Review: Loving the Bomb
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The book has had the fortune (good or bad remains to be seen) to be published in 2004. Joes has written about these subjects for years, and it is likely that much of the book was drafted before the current campaign in Iraq began. Nevertheless, Joes includes a two-page Epilogue on Iraq, giving the book a topicality that otherwise would have remained entirely coincidental. Perhaps Joes will someday address Iraq at length, and revisit all his recommendations—the need for legitimate elections, civilian security, peace and justice, rectitude, amnesty, the usefulness of blockhouse lines, the control of outside support, the importance of intelligence, the role of elites, and separating leaders from their followers.

Resisting Rebellion's value goes well beyond understanding or ameliorating any present conflict. Joes has ambitiously tried to chart a course of conduct for the United States into an indefinite future by presenting the reader with a rich tapestry of historic images evoking past experience. Joes accepts without sentimentality or regret our current position in the world, and might well have said, *Spartam nactus es, hanc exorna.*

–Corey Abel

LOVING THE BOMB

Peter Goodchild: *Edward Teller: The Real Dr. Strangelove.* (Cambridge, MA: Harvard University Press, 2004. Pp. xxv, 469. $29.95.)

Peter Goodchild's *Edward Teller: The Real Dr. Strangelove* is an engaging book that takes the reader to the junction of politics and science via the life of Edward Teller. In a 469-page book, we are efficiently led through Teller's childhood, such that by page 47, it is 1939, Teller is 31, and he is concerned about keeping research on fission secret so it does not get used by Nazi Germany. Putting world politics above science politics, he successfully fought against the scientific norm of publishing one's discoveries. By this time, Teller has studied under or worked with many of the greats in physics: Leo Szilard, Werner Heisenberg, Niels Bohr, Hans Bethe, Enrico Fermi, and Robert Oppenheimer—among several others. These are probably familiar names to the readers of this review, maybe because work on the atomic bomb bound many of them to work that was itself of major historic importance. Yet it is hard to read along and not think: is there such a great cohort of physicists today? Why not?

We also begin to get a sense of Teller's personality: helpful to colleagues, gentle, very hard working, determined, egotistic, and angry when frustrated. As World War II progresses, and the Cold War begins, we learn in often great detail about Teller's four main contributions and/or controversies. First, Teller was the driving force in building the hydrogen bomb—many times

more powerful than the atomic bombs that destroyed Hiroshima and Nagasaki. Unlike many colleagues after the bombing of Japan, he immediately turned his mind to the Russians, and the need to continue improving atomic bomb technologies. Perhaps the most important scientist on the project, Teller was devoted to scientific progress and deterrence at any price, and pursued the H-bomb project without second thoughts.

Second, Teller testified in 1954 before the U.S. Atomic Energy Commission that Oppenheimer should not be trusted with nuclear secrets. This helped bring Oppenheimer's career to an end, and enraged many fellow scientists who defended Oppenheimer and thought he fell victim to a McCarthy-esque witch hunt. Indeed, Oppenheimer is so well covered that this occasionally detracts from the focus of the book. However, as the author of *J. Robert Oppenheimer: Shatterer of Worlds* (Houghton Mifflin, 1980), Goodchild has a lot to say.

Third, Teller's zeal for nuclear weapons was found in his opposition to the Limited Nuclear Test-Ban Treaty of 1963 that banned testing in the atmosphere, outer space, and under water. Teller was not alone in opposing the ban. However, after 500 atmospheric tests totaling 430 megatons of explosive power (Data from the Bulletin of the Atomic Scientists website at <<http://www.thebulletin.org/article_nn.php?art_ofn=mj96norris>>), increasing public outcry about atmospheric tests, and increasing evidence about the harm of fallout, Teller's strident support for continued testing is indicative of his unwavering priorities. Teller's enthusiasm for nuclear bombs extended into "Project Plowshare" in which bombs would be used for digging canals and making diamonds. Similarly, Teller came to the defense of the nuclear industry after the Three Mile Island crisis.

Finally, Teller was instrumental in persuading President Reagan (and his advisors) to bolster U.S. efforts to pursue missile defense. This culminated in Reagan's March 23, 1983 speech announcing the Strategic Defense Initiative (SDI), or "star wars." It may be something no one can answer, but I still want to know more about why Reagan made his surprise SDI speech. Were there no more people to interview? Documents to obtain under the Freedom of Information Act? Maybe it is beyond the scope of a biography, but tying Teller even more directly to the decision would have been a coup for Goodchild who relied mostly on newspaper and other open sources in this section. That said, political scientists and historians will find this a useful book when delving into the history of the atomic bomb, the Cold War arms race, and the origins of the Strategic Defense Initiative. Teller went on to be a proponent of several missile defense technologies, especially the improbable x-ray laser which would use a nuclear bomb to power multiple x-ray lasers, precisely aimed to knock out numerous warheads or missiles at once.

This book has several strengths. First, it enjoys the science Teller worked on (if not the atom weapons). Those with an interest will learn about bomb design and other technical issues Teller confronted. There are

even three short appendices on the history of quantum physics, the history of fission, and scientific formulas for atomic reactions. This is not a psycho-social biography. The focus is on Teller's science, and especially his influence on politics. Caveat emptor though: another review of this book (Jeremy Bernstein, in *The Nation*) says that "Goodchild's scientific misunderstandings are too numerous to mention them all." Second, this book is fairly objective, even though Goodchild admits it is hard to be objective about Teller. Goodchild is rightfully skeptical about Teller's recountings of events, which increasingly veered into the self-serving. However, there is no sense that Goodchild was out to do a hatchet-job. Third, the reporting is fairly thorough and well-documented. Goodchild interviewed forty friends, family, and colleagues of Teller, and Teller himself over the course of four afternoons. The author also exploited a number of archival libraries throughout the United States and in London.

In the end, was Edward Teller the real Dr. Strangelove? It depends on what one means by Dr. Strangelove. There are four meanings of Dr. Strangelove that may apply: the overall film, and three of its characters: Dr. Strangelove, General Buck Turgidson, and General Jack D. Ripper. In thinking about the film, its general theme is to underscore, in an absurdly comedic rendering, the seriously absurd nuclear standoff between the Soviet Union and the United States. In 1964 when the film was released, the United States had almost 31,000 nuclear weapons, while the Soviets had just over 5,000. Reality closely mimicked the doomsday device in the film (stockpiles peaked in 1986, with U.S. holdings of 23,000 and the Soviets at 41,000 <<http://www.thebulletin.org/article_nn.php?art_ofn=nd02norris>>). When most people think of the film, this is probably the first overall reaction: Kubrick has used comedy to help make us aware that we really do face a doomsday device. However, there is little comedy in Edward Teller from what Goodchild recounts. So if Teller is not Dr. Strangelove the film, is he Dr. Strangelove the character?

Dr. Strangelove, the character, is from the "Bland" (Rand) corporation and is the quintessential early Cold War civilian analyst. Aside from his comedic and perhaps suggestive battle to control his Nazi past, Strangelove is a rational, and utterly unemotional calculator. That rationalism is both the solution to and cause of the absurd cold war. If everyone were rational, nuclear war would not happen. Yet it is through rational small steps that the world got up to 65,000 nuclear weapons (we are now at about 20,000). That said, it was Strangelove who most thoroughly understood the tragedy. Dr. Strangelove rejected the doomsday device. Dr. Strangelove figured out how to save a nucleus of humanity. In contrast, Teller was so enthusiastic about nuclear weapons that he is no Dr. Strangelove. From concocting improbable "civilian" reasons to pursue new nuclear weapons designs to advocating the X-ray laser, Teller was a nuclear enthusiast, much more than he was a strategist.

Teller was also consumed with hatred for the Soviet Union. Here, he deserves some credit. As a member of the card-carrying arms-control community in the early 1980s when President Reagan launched the SDI, I joined my colleagues in dismay and scoffing when President Reagan called the Soviet Union an Evil Empire. But it was. The familiar facts are that the Soviets killed 20 million of their own citizens, and ran a horrible authoritarian government over its 70 years. Now we know they raped 2 million East German women during their occupation. But the most evil thing of all is that they employed 60,000 people to develop biological weapons after signing the Biological Weapons Convention. I can imagine nothing worse on earth than a massive offensive biological weapons program. Many people think Teller (and Reagan) were paranoid, and one can differ over how to have dealt with the Soviets, but the Soviet Union was evil (while filled with mostly normal, life-loving, constructive people). Teller was also more astute than many of his comrades in keeping secrets from the Nazis.

Teller is really the next two characters: the militaristic Turgidson and paranoid Ripper. Dr. Strangelove knew a doomsday device was crazy; Turgidson wanted a U.S. doomsday device: "Gee, I wish we had one of them doomsday machines." In his enthusiasm for things nuclear, one can almost imagine Teller wanting such a thing despite its ... redundancy. To a lesser extent, we can see some Ripper in Teller. And even though the Soviets were evil, and far worse than an often expedient or worse U.S., Teller did in fact pursue policies such as missile defense and opposition to the test ban which were arguably counterproductive during the Cold War.

The bottom line is that this is a fine book with a misleading title. Comparing Teller to the rational, calculating character of Dr. Strangelove is an insult to Dr. Strangelove.

–Dan Lindley