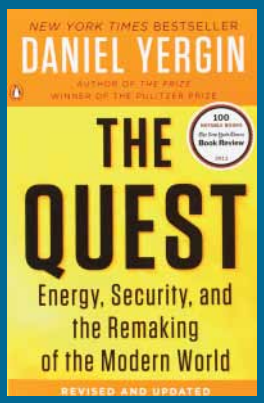

THE QUEST: Energy, Security, and the Remaking of the Modern World

Daniel Yergin

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THE QUEST IN 2015

Daniel Yergin reinforces his position as the foremost analyst of energy policy with *The Quest: Energy, Security and the Remaking of the Modern World*, a 800-plus tome that continues to be relevant four years after its initial publication. Backed by his consulting firm Cambridge Energy Research Associates and his unique exposure to key energy actors, Yergin manages to create an enticing sequel to his Pulitzer Prize winning book *The Prize: The Epic Quest for Oil, Money, and Power*. Like its predecessor, energy and its essential role to the human endeavour continues to be the protagonist, but oil gives way to electricity in an attempt to illustrate the present state of the global energy theatre and how it will play into the future.

Shortly after the collapse of the Soviet Union we are introduced to the "Native Son" and president of Azerbaijan, Heydar Aliyev, a key actor in the New World of Oil. What ensues in the Caucuses is a derby of pipeline politics at the dawn of the 21st Century where American preoccupations of Iran and Russia's relations with the Near Abroad would determine the outcome of the $4 billion Baku to Tbilisi to Ceyhan (BTC) pipeline coined by the Native Son as the "Deal of the Century". The strategic importance of the BTC supply was accentuated with the annexation of Crimea by the Russian Federation in 2014 – 80% of Russian exports to the European Union passed through pipelines in Ukraine.

What did 9/11, Hugo Chávez, the Niger Delta, and Hurricanes Katrina and Rita have in common? According to Yergin, they demonstrate that the threats to reliability and security of supply can come in unexpected ways and collude into "aggregate disruption". 9/11 triggered the Bush Administration's War on Terror reducing Iraq's output after the invasion to zero; Hugo Chávez's re-election resulted in a countrywide strike that reduced Venezuela's output to bare minimums; the Movement for the Emancipation of the Niger Delta shut 40% of Nigeria's total output; and Hurricanes Katrina and Rita knocked out 29% of total US oil production and refining capacity. With the demand shock brought by the emerging economies and the proliferation of the paper barrel, crude oil reached the historical peak price of $147.27 on July 11th 2008.

The summer of 2015 has seen crude oil prices plummet to a six-year low with West Texas Intermediate (WTI) futures oscillating close to the $40 a barrel mark, a current glut in stark contrast to the tight market during the Great Recession. Why? Yergin delves into three key factors during *The Quest* that might give us an idea. First, after the demand shock and birth of the Supermajors described by Yergin, the new world order adjusted to a market accustomed to robust Chinese growth that is currently dwindling, and whose currency, the Yuan, has been devalued.

Second, the current glut in supply is partially a result of unconventional production hailed as the future new

conventional by Yergin. Shale gas grew from 2% to 37% of natural gas supply in the United States between 2000 and 2012. Canada's proven oil reserves were adjusted by an almost fortyfold increase to 180 billion barrels after the breakthrough of oil sands production. In 2012, about 27% of total world oil production was produced offshore in both shallow and deep waters. By definition shale gas and tar sands are not unconventional anymore, and vast unlocked reserves like tight oil, presalt and the Arctic might follow suit to commercial recovery in the following decades.

Third, the Obama Administration is at the influx of what Yergin has coined "The Game Changer". A nuclear Iran that would alter the balance of power in the Gulf and threaten the security of world oil and gas supplies – "the most complex, contentious, and potentially most difficult issue were the risk of energy and foreign policy interests colliding is high". President Obama announced a comprehensive long-term plan that would prevent Iran from obtaining nuclear weapons on July 14th 2015. Built on verification rather than trust, Iran's entire nuclear supply chain would be subject to transparency measures for 25 years by the International Atomic Energy Agency (IAEA) in exchange for a phased relief from international sanctions that would snap into place if Iran were not to follow through. The deal embodies a diplomatic compromise that does not suit particular constituencies both domestically and abroad, yet President Obama's intention to veto any legislation that would prevent its successful implementation speaks for the game changing nature of the deal. The thawing of US-Iran relations has resulted in further supplies of oil in the world market.

The Obama Administration's management of Iran's nuclear program contrasts with the catastrophic management of various crises described in *The Quest*. Albeit Three Mile Island, Chernobyl, Hurricane Katrina, Deepwater Horizon and Fukushima Daiichi disasters occurred separately, they all echo Admiral Hyman Rickover's "Investigations of Catastrophic Accidents Involving Man-Made Devices" letter to President Carter in 1979. As Yergin continues into the history of climate and carbon, an ominous analogy surfaces between climate change and the poorly managed catastrophes described previously. Yergin's summary of the official report on Fukushima for the National Diet of Japan (2012) illustrates this:

> a "man-made disaster," the result of "a mind-set" of complacency, reinforced by too-close relationships among regulators, company, and politicians. Underlying it all was a "culture" that prevented recognition, discussion, and preparation for a low probability but extraordinary high-impact and highly dangerous accident. As a result, "many opportunities for taking preventive measures" were not taken, and "the measures in place to prevent a severe accident" were "far from sufficient". (As cited in Yergin, p. 416)

The connection between nuclear disasters and climate change might be farfetched, but *The Quest* introduces us to the genius John von Neumann, who recognizes that both simulating atomic explosions and predicting weather patterns were nonlinear problems in fluid dynamics that required vast amounts of computation at breakneck speed.

The Quest provides vital context before the upcoming Paris Climate Conference in December. Yergin's exhaustive and impartial story of energy is essential to understand the reality of our economy and way of life, including surprising insights that deconstruct popular misconceptions. For example, Yergin argues that Hubbert's Peak Oil theory is erroneous as most of the world's supply is not the result of discoveries, but of reserves and additions resulting in a peak continuously receding into the future, or rather a plateau. Unconventional production echoes on the supply side what the author calls on the demand side "The Fifth Fuel" – efficiency. Dow Chemical serves as Yergin's poster child for efficiency, that with an investment of $1 billion saved $9 billion. For Yergin the fifth fuel is crucial with an industrial sector that consumes a third of the world's energy and is responsible for 36% of carbon emissions. The globalization of demand has blurred traditional state positions as Hu Jintao (2006) declared: "Energy insecurity for China, also means energy insecurity for the United States – and vice versa" (As cited in Yergin, p. 215). The new world order where developed countries outsource their energy consumption to developing countries sees US and China as the largest emitters of carbon dioxide, although the former also accounts for half the world's total budget for climate change research and the later is the biggest market for wind and the largest manufacturer of solar cells. Moreover, using timely

data Yergin differentiates installed capacity with electricity actually generated to explain the position of renewable energy technologies. Similarly, he also explains how the concept of grid parity obscures the cost to the entire system by focusing only on the direct cost to the consumer.

The Quest is driven by one key question – Can today's $70 trillion world economy be sure it will have the energy it needs to be a $130 trillion economy in two decades? Yergin concludes with ruthless insight. For the next two decades 80% of world energy will continue to be carbon based. Figures provide us context – 1 trillion barrels of oil have been produced since the Industrial Revolution and there are at least 5 trillion barrels of which 1.4 trillion are commercially recoverable. The crux of the matter becomes fuel choice: coal, oil, natural gas, nuclear, renewables, efficiency,… *The Quest* demonstrates time and time again that the business of electric generation is subject to alternating current of public policy and dramatic swings in markets and popular opinion that lead to major and abrupt changes in direction in what Lawrence Makovich calls "The Quandary". Takayuki Ueda argues that without the San Denchii Kyodai – fuel cells, solar cells and batteries – cutting emissions by 80% will be almost impossible. For Yergin, there is no guarantee that the investment at the scale needed will be made in a timely way, or that government policies will be wisely implemented. The scale and complexity of our energy system triggers extensive lead times. *The Quest* proves Winston Churchill's (1913) precept to Parliament again and again. The fundamental touchstone of energy security is the diversification of supply, "On no one quality, on no one process, on no one country, on no one route, and on no one field must we be dependent" (As cited in Yergin, p. 267).

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