ENERGY

The new oil era

Chris Nelder relishes a lively history of fracking that delves into the complexities.

Despite its title, *The Boom* is no sales pitch for fracking. *Wall Street Journal* energy reporter Russell Gold has produced a thoughtful piece of journalism, exploring the complex landscape of drilling, finance and politics that brought a gusher of oil and gas to a country convinced that its hydrocarbon heyday was over. Gold offers no pat answers to the challenges that this new abundance poses, but reminds us starkly of “unforeseen costs and necessary evils”.

Skilfully interweaving hard data about US energy with an engaging narrative, Gold covers previous oil booms in Texas, Oklahoma, the Niger Delta, the Bakken shale in North Dakota (which saw its first oil well drilled in 1953), and Pennsylvania. He also relates the biography of businessman George Mitchell, ‘the father of fracking’; the fundamentals of petroleum geology; and the long evolution of technology for oil and gas production. Much of *The Boom* focuses on Aubrey McClendon, founder of the Chesapeake Energy company. Describing him as “part pied piper, part early adopter, and part rapacious capitalist”, Gold duly credits McClendon for seeing the potential in shale gas and driving its production, but gives equal weight to his rise and downfall.

As a lens on the conflicts between ethics and raw need that characterize today’s energy industry, Gold uses a personal experience. His parents had co-owned land in Pennsylvania since the 1970s. In 2009, Chesapeake Energy was snapping up leases there to drill for natural gas in the Marcellus shale formation underneath. As he advised his parents on Chesapeake’s US\$400,000 offer, Gold was torn between their desire to prevent groundwater contamination, and his certainty that fracking would proceed around them, driven by the need for domestic gas, income and jobs. As one farmer told him, local exploitation of forests and coal had been unsustainable:

“We can’t do that three times in a row ... If we don’t do this right, what the hell have we done?” Despite the doubts, the lease was signed.

Along with his hard-hitting analysis of the disruptive nature of fracking, Gold offers deep reportage on two previously untold stories. The first concerns the close relationship between McClendon and his

best friend since university, Ralph Eads. Starting in 2004, Gold says, McClendon talked to Eads regularly about how to round up more capital. Eads “set out to create a new financial ecosystem to find money to drill shale”, pitching Chesapeake’s opportunities to institutional investors globally. The company raised \$33.7 billion, with Eads serving as financial adviser for nearly all of the deals. Chesapeake also bet heavily on the future price of gas.

By 2008, Gold writes, “McClendon and Chesapeake were whales in the futures market”. But as competitors arrived, a gas glut developed and prices plummeted. “With its heavy debt and drilling commitments, this price decline was a recipe for trouble,” Gold explains. He writes that during the stock-market crash of 2008, Chesapeake’s shares lost 59% of their value; subsequently, there were revelations that McClendon had taken out large personal loans from EIG Global Energy Partners (an investor Eads had connected with Chesapeake) without the knowledge of his company’s board. Large shareholders became increasingly restive, he writes. McClendon’s job was terminated in 2013.

The Boom: How Fracking Ignited the American Energy Revolution and Changed the World
RUSSELL GOLD
Simon & Schuster: 2014.

The second story that Gold details is of a secretive partnership between McClendon and Carl Pope, head of the Sierra Club, the United States’ largest environmental group, for 18 years. The two had a mutual interest in fighting coal power, but very different motivations: Pope’s, to combat climate change; McClendon’s, to secure natural gas as the nation’s power-grid fuel of choice. Without the knowledge of the Sierra Club board, Gold alleges, Pope allowed McClendon to underwrite the organization’s Beyond Coal campaign, even as its New York chapter was fighting fracking over water contamination. Gold describes how tension within the Sierra Club grew. Pope was ousted in 2011.

That the costs and benefits of fracking are complex is never fudged. The rapid decline rates of wells for shale gas and ‘tight’, or fracked, oil condemn frackers to increase the pace of drilling continually just to keep overall production flat. Embedded in the unfettered, market-driven US approach to energy development is the risk of dependence on finite resources. The US Energy Information Administration forecasts that tight oil will peak by 2021, although some think this optimistic.

The Boom carefully explores technical issues around water contamination and the failure to develop solutions. The inability of regulators to keep up with entrepreneurs’ advances — a problem as old as the oil industry itself — opens up scenarios of irreversible damage. And drilling has “thrown a lifeline to fossil fuels” just when dependence on them, and the risks of climate change, are more dangerous than ever.

Gold points out that over the 150-year history of oil and gas exploitation, we have worked our way down from vast accumulations of cheap, high-quality hydrocarbons to poor-quality shales. “Source rock is where plankton turned into hydrocarbons,” he muses. “There is no further back.” We “fossil-fuel addicts”, he suggests, should think of shale gas as methadone, a stepping stone on the way to a renewably powered future. ■

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The Serpent's Promise: The Bible Retold as Science

Steve Jones (Little, Brown, 2014)

With sensitivity towards religion and sardonic wit, geneticist Steve Jones delivers a masterful scientific take on biblical events such as the Deluge — which he attributes to the end of an ice age. (See Tim Radford’s review: *Nature* **496**, 432–433; 2013.)

My Beloved Brontosaurus

Brian Switek (Farrar, Straus and Giroux, 2014)

The film *Jurassic Park* aside, velociraptors were turkey-sized, reveals Brian Switek in this paean to palaeontology. He joins the scales-versus-feathers debate, and mourns the ‘second extinction’ of the brontosaurus, now called *apatosaurus*. (See Xu Xing’s review: *Nature* **496**, 30; 2013.) [Emily Banham](#)