainty. In street parlance, WT/EI is currently a stock that must be sold; with subsidies out the picture, WT/EI is a stock waiting to be bought.

Wind, for example, is competitive with \$75 per barrel oil, but not \$25 oil. Selling stock in a wind company is easier if investors believe oil will stay above \$75 a barrel because it isn’t subsidized than if they believe it will drop to \$25 because it is subsidized. Similarly, \$75 oil makes it easier to raise hundreds of billions for infrastructure needed to convert wind produced electricity into hydrogen and distribute the hydrogen to tanks in fuel cell equipped cars. Markets are efficient at driving resources to their highest and best use by optimizing product and practice mix (wind/hydrogen might not be the best) once economic schizophrenia induced by subsidies has been removed.

How might WT/EI be implemented? One possibility would be to privatize PIPS by transferring the function to international oil companies. The companies already operate security forces resembling small armies. The cost of PIPS would automatically be included in pump prices. Even Libertarians, however, may pause at the thought of Exxon launching sorties off carriers.

Another option would be to impose a duty on oil imports to recapture PIPS’s cost and simultaneously reduce other taxes (payroll taxes, perhaps) by a like amount so the overall action is revenue neutral. To use our example, impose a \$50/barrel duty on imported oil and reduce payroll taxes by \$200 billion.

## A Sharper Weapon

Historically the War on Terror has relied on conventional military forces that have difficulty defeating guerrillas without killing all the fish in ponds where guerrillas swim.<sup>26</sup> Genocide is not a practical option, although Islamic religious leaders have more skin in the game than they may realize.<sup>27</sup> Grinding down guerrillas militarily while “winning hearts and minds” is a race against public impatience. Further, to quote Clausewitz, “In war, the result is never final.”<sup>28</sup>

Assessments of U.S. vs. al Qaeda military capacity are inherently subjective. It’s a matter of scale versus structure<sup>29</sup> with the U.S. having the advantage of scale, al Qaeda of structure. Unable to prevail in high-intensity, high-tech military action, al Qaeda’s strategic advantage lies in low-intensity, low-tech political subversion and terrorism.

We argue the advantage in an economic war against al Qaeda is clearer cut with the U.S. able to indefinitely sustain economic hostilities with the edge in both scale and structure (Table 7). The U.S. has a powerful engine: entrepreneurial energy.<sup>30</sup> The engine persistently chugs along improving human conditions. It protects freedom by underpinning long term military strength. U.S. factories and refineries that overwhelmed Nazi and Japanese war machines were there when needed because of earlier, lonely efforts by pioneering wildcatters, Henry Ford, the Wright Brothers, and countless other entrepreneurs.<sup>31</sup> Why not use it in the War on Terror?

WT/EI pits this sharper weapon against al Qaeda’s primary weakness: its dependence on the West for sustenance. Often touted as an advantage monopolized by irregular forces, “living off the enemy” is also a weakness that can be exploited.<sup>27; 30</sup> Oil, to use Clausewitz’s terminology, is al Qaeda’s center of gravity. Cutting off petrodollars has more profound consequences than merely shrinking al Qaeda’s reach: it shrinks the fish pond. Middle East population levels are unsustainable without steady inflows of petrodollars. In *Collapse*, Jared Diamond cites loss of a trading partner as a major factor leading to the collapse of past societies which often turned against their spiritual leaders before the end.

Conventional analysis of petroleum tends to focus on Western needs. *A Worst Case Scenario* in Figure C is typical. Relatively little attention is given to the flip side of the equation – the draconian consequences of Western energy independence for OPEC countries. Many face total collapse if the West stops importing oil. Supporting current Middle East population levels without oil revenue would be problematic under the best of circumstances. (Anthropology’s dirty little secret is that numerous societies descended into starvation and cannibalism as they collapsed and literally consumed their political and spiritual leaders.)<sup>32</sup>

In *Collapse*, Diamond argues that a society’s response to changing conditions weighs heavily in whether it survives or collapses. Numerous factors mitigate against a dynamic response in the Middle East. A tradition of entrepreneurship has not evolved. Half the labor force (women) is excluded from the labor pool. Islamism is a conservative belief structure which, in looking backward rather than forward, discourages change. In addition, Islamism redirects substantial resources from building an economic base to unproductive uses such as Jihad, just as Pharaohs and Easter Island chieftains squandered resources on pyramids and statues.

WT/EI has the added advantage of avoiding inflammatory images of collateral damage, ruined mosques, and Abu Ghraib. Its casualties can be explained as unavoidable consequences of environmental concern and Kyoto.

Comparative Advantage		
Military Warfare		
	USA	radical Islamism
governance structure	vertical	horizontal, network
scale	strong	weak
Economic Warfare		
	USA	radical Islamism
governance structure	horizontal, network	vertical
scale	strong	weak
Table 7		

## ***Marshalling Support***

Selling WT/EI will be difficult. Decades of cheap subsidized oil, years spent denying the War on Terror and oil are related will make justifying \$75 oil as tough as selling the War in Iraq. Public support, however, is a necessary condition. WT/EI, after all, *is* war. Clausewitz calls war “diplomacy by other means.” It could be said that economics is war by other means. *The Art of War*<sup>33</sup> cautions the first step in waging war is “to cause the people to be fully in accord with the leader.” The insight was equally apparent to other classicists including [Thucydides](#), [Jomini](#), [Machiavelli](#), and Clausewitz.<sup>34</sup> Churchill and Roosevelt were able to rally homefolks: Johnson wasn’t.

Greater transparency might be the first step in making the sale. Tell it like it is. Protecting the pipeline is as critical as protecting subways and airplanes. Why should it be considered shameful? Assertions such as Secretary Rumsfeld’s, “the War in Iraq has nothing to do with oil,” hurt credibility, cause confusion, and divert attention from solutions.

A clear articulation of vision would help build consensus and focus planning and execution. The contrast between the U.S. and the USSR was one of degree. The USSR produced and innovated: though less than the U.S. President Reagan’s six words, “Mr. Gorbachev, tear down this wall,” resonated with both friends and foes.

Today, the contrast is starker. With al Qaeda, it’s a matter of absolutes. Al Qaeda produces nothing and contributes nothing to the human condition. Its “Islam” has no clothes. Without Western dollars it is nothing. WT/EI cries out for a master communicator.

## ***Before the Collapse***

Energy independence will require some years to achieve. In the meantime, the threat of WT/EI can be leveraged. To quote [Samuel Johnson](#), nothing concentrates a man's mind as much as the imminent prospect of hanging. President Reagan understood that a creditable threat often moderates enemy behavior more than the actual event. He brandished the threat, rather than the reality, of [Star Wars](#). Properly leveraged, WT/EI’s threat would help end the need for an American President to sell AWACS planes or hold hands with a Saudi prince.

Establishing creditability for WT/EI should be easier than for Star Wars. WT/EI, unlike Star Wars, is not constrained by a looming Armageddon. Star Wars’ lengthy development cycles and massive government contracts are not required. Demonstrable WT/EI progress can begin relatively quickly by eliminating oil subsidies. WT/EI is more scaleable than Star Wars: a 10% reduction in oil imports is more potent than intercepting 10% of 200 incoming missiles. The USSR could respond to Star Wars by building more [MIRVs](#); Saudi Arabia lacks a viable response. Star Wars was a defensive weapon that did not directly threaten the USSR’s existence; WT/EI is an offensive weapon aimed at Saudi Arabia’s heart. WT/EI progress makes it obvious that time is an U.S. ally – that al Qaeda’s “Islam” is a failed philosophy that will be relegated to the trash heap of history.<sup>35</sup>

## ***The Political Leader’s Legacy***

More than two thousand years ago [Sun-tzu](#) said,<sup>36</sup> “To win without fighting is best.” The War on Terror is a war ideally suited to winning by other means. Ending oil imports – effectively castrating al Qaeda plans to appropriate Middle East oil – would minimize the need for conventional warfare. As Sun-tzu teaches, “the highest realization of warfare is to attack the enemy’s plans” and the wisest leaders are those who win without fighting battles. Would not leaders who solved the terror problem, by bankrupting competitors through energy independence rather than by conventional warfare, be judged wise by history? Especially when intricate, protracted, and costly procedures proscribed in the [Army Counterinsurgency Manual](#)<sup>37</sup> are the main alternative?

Notes:

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- <sup>1</sup> Rosa, P. (1992) “Entrepreneurial Training in the UK: Past Confusion and Future Promise” *Scottish Enterprise Foundation Conference Paper Series*, No. 81/92, Stirling University, Scotland, page 4.
- <sup>2</sup> Pearlman, Ellen and Briody, Dan. The New York Times' Thomas Friedman on Globalization March 25, 2005. <http://www.tsgonline.com/studies/zd/zd0305IT/invite/CIOI/dono.asp>.
- <sup>3</sup> Pearlman, Ellen and Briody, Dan. The New York Times' Thomas Friedman on Globalization March 25, 2005. <http://www.tsgonline.com/studies/zd/zd0305IT/invite/CIOI/dono.asp>.
- <sup>4</sup> Flat v. Horizontal, [http://www.dymaxionweb.com/dymaxionweb/archives/2005\\_04\\_10.html](http://www.dymaxionweb.com/dymaxionweb/archives/2005_04_10.html)
- <sup>5</sup> Stergiou, Christos and Siganos, Dimitrios. Siganos. NEURAL NETWORKS. [http://www.doc.ic.ac.uk/~nd/surprise\\_96/journal/vol4/cs11/report.html](http://www.doc.ic.ac.uk/~nd/surprise_96/journal/vol4/cs11/report.html)
- <sup>6</sup> Phenomena viewed through single lenses, particularly conventional lenses, are distorted. The Black Swan, Nassim Taleb (2007), Random House
- <sup>7</sup> Toward the end of the war, the U.S, was producing as many planes in a month as Germany produced during the entire war.
- <sup>8</sup> Joseph Stalin was a robber baron Chief Executive Officer (“CEO”), and the Politburo was an overly compliant board of directors. *Reality is Contextual*, Stephen A. Boyko In The National Interest (Volume 31: Issue 15) [www.inthenationalinterest.com/Articles/Vol3Issue15/Vol3Issue15Boyko.html](http://www.inthenationalinterest.com/Articles/Vol3Issue15/Vol3Issue15Boyko.html)
- <sup>9</sup> *The Destruction of the Soviet Economic System*; Michael Ellman and Vladimir Kontorovich editors; M.E. Sharpe, Inc. 1998
- <sup>10</sup> AWAC systems, modern fighters, Special Forces training are example “favors.”
- <sup>11</sup> *The Prize*; Daniel Yergin (1993); *Guardians of the Gulf*; Michael A. Palmer (1991)
- <sup>12</sup> “Wheresoever ye be, death will overtake you, although ye be in lofty towers”, Koran 4:78.
- <sup>13</sup> The Geopolitics of Energy into the 21<sup>st</sup> Century; Center for Strategic and International Studies, (2002)
- <sup>14</sup> Though controversial, pollution and other “soft” costs of non-renewable energy may be higher than generally perceived. In his recent book, *Collapse*, Jared Diamond, the Pulitzer Prize winning author of *Guns, Germs, and Steel*, rigorously examines the demise of past civilizations. Diamond contends that in most instances multiple interrelated contributing factors combined to trigger collapse. In four Polynesian societies, however, the sole cause was self-inflicted environmental degradation. And, in fact, past climate change and environmental degradation in the former “Fertile Crescent” renders al Qaeda more vulnerable to the alternative strategy proposed in this paper. Jared Diamond, *Collapse*, (Penguin Group, 2005)
- <sup>15</sup> DOE/EIA International Energy Outlook 2004, p 35, 36
- <sup>16</sup> “IEA: World Energy Investment Outlook 2003
- <sup>17</sup> No public record was made of FDR’s meeting with Ibn Saud (Figure D) or Vice President Chaney’s meetings with oil industry leaders.
- <sup>18</sup> EZKlick, Inc. *Offering Memorandum*, April 1, 2004; SPI Consulting International, Independent Research
- <sup>19</sup> Independent research: Society of Professional Management Consultants & SPI Consulting International
- <sup>20</sup> In linear inventory management models, inventory must be increased to maintain customer service to compensate for missing data. Even with higher inventory, error margins increase. Modern chaos theory shows how constricting information flow contributes to destabilizing “wave-like” perturbations in market systems.
- <sup>21</sup> Although Flexible Fuel Vehicles in Brazil have a choice. Brazilian motorists can fill their tanks with any blend of gasoline or ethanol they choose, depending on which is cheaper, or more convenient. Source: California Energy Commission [www.consumerenergycenter.org/transportation/afvs/ethanol.html](http://www.consumerenergycenter.org/transportation/afvs/ethanol.html)
- <sup>22</sup> *Harnessing the Storm*, Cambridge Energy Research Associates and Accenture
- <sup>23</sup> IEA, *Looking at Energy Subsidies*, 1999
- <sup>24</sup> Regulation is an operational tax. Understanding Entrepreneurs, Stephen A. Boyko and Aron Gottesman, <http://www.inthenationalinterest.com/Articles/Vol3Issue13/Vol3Issue13Boyko.html>

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<sup>25</sup> “Dual” facilities of [Oak Ridge](#) and Washington State are examples of multi-billion dollar expenditures to reduce single thread uncertainty.

<sup>26</sup> [On Guerrilla Warfare/Mao Tse-tung](#); translated from the Chinese by Brigadier General Samuel B. Griffith II, U.S.M.C (ret.), 1961; [Revolt in the Desert](#); T. E. Lawrence, 1927; [Chinese Ways in Warfare](#), Harvard University Press 1974

<sup>27</sup> They and their followers stand to lose more than Westerners if things get out of hand. Casualties exceeded 100 million in WW II. Both sides officially targeted civilian populations – which only al Qaeda has done so far in the present conflict. Today’s weapons are orders of magnitude more destructive than WW II’s. If the current conflict escalates to “total war,” civilian losses in Islamic nations are more likely to surpass WW II levels than in Western nations.

<sup>28</sup> Carl von Clausewitz, [On War](#); Translated and edited by Sir Michael Howard and Peter Paret; Princeton University Press, Princeton, NJ, 1976.

<sup>29</sup> Susan L. Marquis, [Unconventional Warfare](#), Brookings Institute Press, 1997

<sup>30</sup> The capacity of democracy and freedom to improve the human condition and build military strength by unleashing the power of entrepreneurial energy are quantitatively documented in [Capital and the Small Businessman: A Proposal for an International Entrepreneurial Exchange](#); Stephen A. Boyko, In The National Interest (May 21, 2003) A plan to strengthen this vital national resource is also presented.  
<http://www.inthenationalinterest.com/Articles/vol2issue20/vol2issue20boyko.html>

<sup>31</sup> Michael I. Handel, [Masters of War: Classical Strategic Thought](#); Frank Cass Publishers, New York, 2001.

<sup>32</sup> Jared Diamond, [Collapse](#), (Penguin Group, 2005)

<sup>33</sup> [The Art of War/Sun Tzu](#); translated from the Chinese by Thomas Cleary, 1988, 1998.

<sup>34</sup> Thucydides, [The Landmark Thucydides: A Comprehensive Guide to the Peloponnesian War](#), edited by Robert Strassler, New York,: The Free Press, 1996; Niccolo Machiavelli, [The Art of War](#), Translated by E. Farnsworth, Indianapolis: Bobbs-Merrill, 1965. Carl von Clausewitz, [On War](#); Translated and edited by Sir Michael Howard and Peter Paret; Princeton University Press, Princeton, NJ, 1976.

<sup>35</sup> Islam, itself, may not survive subversion by al Qaeda – just as commune style communism, dialectics, and socialism were discredited when "communism" was waylaid by the USSR’s founding fathers. Future historians may well judge mainstream Islamic leaders had as much to do with Islam’s demise as did al Qaeda, by failing to protect it from al Qaeda’s ravages.

<sup>36</sup> [The Art of War/Sun Tzu](#); translated from the Chinese by Thomas Cleary, 1988, 1998.

<sup>37</sup> [The U.S. Army★ Marine Corps Counterinsurgency Field Manual](#), The University of Chicago Press, 2007