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Reaching the peak: what are we going to do when we run out of oil?

The descent of Mount Petroleum

Beyond Oil: The View from Hubbert's Peak
by Kenneth S. Deffeyes
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Nostradamus has nothing on M. King Hubbert. In the late 1950s, Hubbert correctly forecast that US oil production, which was then increasing rapidly, would peak in 1970 and decline thereafter. But Hubbert's accuracy has generated a conundrum: repeated announcements of the peak in worldwide oil production made by Hubbert's acolytes gather considerable attention, but their perennial failure provides ammunition for the 'cornucopians', who argue that large supplies of oil remain. This is a false dichotomy, but Kevin Deffeyes encourages it. He frames the debate about world oil supplies as one between Hubbertists and cornucopians, and as such, *Beyond Oil* can be viewed as the latest salvo between two caricatures of the real oil situation. Nonetheless, there is valuable information to be gleaned from this thoughtful and entertaining book.

The first three chapters provide an excellent description of the historical context and mathematical basis of Hubbert's methodology. Unfortunately, Deffeyes ignores subsequent research which indicates that Hubbert was lucky as well as being a genius. Had prices evolved on some other path, or had the Texas Railroad Commission — the US prototype of OPEC (the Organization of the Petroleum Exporting Countries) — controlled production using some other criterion than price stability, Hubbert's prediction would probably have been less accurate.

Because of subsequent changes in these economic and institutional forces, Deffeyes' updated version of Hubbert's analysis states that 228 billion barrels will be recovered from US oil fields, which is about 30% higher than Hubbert's estimate. Deffeyes does not mention this increase, perhaps because he views Hubbert as his 'patron saint', but by doing so he misses an opportunity to demonstrate the strength of Hubbert's method, which is that relatively large uncertainties about recoverable oil supply have relatively little effect on the timing of the peak in production. Deffeyes' contention that global oil production will peak in 2005 may be wrong (again), but that does not mean that the cornucopians are correct. Given most reasonable estimates for world oil supply, the peak is not far off, and that is why society must now consider what comes after oil.

This consideration is where the book shines. In the following six chapters, Deffeyes combines his expertise in science in general and geology in particular with anecdotes from his extensive work in the private sector as a petroleum geologist to assess potential alternatives to oil. Most are geological in origin, although he also devotes a chapter to hydrogen. For each, he describes its geological origins and the engineering difficulties that are associated with its production. In addition, he offers many engineering rules of thumb that influence the economic viability of the alternatives. Better than any economic cost–benefit analysis, this combination of theory and practical know-how gives the reader a better feel as to why there is still no obvious alternative to oil. As such, these chapters are ideal for non-specialists and undergraduates who are convinced that the world will eventually need a replacement for oil but wonder why people shy away from this need every time the price of oil drops from its most recent peak.

Ironically, Deffeyes denigrates undergraduates in the subject where his book may be most appreciated: environmental studies. He comments several times that environmental-science courses are flawed because they fail to teach students 'hard science' and instead emphasize breadth. This may be true, but Deffeyes' focus on depth leads to some 'breadth-taking' errors of his own. Perhaps most startling is his argument that "the major oil companies are not saying publicly that the oil game is over. [But] if there were attractive prospects available, companies would be clawing their way over one another to get to the drilling rights." Deffeyes says they are conspicuously not doing so, but he fails to realize that many OPEC nations, especially those in the Middle East, prohibit foreign oil companies from investing directly in their oil fields. And yes, oil companies do claw their way over one another each time Saudi Arabia, Kuwait or some other OPEC nation opens a possibility for direct investment. Geologically attractive sites remain, but they are unavailable politically.

The interplay among geology, economics and politics is what makes the world oil market so interesting. No book can hope to do justice to all its aspects. Deffeyes' argument has some flaws, but no more than other books that try to describe the current energy situation and possible solutions for it. Despite these limitations, readers should remember that the book uses a methodology that generated a remarkably accurate forecast for one of the most important economic events in the twentieth century. And that creates the book's real take-home message: even if production does not peak in 2005, we all need to know that Hubbert's peak is coming soon, and we had better start thinking about a future without oil.

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