letters

Of Martians, aerodynamics, and fathering the bomb

Barton Bernstein's review (PHYSICS TODAY, May 2007, page 63) of *The Martians of Science: Five Physicists Who Changed the Twentieth Century* by István Hargittai (Oxford U. Press, 2006) pointedly evaluates Michael Gorn's 1992 biography of aeronauticist Theodore von Kármán as brief and uncritical. (And I would add, replete with names, many of which add little benefit.) But Gorn, like others thus far, seems to have overlooked John von Neumann's contribution to aerodynamics. Early attempts to deal numerically with aerodynamic flows that develop shocks ground to a halt in rezoning the shock too finely for computation to proceed. With Robert Richtmyer, von Neumann demonstrated an algorithm for introducing an "artificial viscosity" that sets a lower bound to shock thickness without violating any physics.[1] Computational physicists are indebted to these two scientists for much of present-day understanding of such diverse problems as supersonic aerodynamics and supernova explosions.

Reference

1. R. D. Richtmyer, J. von Neumann, *J. Appl. Phys.* **21**, 232 (1950).

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In the last sentence of Barton Bernstein's book review, he referred to Edward Teller as the father of the hydrogen bomb.

Teller was the speaker at a small meeting I attended in Berkeley, California, in the mid-1970s. After his talk, I asked a question and addressed him as the father of the H-bomb. Teller immediately interrupted, saying, "I am not the father of the H-bomb. I have never received a Father's Day card from an H-bomb."

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Bernstein replies: It's good to learn more about the brilliant John von Neumann. He merits far more biographical work on his science, politics, and life, including his postwar political differences with J. Robert Oppenheimer, even though he supported Oppenheimer during the 1954 security hearing.

Edward Teller did not like to be called the "father" of the H-bomb. But he did want to be known, apart from Stanislaw Ulam, as the scientist who had devised the crucial breakthrough for the H-bomb.

We should ponder why Teller so energetically refused to be called the father of the H-bomb, and so jealously and unkindly sought to deny Ulam's contribution. In his denial, Teller could seem modest, accept the acknowledgment of scientific "fatherhood," playfully quibble about the term, and still avoid giving Ulam credit. My interpretation is speculative, of course, but it may make sense of an otherwise puzzling matter.

Teller's behavior on this subject should remind us of Oppenheimer, who often claimed not to want to be known as the father of the A-bomb. But after Hiroshima, Oppenheimer was also frequently proud of his major role in the A-bomb's creation.

Teller and Oppenheimer, two men who became fierce enemies, shared much in common, though their separate, virtually warring camps of admirers seldom acknowledge that. Von Neumann, whether or not he clearly saw the similarities, was flexible enough that he could maintain alliances with both men.

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A different view on US–India nuclear pact

The item "US–India Nuclear Pact Gets Mixed Reaction" (PHYSICS TODAY, February 2007, page 24) makes for amusing reading. I am dismayed at the one-sided and unbalanced coverage. I strongly disagree with the contention of Matthew Bunn from the Belfer Center for Science and International Affairs at Harvard University that the US stands to gain "between not very much and nothing" from this pact. That India has opened 14 of its civilian nuclear reactors to International Atomic Energy Agency oversight is surely a step in the right direction; before the deal the reactors were all off bounds. Mohamed El Baradei, the IAEA's director general, welcomed the pact enthusiastically. Surely, if the leader of the United Nations body whose mission is to prevent global nuclear proliferation endorses the agreement, it can't really be the death knell of nonproliferation. ElBaradei speaks with much credibility, which the writer of the article blissfully ignored, instead giving free rein to obscure think tankers.

Michael Krepon's good guys–bad guys argument essentially echoes the chorus of the nonproliferation pundits who rule the numerous moribund think tanks of Washington, DC, and the Democratic party. Where is the comparison between India, a responsible nonproliferating democracy whose nuclear weapons are under civilian (not military) oversight, and Pakistan, Iran, and North Korea? Having nuclear weapons and yet not proliferating weapons or the associated technology is not "bad behavior" on the part of India. Unfortunately, "bad guys" such as Pakistan—thanks to nuclear scientist Abdul Q. Khan—have exported nuclear weapons development technology and rocket design to North Korea and possibly Iran. It's a no-brainer, then, that the Bush administration has categorically refused a similar nuclear deal with Pakistan.

Most important, the article utterly ignores the geostrategic and geopolitical ground realities in both South Asia and East Asia. India's strategic attack-preparedness planning is concerned with China, not Pakistan. Current In-

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