world without nuclear weapons. "Demilitarization of fissile materials," as urged by Alexander DeVolpi, would be one of the important measures requiring cooperative enforcement.

As to Jonathan Katz's concerns about potential dangers in a world without nuclear weapons, I am also gravely concerned that with the spread of nuclear know-how, materials, and weapons, we face a growing danger of their falling into the hands of rogue states or terrorist organizations and enabling mass murder on an unprecedented scale. In today's world, relying on nuclear weapons for deterrence is becoming increasingly hazardous and decreasingly effective. Achieving a world of zero nuclear weapons cannot mean returning to the world of pre-1945. Knowledge of nuclear weapons will still exist, as will the capability to reconstitute them.

Getting to zero will take hard work on policy and technical issues. It will require an international consensus on strict compliance-monitoring procedures that are considerably more intrusive than achieved so far. A framework for increasing mutual trust and transparency was established by the comprehensive data exchanges and on-site verification measures negotiated in the New START treaty, and I am optimistic that detection of reconstitution efforts will be possible, as is essential by the time zero is achieved.

Those who see hope for a safer world without nuclear weapons need to get to work on eliminating them. My article is a call to action to meet that goal.

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Cold fusion and reproducibility

In response to Bernard J. Feldman's review (PHYSICS TODAY, July 2010, page 50) of David Goodstein's book, *On Fact and Fraud: Cautionary Tales from the Front Lines of Science*, I offer a note on reproducibility and cold fusion. High-temperature superconductors were initially very difficult to reproduce, and many obscure results were noted but not regularly reproduced. If the researchers had sat on the results until they were totally reproducible, the field would have taken years longer to develop. The cold-fusion results suffered from actually being reproducible—so long as the experiment was flawed in the same way as the original. I think Feldman has way overstated the importance of reproducibility to first publishing. Besides, as much as it felt like we had been foolishly led astray in the end, wasn't it fun to examine the possibility of cold fusion and those very odd and interesting electrochemical effects?

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Bernard Feldman is to be commended for his thoughtful review of David Goodstein's new book. However, Feldman has seriously misrepresented the scientific facts about the contentious topic of cold fusion. In particular, he suggests that Goodstein's "sympathetic view toward scientists working in cold fusion" is misguided because cold fusion is "a prime example of a field characterized by unverified results." Although the vast majority of the early attempts to reproduce the associated effects failed, not only were the effects reproduced, but with time, the reasons for the difficulties that were encountered have become well understood.

An important source of confusion is that Martin Fleischmann and Stanley Pons did not discover a colder version of conventional fusion. They discovered something else: a new form of aneutronic nuclear fusion, involving a two-deuteron reaction in which helium-4 is created without the emission of high-energy particles or gamma rays.[1–3] It is not altogether surprising that Feldman is unaware of that. Effectively, mainstream scientific journals have maintained an embargo against cold-fusion papers that report positive findings. That failure has, in fact, become a topic in the mainstream ethics-in-science literature.[4] Twenty-one years after cold fusion was first announced, a more "normal" dialog about the subject[5] is badly needed.

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