THE QUEST: ENERGY, SECURITY, AND THE REMAKING OF THE MODERN WORLD

By Daniel Yergin, Penguin Press 2011

Reviewed by Jonathan D. Schneider*

Daniel Yergin has done much for the reputation of oil as a central figure on the world stage over the course of the 20th Century. While others have chronicled the careers of those who developed and profited from the resource, Yergin gave the substance itself the starring role it deserves in his 1992 work, *The Prize*.[1] Yergin won a Pulitzer for the book, and he deserved it for so well telling the story of oil's career as it rose from coal's less prominent cousin at the outset of 20th Century to its starring role as the world's predominant energy resource. Yergin's tale of oil's influence on world events includes the riveting back story leading to World War II, as Japanese naval strategists pressed for the attack on Pearl Harbor as a means of securing oil supplies in the Pacific. *The Prize* concluded with the rise of OPEC, and the profound resulting shift in the axis of world power, as developed nations adjusted to a new and relatively less self-sufficient reality.

In *The Quest*,[2] Yergin picks up the thread of the story in the latter part of the 20th Century, a time in which fossil fuels have shared the stage with other forms of energy more favored by certain policy makers, while the world reeled from the break-up of the Soviet Union and the emergence of newly independent oil-producing nations in the former Soviet Republics. These events have dramatically altered oil production scenarios and the calculus undertaken by those who look after the security of the nation's energy supplies. This is a story with many diverse threads, though many aspects of the tale have been told elsewhere and in more detail. Still, Yergin weaves together an effective narrative. Now nearly one year old, *The Quest* received generally good reviews from major outlets, including the New York Times and the Wall Street Journal, and indeed much is praiseworthy. The book is readable, and it provides a comprehensive survey of the broad sweep of issues involved in energy commerce and policy. Through it all, Yergin maintains a keen sense for the story-line and a journalist's eye for character-driven events.

Yet, this is a frustrating book with respect to its two most important themes: the role of oil in the 21st Century and its analysis of the climate debate. As to oil, *The Quest* leaves one to accept on faith Yergin's conclusion that oil will remain relatively plentiful for the remainder of the 21st Century. As to the climate change debate, the book suffers from a failure to do more than scratch the surface of the science that is at the core of this critical issue. The book will also

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1. DANIEL YERGIN, THE PRIZE: THE EPIC QUEST FOR OIL, MONEY & POWER (1992) [hereinafter THE PRIZE].

2. DANIEL YERGIN, THE QUEST: ENERGY, SECURITY, AND THE REMAKING OF THE MODERN WORLD (2011) [hereinafter THE QUEST].

frustrate scholars. Its citations are sparse, and while there is a reasonably extensive bibliography, it is not at all clear where a good deal of the information comes from.

With respect to oil's future, Yergin sees an endless horizon for the resource. Rejecting what he describes as the commonly-held view that the world will soon see a peak in oil production, followed by a meaningful decline, Yergin instead projects a 20% *increase* in supply through 2030, followed by a plateau, and a gentle decline thereafter.[3] According to Yergin:

> The peak may be the best known image of future supply. But there is another, more appropriate way to visualize the course of supply: as a plateau. The world has decades of further production growth before flattening out into a plateau—perhaps sometime around midcentury—at which time a more gradual decline will begin.[4]

He is dismissive of "peak oil" theorists, those who see a near to medium-term peak in oil production and a substantial decline thereafter, and he traces their lineage as far back as an 1885 state geologist in Pennsylvania, who apparently fretted over plentiful oil as a "vanishing phenomenon."[5] Yergin goes on to find such irrational fears expressed by as diverse a collection of historical figures as Woodrow Wilson, Third Reich Field Marshal Rommel, and former President Jimmy Carter, and he connects this way of thinking to the Club of Rome, which prophesied natural limits to Western economic growth in its iconic work, "Limits to Growth." He describes the work of ground-breaking geologist Marion King Hubbert, who projected the decline of production in the United States in work undertaken in the 1930s through the 1960s, and he reasons, with surprisingly little connective tissue, that since these prognosticators were famously wrong in the past, present day adherents to peak oil theory must also be mistaken.[6]

Further, Yergin dismisses calls for energy independence as pointless nostalgia – a "mantra," as he puts it – with roots as old and discredited as the Nixon administration.[7] According to Yergin,

> Overemphasizing something that is an aspiration rather than a goal that can be realized in a reasonable time frame can corrode the international relations that are critical to energy security in an interdependent world. And it runs the risk of diverting attention from the more complex agenda of energy security.[8]

Is Yergin right? Can we expect to enjoy an abundant, economical supply of oil for the foreseeable future? Or, as it was put in the energy blog, *The Oil Drum* not long ago, is Yergin guilty of selling "happy talk" as a "cheerleader for abundance" along with his colleagues at Cambridge Energy Research Associates (CERA), the consulting firm he leads?[9] The question has absolutely critical implications for the nation's energy industry and public policy.

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3. THE QUEST, *supra* note 2, at 239-41.

4. *Id.* at 227-28.

5. *Id.* at 229.

6. *Id.* at 233-35.

7. Nixon announced "Project Independence" in November, 1973, responding to the Arab oil embargo following the United States public supply of military hardware to Israel. *Id.* at 267.

8. *Id.* at 268.

9. Steve Andrews & John Theobold, *Peak Oil Workhorse Matt Simmons: 1943-2010*, THE OIL DRUM (Aug. 23, 2010, 10:38 AM), www.theoildrum.com/node/6868.

The analysis and support provided in *The Quest* give little comfort. Estimating the world's supply of economical oil is an exceedingly complicated matter. By definition, an analysis of known energy reserves conceals what we do not know. Certainly Yergin is right that new and developing extraction processes will continue to provide access to previously inaccessible supplies, whether associated with existing but not fully exploited fields, or in new locations, such as those in off-shore deepwater locations. But many have argued that we have already exploited the largest, most easily accessible reserves, and we certainly have no assurance regarding ongoing technological breakthroughs. The fact that so much is unknown about potentially accessible reserves further complicates matters. Other than broadly describing certain new processes, Yergin provides no analysis, nor any empirical basis from which one might reasonably conclude that his faith is justified. Moreover, it is axiomatic that oil reserves are indeed limited, though no one can say how much so. The one hard number in the text – that supplies will increase by 20% through 2030 – is supported only by an unpublished CERA study cited in a footnote.[10]

What Yergin does provide is an argument: Peak oil theorists have cried wolf since 1858 and cannot be trusted now. According to Yergin, "[t]he peak oil theory embodies an 'end of technology/end of opportunity' perspective, that there will be no more significant innovation in oil production, nor any significant new resources that can be developed."[11] In effect, he plays the Malthus card: Those who have argued that economic growth and innovation have natural limits have been famously wrong; they have been wrong in the past with respect to oil resources, and they will continue to be wrong in the future.

The fly in this ointment, of course, is that the productivity of oil resources is not only a matter of innovation; though surely that is part of the equation, it is also a matter of fact. It is a fact that the earth contains a finite quantity of oil.[12] It is a fact that the industrial world's consumption of oil increased at a dramatic pace. In 1970, global oil demand was just shy of 50 million barrels/day. By 2010 that figure was 87.4 million barrels/day.[13] It is also a fact that sustaining this level of production has called for increasingly expensive means of production, which Yergin himself describes, though he does not quantify the cost. As a consequence, it is also a fact that the world will undeniably see a decline in and the eventual disappearance of this resource; it simply cannot be otherwise. The key question, obviously, is when this will happen, and that is also a question of fact, and one which cannot be answered by Yergin's anti-Malthusian philosophy alone.

The Quest is not the first platform for Yergin's view that that oil will forever be abundant.[14] Rather, it is rather part of a long-running conversation between opposing camps. Prominent organizations and individuals have weighed in on the other side of the question in opposition to Yergin's view, though one would not know it from Yergin's text, and references to the likes of

10. THE QUEST, *supra* note 2, at 239 n.20 (citing Peter Jackson et al., *Peak Oil Postponed Again*, IHS CERA (Oct. 18, 2010), *available at* http://www.ihs.com/products/cera/energy-report.aspx?id=106592611).

11. *Id.* at 227.

12. To be sure, oil results from the breakdown of organic matter, but the process occurs so slowly, over so many millennia, that one cannot conceive of oil as a renewable resource for any practical purpose.

13. BP STATISTICAL REVIEW OF WORLD ENERGY JUNE 2011 at 3, *available at* http://www.bp.com/sectiongenericarticle800.do?categoryId=9037170&contentId=7068610.

14. *See, e.g.*, Daniel Yergin, *Ensuring /Energy Security,* 85 FOREIGN AFFAIRS, Mar.-Apr. 2006, at 69.

Woodrow Wilson and Field Marshal Rommel as his strawmen on the opposing side of the issue. Moreover, credible voices on other side of this debate are hardly counter-cultural figures. In 2005, Exxon-Mobil spokesperson William J. Cummings admitted that "[a]ll [of] the easy oil and gas in the world has pretty much been found. . . . Now comes the harder work in finding and producing oil from more challenging environments and work areas."[15] Similarly, former Shell Chairman Lord Ron Oxburgh commented in 2008 that "[i]t is pretty clear that there is not much chance of finding any significant quantity of new cheap oil. Any new or unconventional oil is going to be expensive."[16] To the same effect, in its February, 2010 statement describing United States' military's "Joint Operating Environment, the U.S. Joint Forces Command commented that "[b]y 2012, surplus oil production capacity could entirely disappear, and as early as 2015, the shortfall in output could reach nearly 10 million barrels per day."[17] And the venerable International Energy Agency (IEA) in its 2011 World Energy Outlook recently projected that world oil production will likely decline to 68 million barrels of crude oil per day by 2035, substantially below the 2010 peak, and certainly below Yergin's projection.[18]

Such projections are the product of painstaking research, undertaken by geologists and economists combining a myriad of factors, including figures for known reserves, production curves derived from historical experience, and a dose of judgment reflecting assumptions regarding developing technology. On the subject of known reserves and production curves, it is of some note that Yergin makes no mention of perhaps the most prominent critic in recent years of bullish predictions, Matthew Simmons. Five years before he died in 2010, Simmons authored *Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy*,[19] in which he took to task those who took the era of endless oil supply for granted. Hardly an Occupy Wall Street type, Simmons headed Houston-based Simmons and Company, an investment bank specializing in the energy industry. He was an advisor to George W. Bush on energy matters leading up to the 2000 election, held membership on the New York Council of Foreign Relations, and earned an MBA from Harvard.[20] Focusing on the world's reliance on oil from the Persian Gulf (27% of the world's daily consumption in 2005),[21] Simmons expressed alarm over the lack of good information regarding production from the world's largest oil fields. Simmons noted that in 2003, BP reported that fully 63% of the world's known petroleum reserves lay in the

15. John Donnelly, *Price Rise and New Deep-Water Technology Opened up Offshore Drilling*, THE BOSTON GLOBE, Dec. 11, 2005, 2005 WLNR 19921417.

16. *The Next Crisis: Prepare for Peak Oil*, WALL ST. J., Feb. 11, 2010, http://online.wsj.com/article/SB10001424052748704140104575057260398292350.html.

17. Terry Macalister, *US Military Warns Oil Output May Dip Causing Massive Shortages by 2015*, GUARDIAN, Apr. 11, 2010, http://www.guardian.co.uk/business/2010/apr/11/peak-oil-production-supply.

18. INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK 2011: EXECUTIVE SUMMARY at 3 (2011), *available at* http://www.iea.org/Textbase/npsum/weo2011sum.pdf.

19. MATTHEW R. SIMMONS, TWILIGHT IN THE DESERT: THE COMING SAUDI OIL SHOCK AND THE WORLD ECONOMY (2005).

20. Jonathan D. Schneider, Book Review, *Collapse: How Societies Choose to Fail or Succeed by Jared Diamond, Viking, 2005* and *Twilight in the Desert by Matthew R. Simmons, Wiley & Sons, 2005*, 27 ENERGY L.J. 227, 229 (2006).

21. The IEA estimated in 2011 that oil from the Middle East and North Africa would account for 51% of the world's production by 2035, a modest decline from earlier years. IEA, 2011 WORLD ENERGY OUTLOOK 89.

Middle East, while 23% of world production was undertaken by Saudi Arabia.[22] Simmons further reported that there has been no reliable field-by-field production information from Saudi Arabia since 1982, "the year [that] then-Saudi Oil Minister Ahmed Yamani saw to it that OPEC members would refrain from publicly reporting field-by-field oil production data, as they [previously] had since 1950."[23]

Against this background, Simmons went on to explain, and to express concern over, what is known about the largest of the Saudi oil fields, the Ghawar field, a resource that supplied roughly 63% of the Saudi's daily production in 1994.[24] The Ghawar field is the world's largest and nearly three times the size of its nearest rival, Iraq's West Qurna field.[25] The field was discovered in the 1940s, and its capacity was expanded throughout the 1960s and 1970s, with daily production enhanced first by the injection of natural gas, and then water, to increase output pressure. Yet, as Simmons pointed out, these techniques for improving oil field production presage the end of a field's productive life. Simmons noted that Aramco was injecting as much as 8 million barrels of water water into the Ghawar field daily, in order to extract over 5 million barrels of oil each day.[26] Simmons commented that there is no precedent for this pattern continuing much beyond the present day. The analogous large oil fields whose life cycles Simmons reviewed generally lost half of their productive capability within ten years of peak production. Simmons further commented that most major fields exhibit a life cycle in the thirty year range, a period now substantially exceeded by the Ghawar field. Simmons noted precipitous declines in productivity for many fields worked past a natural breaking point.[27]

Yergin responds, in a subchapter specifically devoted to the Ghawar field. Addressing unnamed critics arguing that Saudi production is in decline, Yergin's sole rejoinder is to quote the President of Aramco in an apparently private interview. Yergin provides this:

> After more than sixty years, Ghawar is still, in the words of Saudi Aramco President Khalid Al-Falih, "robust in middle age." Investment requirements are going up. But at a production rate of over 5 million barrels per day, Ghawar continues to be highly productive.[28]

It is difficult to know what additional information Yergin may have in the CERA files regarding the Ghawar field. Yergin's view that readers should take Aramco's word at face value does not inspire confidence. In *Twilight in the Desert,* expressing his dismay over the Saudi's lack of transparency, Simmons commented that the "mortality of the Saudi oil fields was concealed by three veils – secrecy, sovereignty and self-delusion."[29] Yergin does little to dispel the sense that Simmons has had the last persuasive word on the subject.

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22. SIMMONS, *supra* note 19, at 6-7.

23. Schneider, *supra* note 20, at 229.

24. SIMMONS, *supra* note 19, at 152.

25. Christopher Helman, *The World's Biggest Oil Reserves*, FORBES.COM (Jan. 21, 2010, 12:00 PM), http://www.forbes.com/2010/01/21/biggest-oil-fields-business-energy-oil-fields.html.

26. SIMMONS, *supra* note 19, at 90.

27. *Id.* at 286-290.

28. THE QUEST, *supra* note 2, at 238.

29. SIMMONS, *supra* note 19, at 97.

These questions of fact figure prominently into a policy debate over the nation's energy independence and energy security. Here, Yergin's fundamental premise is that supply diversity and a broad-based, stable market provide the best assurance against supply disruption and economic dislocation. Criticizing those who he believes call simple-mindedly for energy self-sufficiency, Yergin asserts that "[s]ecession from the global market is not an option, except at very great cost."[30]

These observations are undeniably true, as far as they go. But they also beg the question whether we continue to rely to a greater extent than is prudent on oil supplied by regions of the world (and certainly the Middle-East) to which it is unwise to be beholden. On this point, there is some good news but substantial reason to remain alarmed. As Yergin points out, since the early 1970s, the United States went from importing a third of its oil to a high of 60%. The good news is that this figure fell back in 2011 to 50%.[31] Further, the United States Energy Information Administration reports that the percentage of our portfolio of imported oil derived from the Persian Gulf has fallen from 27% in 1993 to 18% in 2010.[32] In addition, if hydraulic fracturing technology and horizontal drilling take hold for oil resources in the continental United States (as it is for natural gas), meaningful new oil resources may be exploited here.[33]

Yet, several factors continue to suggest that these improving trends provide cold comfort. The first is that while the nation's reliance on imported oil has recently fallen to 50% from 60%, that figure remains dramatically above the roughly 30% figure the nation enjoyed when it was rocked by the OPEC oil embargo in 1973.[34] Second, oil prices rise markedly in response to relatively small reductions in supply. Evidence for this fact lies in the observation that relatively small releases of petroleum from the nation's strategic petroleum reserve will have a cognizable effect on gasoline prices. We remain, as a consequence, dismayingly beholden as a matter of economics to fluctuations in supply from the Middle-East and, therefore, vulnerable to the politics of the region.

The third, and perhaps most, telling reason why our apparent recent progress in controlling oil imports is little reason for solace is that oil imports by China and India are currently projected to outstrip changes in the supply picture for the United States by orders of magnitude. The IEA projects that China and India together will increase their imports of oil by 11 million barrels per day by 2035.[35] That increase is roughly equal to existing demand by the United States and fully one eighth of the world's current consumption.

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30. THE QUEST, *supra* note 2, at 276.

31. *Id.* at 268.

32. Stephen R. Kelly, *Oil Under Our Noses*, N.Y. TIMES, Mar. 20, 2012, http://www.nytimes.com/2012/03/21/opinion/oil-under-our-noses.html?_r=1&scp=1&sq=oil&st=Search.

33. *See generally* Daniel Yergin, *America's New Security*, WALL ST. J., Dec. 12, 2011, http://online.wsj.com/article/SB10001424052970204449804577068932026951376.html.

34. *See generally* Andrew S. Grove & Robert A. Burgelman, *U.S. Dependence on Oil in 2008: Facts, Figures and Context* (Stanford Graduate School of Bus. Research Paper Series, Research Paper No. 1997, Aug., 2008) (citing Energy Information Administration), *available at* http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID1327152_code363555.pdf?abstractid=1327152&mirid=1.

35. IEA, IEA World Energy Outlook 2011, Presentation to the Press, London at 6 (Nov. 9, 2011), *available at* http://www.iea.org/weo/docs/weo2011/homepage/WEO2011_Press_Launch_London.pdf.

Taken together, these factors very strongly suggest that it should be an absolutely critical policy goal for the United States to address its dependence on imported oil over the next twenty years. Whether this goal is phrased in terms of energy independence, or energy security (as Yergin would prefer), it would be a substantial mistake for the nation not to make it a priority to reduce our dependence on imported oil to the maximum extent possible. We will otherwise continue to remain at the economic mercy of untoward developments in international oil markets, compelled to intervene to protect our supply chain, and we will find ourselves in increasingly close competition for resources also needed by India and China as these nations clamor for needed resources.

Turning, finally, to the role of climate change in the development of energy policy, Yergin provides a broad history tracking the development of climate science, the national and international politics surrounding the issue, and sequence of events leading to the Kyoto accord and the Copenhagen conference.[36] It is a story without a conclusion, as events that included developing scientific consensus, increasing international cooperation, and surprisingly broad-based political agreement, have led us to an impasse. It seems clear that any further political action in the United States is at least several election cycles away, if at all. Indeed, it is difficult even to remember the political environment in which Senators McCain and Lieberman teamed to produce climate control legislation that garnered 43 votes in the Senate. Much of Yergin's work surely was prepared at a point in time at which major climate control legislation seemed likely to be enacted, and only with the passage of time will we know whether the events Yergin chronicles are critical steps along the way toward eventual action, or the detritus of an ultimately doomed effort, with only a cautionary tale to tell.

In any event, Yergin's history of the unprecedented scientific cooperation and consensus that took place under the umbrella of the Intergovernmental Panel on Climate Change (IPCC) and his work tracking the political developments that led climate control advocates to embrace cap and trade legislation is most instructive. The role of now deceased Swedish meteorologist Bert Bolin in persistently ensuring that the consensus vocalized through the IPCC did not outrun known science is an interesting revelation for those not intimate with the organization. Also noteworthy is Yergin's account of how climate control advocates and their supporters came to embrace cap and trade legislation (as opposed to a carbon tax or other prohibition).[37] Yergin reminds us that the link between climate control advocates and the market-based cap and trade system was initially forged by market enthusiasts in the first Bush White House.[38] It is somewhat ironic that the Americans persuaded their European counterparts to adopt the cap and trade format at the Kyoto conference over initial objections[39] and that suspicion of the potentially vast resulting market in carbon trading became one of its political liabilities in the wake of the 2008 financial crisis.

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36. *See generally* THE QUEST, *supra* note 2, at 419-520.

37. *See generally id.* at 471-87.

38. *Id.* As Yergin notes, George H.W. Bush's White House Counsel C. Boyden Gray worked closely with the Environmental Protection Agency in promoting the market-based cap and trade program for controlling SO_2 promoted by the Environmental Defense Fund. The application of a market solution for carbon was then embraced by the Clinton White House.

39. *Id.* at 485-86.

It is hard to know what conclusions Yergin draws from all of this. There is something amusing in the fact that in their reviews of *The Quest*, both the New York Times and the Wall Street Journal were critical of Yergin's take on the climate control debate, the Times for Yergin's "bland and non-committal" presentation on the subject (a "public disservice"),[40] and the Journal for an "alarmist storyline" and for giving too much credence to the IPCC.[41] In fact, Yergin seems fairly agnostic on the debate and serves more as a journalist than an advocate or policy theorist. One cannot insist that Yergin have opinions, of course, and there is certainly value in Yergin's journalism on the subject. What does seem a shame, however, is that Yergin provides little insight into, or even much coverage of, the fundamental issues that are in play in the scientific community on the subject, or a review that would enable the reader to weigh the relative merits of scientific consensus against the views of the skeptics.[42] This is a complicated matter; the public debate has much suffered from demagoguery, and the level of public ignorance is high. Yergin could have advanced the discussion but retreats to ground easier to hold, involving the politics and history of the subject.

Ultimately, there is little in *The Quest* from which one would take meaningful leads in fashioning any energy policy at all. If one assumes, as Yergin does, that a plentiful oil supply will be ours for much of this century, and no compelling reason is presented to act on climate change, there would appear little basis on which to do other than stay our current energy course. This is a shame. In *The Prize,* Yergin was right to recognize that the world's need for oil resources was responsible for altering the course of the 20th century, as nations jockeyed for position at the world's energy table. This insight is likely to be no less apt in the 21st century, and it will be among the nation's most critical challenges to rise to the occasion.

40. Fareed Zakaria, *How Will We Fuel the Future?*, N.Y. TIMES SUNDAY BOOK REV., Sept. 23, 2011, http://www.nytimes.com/2011/09/25/books/review/the-quest-by-daniel-yergin-book-review.html?pagewanted=all (reviewing THE QUEST, *supra* note 2).

41. Steven F. Hayward, *In Search of Carbon Copies*, WALL ST. J., Sept. 20, 2011, http://online.wsj.com/article/SB10001424053111904265504576569020549199248.html (reviewing THE QUEST, *supra* note 2).

42. Toni Johnson, writing for the New York Council on Foreign Relations, provides a helpful primer. Toni Johnson, *Alternative View on Climate Change*, COUNCIL ON FOREIGN RELATIONS (Feb. 23, 2010), http://www.cfr.org/climate-change/alternative-views-climate-change/p14318. A good overview of the poles of the scientific debate can be found in a collection edited by Ernest Zedillo, head of the Yale Center for the Study of Globalization. GLOBAL WARMING: LOOKING BEYOND KYOTO (Ernesto Zedillo, ed., Brookings Inst. Press 2006); though that discussion is now somewhat dated.