

## Fracking and the future of fuels FREE

Michael Marder; Tadeusz Patzek; Scott W. Tinker



*Physics Today* **70** (2), 13–14 (2017);

<https://doi.org/10.1063/PT.3.3444>



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2. A. Cavallo, *Nat. Res. Resour.* **11**(3), 187 (2002).
3. S. Nauman, NAS Workshop, *Trends in Oil Supply and Demand*, Washington, DC (2005).

**Alfred Cavallo**

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In the July article by Michael Marder, Tadeusz Patzek, and Scott Tinker, I found no reference to greenhouse gases, global warming, fugitive methane emissions, drought, pollution, ocean acidification, coral bleaching, overpopulation, sea-level rise, energy efficiency, energy conservation, nonpolluting energy sources, overfishing, and other concerns that many scientists, technical people, politicians, and citizens are dealing with. There is a growing realization today that we may suffer a catastrophe if we use all the fossil fuels we are able to extract. How do the authors view my concerns?

**Richard LaRosa**

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[Editor's note: *PHYSICS TODAY* received several letters raising the same concerns as Richard LaRosa's.]

► **Marder, Patzek, and Tinker reply:**

David Cornell points out that we did not discuss wind, solar, and nuclear energy. Our purpose was to spur debate on the involvement of the physics community in research and education into energy by focusing on recent developments in hydrocarbon extraction, not to provide a comprehensive overview of potential solutions to the global energy problem. One of us (Tinker), through the Switch Energy Project (switchenergyproject.com), has provided a broad overview of advantages and disadvantages of various energy sources.

Alfred Cavallo brings up too many points for us to respond to all of them. He asks why we omitted the strong decrease in US petroleum production in the past year. According to the US Energy Information Administration, for the first nine months of each of the past six years US petroleum production has

been 1.5, 1.7, 1.9, 2.3, 2.5, and 2.4 million barrels. There has not been a strong decrease.

Cavallo also presents the virtues of energy-efficient homes. We note that one of us owns a home that runs off solar panels, has only electric appliances, uses only electricity for heating and cooling, and exports many megawatt hours of power each year to the electric grid. He also disconnected the city water supply and uses only rainwater gathered in three large tanks. Another of us invested heavily in home energy efficiency, including additional insulation, radiant barrier, water heaters, and beyond. The third reinsulated his home, gave up his parking permit, and has biked to work every day for more than 15 years. Such conservation measures are needed, but they cannot by themselves solve the problems we raised.

Richard LaRosa asks for our thoughts on the environmental dangers of using fossil fuels. His concerns are valid, and we share them. Yet to stop using fossil fuels precipitously and without a plan

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for replacement would undermine economies, curtail environmental investment, and produce a catastrophe more sudden and more certain than those he mentions. All sources of energy, at scale, have considerable environmental challenges.

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## Book on Sakharov raises issues

We are disappointed that PHYSICS TODAY would publish an alleged book review (July 2016, page 61) by Alexei Kojevnikov of *Andrei Sakharov: The Conscience of Humanity*, which was edited by us and includes papers presented at a conference in December 2014. Kojevnikov's piece was not a review of the book at all, but an exposition of his own flawed personal interpretation of Sakharov's life and views. Worse, the reviewer slurs the book's essays by maintaining, falsely, that they use Sakharov's views on human rights to justify recent wars. Kojevnikov misrepresents both the essays and Sakharov's own ideas and the ways in which they continually evolved. He did not provide a single citation from the essays to support his description. The editors of PHYSICS TODAY were remiss in trusting—but not verifying—his outrageous claims.

An accurate statement of Sakharov's views can be gained by reading his own writing. One example is his "Open Letter to Anatoly Aleksandrov, President of the USSR Academy of Sciences," which reads in part,

I am convinced that the prevention of thermonuclear war is our most important problem and must take absolute priority over all other issues. The resolution of that problem involves politics, economics, the creation of interna-

tional trust among open societies, the unconditional observance of fundamental civil and political rights, and disarmament.

Disarmament, especially nuclear disarmament, is mankind's most important task.<sup>1</sup>

### Reference

1. A. Babyonyshev, ed., *On Sakharov*, G. Daniels, trans., Vintage Books (1982), p. 213.

**Sidney D. Drell**

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[Editor's note: With sadness we inform our readers that Sidney Drell died on 21 December 2016.]



The July 2016 issue of PHYSICS TODAY contains Alexei Kojevnikov's review of the book *Andrei Sakharov: The Conscience of Humanity*, edited by Sidney Drell and George Shultz. The subject of the book and the editors are familiar to readers of PHYSICS TODAY, and therefore the review attracts attention. However, the reaction it evokes is mainly bewildering and disappointment. Any review will contain its author's opinion, which can be positive or negative. However, the reader anticipates that a review will offer at least some information about the book's contents. In that respect, the "review" by Kojevnikov is anything but. The only thing that one finds out about the actual book is that it contains contributions from 11 authors.

We are not exaggerating. Kojevnikov's "review" is not a review at all. The entirety of the remaining text is filled by the reviewer's expounding on his own rather dubious concept of Sakharov's value system, and it ends with the criticism that the book does not reflect Kojevnikov's concept. His treatment of Sakharov's political and moral philosophy is highly questionable and, in our view, distorts Sakharov's position. It certainly fails to reflect the degree to which Sakharov's worldview continuously evolved.

We also believe Kojevnikov is wrong in trying to portray the morality and actions of the USSR during the Cold War as better, or at least not worse, than the

morality and actions of its Western adversaries.

Apart from the fact that Kojevnikov's writing does not belong in the Books section since it provides literally zero information about the actual book, we find it unfortunate and regrettable that PHYSICS TODAY has furnished publication space to such poor treatment of the philosophy espoused by one of the most respected and admired scientists and humanists of the 20th century.

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► **Kojevnikov replies:** My understandably disappointed respondents have not addressed the main criticism formulated in my review, namely that many contributors to *Andrei Sakharov: The Conscience of Humanity* cited Sakharov's moral authority only to advance ideas and agendas that fundamentally contradict his humanitarian values. Here are some examples from the book: Retired general Jim Mattis invoked Sakharov while extolling the morality of the US military's continuing engagement in the Middle East. Retired admiral James Ellis Jr, who commanded the 1999 NATO attack on Yugoslavia, used human rights as a justification for that and subsequent wars. He also suggested that a preemptive strike can "be viewed as an ethical imperative" against possible nuclear proliferation. Theranos CEO Elizabeth Holmes referred to Sakharov and human rights as the basis of her own work, which the media has since exposed as fraudulent corruption of science by commercialization.

In contrast, Sakharov stood up against the high-level scientific frauds, hawkish politicians, and trigger-happy generals of his time. He resolutely opposed warmongering and preventive strikes, championed human rights as the basis for peace and reconciliation of ideological tensions but not for war, and criticized as "flagrant crimes against humanity" the superpowers' military interventions in other countries, such as Vietnam and Afghanistan.

In today's world, the misuse of