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BOOK REVIEW

Bombs We Can Stop

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The Atomic Bazaar: The Rise of the Nuclear Poor. William Langewiesche. x + 179 pp. Farrar, Straus and Giroux, 2007. \$22.

William Langewiesche has the reputation of being one of America's best investigative reporters. Unfortunately, he has written a very bad book on nuclear proliferation. Although *The Atomic Bazaar* does include some useful reporting, it is marred by substantive errors and misjudgments. There are no footnotes, and almost all the quoted sources are anonymous, making it difficult for the reader to judge the credibility of Langewiesche's conclusions and of his interlocutors' statements. Worse, if policy makers were to accept his major theme—that the spread of nuclear weapons is inevitable and there is little hope in trying to stop it—they would not take the actions needed to make the world a safer place.

The Atomic Bazaar is a modest elaboration on three articles by Langewiesche that appeared this past winter in *The Atlantic Monthly*. If you have read the articles—which discuss nuclear terrorism and outline A. Q. Khan's role in building Pakistan's nuclear bomb and in leading a global black-market network that supplied dangerous nuclear technology to Iran, Libya and North Korea—you will not gain a great deal from the book.

Full disclosure: In the book, Langewiesche says that my group at Harvard may have "ossified" and may have "littered the scene with obsolete or irrelevant concerns," and he insinuates that our real motivation for raising such concerns has been to advance our careers because the end of the Cold War left us otherwise unneeded. Readers can be assured, however, that, having first read the *Atlantic Monthly* articles (which do not contain these comments), I had this review largely mapped out before coming upon that particular passage.

Langewiesche begins with a suitably horrifying account of the destruction of Hiroshima, followed by a brief introduction to his proliferation-is-inevitable theme. After that, the first major chapter focuses on the dangers of nuclear theft and terrorism. Here the errors substantially undermine the arguments. It is not true, for example, that all "nuclear weapons in Russia and other advanced states are protected by electronic locks that would defeat almost any attempt to trigger an explosion." Many of the older Russian tactical nuclear weapons are believed not to be equipped with such locks; the same goes for most U.S. strategic weapons, although they have safety features that would make it a challenge to set off a stolen weapon. (A summary of unclassified accounts on this subject can be found in "Terrorist Nuclear Weapon Construction: How Difficult?," an article I coauthored with Anthony Wier, which appeared in the September 2006 issue of *Annals of the American Academy of Political and Social Science*.)

Nor is it true that any level of enrichment less than a 60-percent concentration of the isotope uranium-235 "would simply be no use at all" in a nuclear bomb; although the amount of material needed increases with decreasing enrichment, the curve is remarkably flat even at 60 percent (a bomb made from uranium that has a 50-percent concentration of U-235 would require only one-third more material than if the concentration were 60 percent).

Similarly, Langewiesche's statement that, with the exception of one attempted theft in Chelyabinsk in 1998, the incidents of nuclear theft and smuggling have been "minor affairs of people caught filching or hawking scraps" is nothing short of bizarre. To the contrary, there are multiple documented cases of thefts of kilogram quantities of highly enriched uranium with an 80 percent or greater concentration of U-235, including the following: 1.5 kilograms stolen from the Luch Production Association in Podolsk, near Moscow, in 1992; 2.97 kilograms seized near St. Petersburg in 1994; and 2.73 kilograms seized in Prague in 1994. (More recent seizures have been smaller but are still worrisome, particularly as the smugglers claimed to have access to kilogram quantities of the same material.)

This is just a sampling of the many inaccuracies I noted on reading the book. Then there are the misjudgments. Although it would be significantly more difficult for terrorists to make a bomb from plutonium than from highly enriched uranium, a range of government studies contradict Langewiesche's claim that for a terrorist bomb effort, "plutonium is out." (See, for example, U.S. Congress, Office of Technology Assessment, Nuclear Proliferation and Safeguards [OTA, 1977], which is available online at <http://www.wwww.princeton.edu/ota/disk3/1977/7705/7705.PDF>.) Similarly, Langewiesche errs in arguing that "a rational bomb-maker would abandon any idea" of a commando-style outsider attack to steal nuclear material in Russia, because the thieves would be unable to get enough of a head start to escape the large response that would ensue; he fails to mention that Chechen terrorists have repeatedly succeeded in fading into the forest uncaught after major attacks.

On these points Langewiesche manages to get the specifics wrong but the conclusion roughly right, arguing that a terrorist trying to get a nuclear bomb would have to admit that the odds "are stacked against him" but "are not impossible." And Langewiesche concludes correctly that the most effective means of lowering the risk is to secure stockpiles of nuclear material at their sources. On the road to that conclusion, he offers interesting accounts of several topics: U.S.-sponsored nuclear detectors in Russia that go unused because people carrying radioactive fish they have caught in a nearby contaminated lake keep setting the detectors off; Mafia-style mansions that suddenly spring up in one of Russia's 10 closed nuclear cities; and the folly of spending millions installing readily observable detectors at fixed border points that smugglers can easily go around. Moreover, he makes a good case that U.S. agents should be working to convince the quasi-feudal chieftains who control some of the world's most dangerous borders to let us know about any attempted transports of nuclear material.

Langewiesche then moves on to two chapters relating the story of A. Q. Khan, the metallurgist who is often called the father of the Pakistani bomb. The first chapter recounts how Khan, when employed at a centrifuge-design firm in the Netherlands in the 1970s, stole the designs and left for Pakistan, where he drew on a network of contacts in Europe to procure parts for the centrifuges that enriched the uranium for Pakistan's nuclear weapons. Although this story has been told before, Langewiesche provides some interesting local color, interviewing a friend and coworker of Khan's from his European days, a man who finally realized Khan was spying but was unable to convince anyone until it was too late. Langewiesche also describes how Khan flaunted his power by building a house in Pakistan on a lakeshore where zoning laws forbade construction.

The second of the Khan chapters tells how Khan turned the technology-import network he had built for Pakistan's bomb into an export network, marketing uranium-enrichment centrifuges to some of the world's most unsavory regimes. These centrifuges are the technology of choice for the determined nuclear cheater, because they can be used to make bomb material in facilities that are small and hard to detect. Rather than providing much new reporting, Langewiesche tells this tale by recounting the efforts of another reporter, Mark Hibbs of the trade newsletters *Nucleonics Week* and *NuclearFuel*, who for decades has been doggedly breaking stories on the spread of centrifuges and other sensitive technologies.

It is in meditating on the implications of Khan's black-market network that Langewiesche goes wildly off the rails. His oft-repeated conclusion is that efforts to stop the spread of nuclear weapons are "simply not going to work," that "no amount of maneuvering will keep determined nations from developing nuclear

arsenals," and that therefore, "in the long run, globally," unconstrained nuclear proliferation is inevitable.

A certain amount of pessimism is not surprising, given the news of recent years: North Korea became the first state ever to withdraw from the Nuclear Nonproliferation Treaty (NPT) and then test a nuclear bomb; Iran is apparently seeking to get to the edge of a nuclear-weapons capability while staying in the NPT; global terrorists are seeking stolen nuclear material and nuclear expertise; and the Khan network revelations are fresh in everyone's mind. Langewiesche is correct to say that nations that are determined to build nuclear weapons will eventually succeed if they are willing to devote substantial technical and financial resources to the effort and remain determined over time.

But he ignores an even more important truth—that efforts to stop nuclear weapons programs have succeeded more often than they have failed. There are many more countries in the world that have started nuclear weapons programs and then verifiably abandoned them than there are states with nuclear weapons. (There is an extensive literature on why states decide *not* to build nuclear weapons; Langewiesche ignores both these states and this literature. See, for example, Mitchell B. Reiss, *Bridled Ambition: Why Countries Constrain Their Nuclear Capabilities* [Woodrow Wilson Center Press/Johns Hopkins University Press, 1995].) Twenty years ago, nine states had nuclear weapons; today, that number has not changed. (South Africa removed itself from the list, becoming the first case of real nuclear disarmament, and only North Korea joined the list.) That is a remarkable record of success in stemming the spread of nuclear weapons—particularly since that 20-year interval included the chaos following the breakup of the Soviet Union, Iraq's massive secret nuclear-weapons program before the 1991 Gulf war, Iran's secret nuclear efforts, Libya's attempt to get nuclear weapons, and the entire period of the Khan network's activities.

Beyond the nine states with nuclear weapons, all other countries have agreed by treaty not to have such weapons and to accept international inspections of their nuclear activities. Never before in human history has the most powerful weapon available to our species been so widely forsworn. The vast majority of the world's states realize, as Langewiesche does not, that their security is better served by not having nuclear weapons—particularly if their neighbors can be convinced to forgo them as well.

If we ignore Langewiesche's admonitions that our "maneuvering" will not stop proliferation, and we take effective action in the next few years, there is at least a chance that 20 years from now the number of states with nuclear weapons will still not have increased—or may even have declined. That should be the goal. (For a reasonable first cut at an agenda of steps to be taken, see *Universal Compliance: A Strategy for Nuclear Security*, by George Perkovich and others [Carnegie Endowment for International Peace, 2005], which is available online at <http://www.carnegieendowment.org/files/uC2.FINAL3.pdf>.) It is time to roll up our sleeves and get down to the critical work of beefing up security for nuclear stockpiles, strengthening inspections, toughening export controls and, most important, reducing the demand for nuclear weapons—in part by reducing the number, readiness and importance of our own.

You can find this online at <http://www.americanscientist.org/bookshelf/pub/bombs-we-can-stop>

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