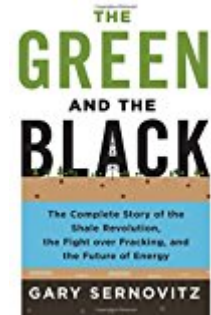


Gary Sernovitz. *The Green and the Black: The Complete Story of the Shale Revolution, the Fight over Fracking, and the Future of Energy.* New York: St. Martin's Press, 2016. 288 pp. \$27.99, cloth, ISBN 978-1-250-08066-0.



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Hydraulic fracturing, or “fracking,” is the act of drilling a well a mile or more deep into the earth, steering it horizontally through a tightly compacted layer of shale or sandstone, and then pumping thousands of gallons of water laced with small amounts of chemicals and proppants to fracture the rock and release the oil or gas trapped within. Also known as shale extraction, fracking is relatively new, profitable under balanced market conditions, and environmentally controversial.

Is it possible for a political liberal to support fracking? Absolutely, insists Gary Sernovitz, a private equity oil investor, novelist, and author of perhaps the most engaging book published so far on the subject. Although he has a vested interest in promoting shale development, Sernovitz is also a supporter of liberal and environmental causes, so much so that his Houston, Texas, friends chide him as a “Democrat-donating, yoga-practicing, skinny-pants-wearing New York City cliché” (p. 6). With public discussion over fracking in the United States intractably polarized between scaremon-

gering and hype, it is rare to find someone who attempts to straddle the divide between “the green and black,” between environmentalists and oilmen. Sernovitz is partial to the industry that pays his bills, but he portrays environmental and local opposition to fracking fairly and sympathetically. Ultimately, he makes a convincing case that the economic benefits, reduced greenhouse gas emissions, and enhanced energy security resulting from shale extraction outweigh the environmental and social costs, many of which can be ameliorated. These are outcomes that should appeal to Americans across the political spectrum.

Historians, as well, must consider these outcomes, even if they are not ready to embrace them. This means rethinking the scarcity paradigm that has governed the emerging fields of “energy humanities” and “energy history.” In characterizing energy developments since the 1970s, scholars in these fields tend to assume the inexorable exhaustion of petroleum and an imminent transition to a renewable energy future. Sernovitz demonstrates, to the contrary, how oil and

gas reserves have been greatly enlarged and how the burst of innovation unleashed by fracking has only just begun. Even though muted at the moment by unusually low prices, the shale boom will likely change our views of energy history just as it has transformed the oil and gas business.

The Green and the Black investigates shale extraction from five different perspectives: the industrial, local, financial, global, and national. Sernovitz emphasizes the uniquely American aspects of the boom, not only the favorable geology underlying large parts of the continent but also the plucky “independents” in the vanguard of innovation. He features an entertaining and now legendary cast of characters, such as George Mitchell, Harold Hamm, Mark Papa, and Aubrey McClendon, the four men on “the Mount Rushmore of the shale revolution” (p. 46). Prominent critics, like Bill McKibben, Anthony Ingraffea, and Josh Fox, also receive their due. Sernovitz takes seriously the opinions and arguments on both sides, sorting out empirical evidence from hyperbole on a range of contested issues.

Offering accessible tutorials on modern drilling and fracking, he details the process by which “tiny incremental adaptations led to a stampede of industrial creativity” (p. 14). These adaptations coalesced around three technologies that constitute the shale revolution: slick-water fracking, horizontal drilling, and multistage completions. The results have been stunning. US natural gas production has soared from fifty billion cubic feet per day in 2005 to seventy-two billion cubic feet per day in 2015, an *increase* equivalent to the combined output of Canada and Algeria, two of the top ten gas producers in the world. During the same period, US oil production rose from 5.1 to 8.7 million barrels a day, an *increase* equal to the daily production from Iraq, the world’s sixth largest producer. In response to skeptics who contend that fracking is an unsustainable bubble, Sernovitz emphasizes how immature the techniques still are, with many more incremental adaptations

to come that will undoubtedly drive costs down and efficiencies up.

Wells that were considered “unconventional” ten years ago are now “conventional.” Although the industry has largely given up on the distinction, peak oilers continue to describe fracked oil as unconventional, so they can maintain that oil drilled by traditional methods, the “easy” oil, is still in decline. Sernovitz points out, however, that most onshore wells in the United States today are fracked, including those in so-called conventional reservoirs. Fractured wells may not produce the cheapest oil in the world, but they are cheaper and easier than those drilled in ten-thousand-foot ocean depths. The history of the oil and gas industry in the United States, from its origins, has been about turning the unconventional into the conventional. Fracking is the latest chapter in that story.

What about the environmental risks and consequences, as depicted in Josh Fox’s provocative 2010 documentary, *Gasland*, which launched the anti-fracking movement? Sernovitz catalogs the multitude of errors, distortions, and fabrications in the film, but he also expresses grudging admiration for the questions it raises. He cannot deny “that the lives of the people in *Gasland* had been damaged by the industry in which I work” (p. 68). He admits “drilling and fracking are loud, messy activities that bring pollution and disruption to communities” (p. 7). Poor casing and cementing in a few early wells contaminated groundwater, causing understandable alarm. Industry secrecy about the chemicals used in fracking sowed further distrust. Underground injection of wastewater has produced unnerving earth tremors, or “induced seismicity,” in fault-prone locations, such as in central Oklahoma. For those concerned about climate change, like Sernovitz himself, fracking has extended the fossil fuel era longer than desired.

Many of the environmental problems associated with the shale revolution nevertheless have

been overblown or are fixable. Concerns about water contamination from the actual fracturing process have proven to be unfounded. The chemical registry, FracFocus, has helped dispel the myths about the chemicals used in fracking and their threat to aquifers. The methane discovered in some water wells and faucets has turned out to be unrelated to fracking or drilling. The notorious tap ignited in *Gasland*, for example, was connected to a water well that encountered several coal seams. Fracking does use a lot of water, about forty-four billion gallons per year, but this is only 0.03 percent of the total water consumed in the United States, or less than one-tenth the amount that evaporates from the Lake Mead and Lake Powell reservoirs on the Colorado River. Moreover, an increasing amount of produced and flow-back water, as much as 90 percent in places, is recycled. Debate continues over the amount of methane that leaks from natural gas wells and infrastructure. Sernovitz believes, however, that the most comprehensive data indicate that the amount is smaller than critics charge and that “corporate self-interest and new regulations will make it a smaller problem still” (p. 179). The same can be said for the induced seismicity problem.

Weighing the risks and rewards, Sernovitz concludes that the shale revolution, on balance, has been good for the American economy, its environment, and its national security. Accounting for new reserves and infrastructure, he estimates that it has created, as of 2015, almost two trillion dollars in wealth initially spread among oil and gas firms, service companies, and landowners. Not included in this figure is the money it saved consumers. In the absence of fracking, oil and natural gas prices would likely be much higher today. The US trade deficit would also be higher, and the dollar lower. The boom helped the US economy recover from the financial crisis and recession faster than other advanced economies. It also aided the fight to slow climate change. The displacement of coal by natural gas drove US carbon dioxide emissions 12 percent lower between 2007 and

2012, a reduction 18 percent greater than sixty-two other countries combined. Furthermore, without shale technology, dirtier Canadian oil sands would likely be the primary source of new North American oil. Finally, by reducing US dependence on foreign oil and placing a brake on rising global oil prices, the boom gave US foreign policymakers a freer hand in restraining Iran’s nuclear ambitions and added leverage in dealing with Middle East monarchies and Vladimir Putin’s Russia.

Sernovitz may not be able to reconcile hardcore green and black perspectives on one of the most contentious subjects in American environmental politics. But he has staked out important middle territory for those seeking ethical and practical alternatives to the slogans of “drill, baby, drill” and “leave it in the ground.” In the end, he can only try to reassure both himself and his readers “that there is no one-sentence answer to our energy challenges any more than there is a one-sentence answer to life. There is, as in everything, only compromises and imperfect solutions and best available decisions based on data, probabilities, and hope” (p. 238).

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