

CHAPTER 1

Nuclear Terrorism, the Last 40 Years: What Has and Has Not Happened

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In late 1974, I was invited to present a paper on nuclear terrorism at a meeting on nuclear proliferation in Los Alamos, New Mexico. Of course, I was terrified by the prospect. Many of the people attending this meeting were nuclear physicists and engineers—individuals who had designed and actually built nuclear weapons. My academic degrees are in fine arts, history, and the humanities—classical stuff. My colleagues teased me, saying, “Brian, you wouldn’t know the difference between a diagram for a hydrogen bomb and a Coca-Cola vending machine.” I shot back that “I would—one takes quarters.”

The more important question is why the organizers of this meeting decided to include an assessment of nuclear terrorism. To answer that, it is necessary to recall what was going on in the late 1960s and early 1970s. Nuclear proliferation was clearly a concern. During the 1960s, China and France had become nuclear weapons states. Israel was presumed to have nuclear weapons. In 1974, India detonated what it described as a peaceful nuclear explosion. Analysts worried that if nuclear proliferation was not slowed, the world could see as many as 20 or 30 new nuclear weapons states by the end of the century.

Nuclear power also was expanding rapidly at the time. That raised the likelihood of increased reprocessing and a worldwide traffic in nuclear material. The spread of nuclear power prompted a significant anti-nuclear movement that reflected a variety of concerns. Some opposed the planned location of specific nuclear power plants. Others feared that reliance on nuclear energy would facilitate proliferation or require extraordinary security measures that would imperil democracy itself. One of the leaders of the movement was a former RAND colleague of mine, Dan Ellsberg, who previously had been deeply involved in the anti-Vietnam War movement.

Political violence also seemed to be on the rise. The war in Vietnam continued. India had fought one war with China in 1962 and two wars with Pakistan in 1965 and 1971. Israel had fought wars with its Arab adversaries in 1967 and 1973. China was wracked by the Cultural Revolution. In 1975, civil wars and insurgencies were ongoing in 30 countries in Latin America, Africa, and Asia. Terrorist campaigns were underway in Germany, Italy, Spain, France, and the United Kingdom. The United States itself faced growing political violence with 50 to 60 terrorist bombings a year. It was against this background that the Los Alamos conference met to discuss issues of proliferation.

The prospect of increased traffic in nuclear material had already raised concerns about nuclear safeguards. In 1967, an Advisory Panel on Safeguarding Special Nuclear Material, also known as the “Lumb Panel” (after its chairman Dr. Ralph Lumb), concluded that “safeguards programs should also be designed in recognition of the problem of terrorist or criminal groups clandestinely acquiring nuclear weapons or materials useful therein. Although such illegal groups are more likely to steal finished components of weapons than divert materials from peaceful programs, criminal organizations may be attracted to divert such materials if a black market develops, as it is likely to.”¹

That fascinating conclusion preceded the rise of terrorism in the late 1960s. When I was writing my paper in 1974, I called Dr. Lumb and asked him what terrorists or criminal groups did the panel have in mind? He responded that one of the panel’s members had experience involving commodity diversions. If the world was moving toward the widespread large-scale production of plutonium, as seemed likely in the mid-1960s, why would nuclear material not be vulnerable to the same kind of diversions? But who were the terrorist groups? I asked. The panel had no particular terrorists in mind. “We just took a shot,” he said. Keep that in mind, because it is important—nuclear theft by terrorists was a hypothesis.

Theodore Taylor, who worked at Los Alamos National Laboratories, also worried about the spread of nuclear power in the 1960s. He feared that nuclear reactors could become targets of sabotage or wartime bombing, and that the rapid spread of nuclear technology would undermine safeguards. Taylor was a talented nuclear weapons designer who had designed the largest yield fission bomb ever exploded and the smallest fission bomb ever made. He was especially fascinated by very simple nuclear bombs—primitive devices that might be fabricated without the need for vast Manhattan projects.

These were technical design exercises, but in 1973, John McPhee profiled Taylor in a series of articles published in *The New Yorker*.² To lift his musings out of the technical realm, Taylor offered a narrative that the public could readily understand. With a small improvised nuclear device with a yield of a half-kiloton to a kiloton, strategically placed, terrorists could knock over the newly completed tallest building in New York—the World Trade Center.

Taylor did not specify which terrorists, how they might obtain fissile material, whether they could actually build such a device, or what their motives might be. A hypothetical scenario was superimposed on a theoretical design—terrorists were added simply as a dramatic device, although no one doubted that terrorists would, of course, do such a thing.

Why then didn’t terrorists do some of the things we knew they had the capability to do? I asked in my Los Alamos briefing. There had to be some kind of self-imposed constraints—fear of alienating their constituents, provoking public backlash, lack of strategic purpose, even moral considerations. This led to my observation that “Terrorists want a lot of people watching, not a lot of people dead,” which summarized a more complex chain of thought.³

That was more than four decades ago. In those four decades, nuclear proliferation has not been as bad as we thought it might be. Three new nuclear states have emerged since 1975—South Africa, Pakistan, and North Korea. If one accepts the pretension that India’s “peaceful nuclear explosion” in 1974 had nothing

1. Ralph F. Lumb, et al., *Report of the Advisory Panel on Safeguarding Special Nuclear Materials*, Washington, DC: Atomic Energy Commission, 1967.

2. John McPhee, “The Curve of Binding Energy,” *The New Yorker*, December 3, 1973, available at <http://www.newyorker.com/magazine/1973/12/03/i-the-curve-of-binding-energy>.

3. Brian M. Jenkins, *Will Terrorists go Nuclear?*, RAND Paper Series, no. P-5541, Santa Monica, Calif.: RAND, 1975, p. 5.

to do with nuclear weapons, which the country now has, it is the fourth country. South Africa dismantled its nuclear weapons in 1989.

Suspected nuclear weapons programs have been thwarted or put on hold in several countries, including Iraq, Syria, and Iran. We did not come close to the several dozen nuclear weapons states that people worried about.

The Soviet Union collapsed, but held onto its nuclear weapons. There were no thefts or attempted thefts of nuclear weapons that we know about, and no major thefts, or attempted thefts of significant quantities of fissile material—again that we know about.

Insofar as we know, there is no nuclear black market although there have been numerous attempts to sell tiny quantities of fissile material, which often turns out to be scams involving low-enriched or depleted uranium. Buyers often turn out to be undercover police agents. There were potential terrorist buyers.

During the four decades, we know that several terrorist groups contemplated—and *contemplated* is the operative term here—acquiring nuclear weapons. The dark nuclear war dreams of Shoko Asahara drove his followers in Aum Shinrikyo, a strange Japanese cult, toward the acquisition of weapons of mass destruction. One of the group's officials wondered how much it might cost to buy a nuclear weapon in Russia and the group acquired a license to mine uranium in Australia, but that was as far as it got. Aum's scientists instead pursued easier to manufacture chemical and biological weapons, and in 1995, dispersed a crude version of the nerve gas Sarin in Tokyo's subways.

Al Qaeda made several attempts to acquire fissile material, but fell victim to scams. The group's leaders also approached Pakistani scientists for advice in making a nuclear device, but reportedly were told they could not. Failure did not prevent Al Qaeda's leaders from claiming that they could easily acquire—or had already acquired—nuclear weapons from Russia. This was propaganda calculated to excite followers and alarm foes, and it worked. Without an ounce of fissile material, Al Qaeda was widely perceived as a virtual nuclear terrorist power.

Russia's Chechen rebels probably had the best shot at acquiring nuclear weapons or material. They were closest to the source of so-called "loose nukes" that everyone worried about. Some of them had served in the Soviet army; some had even served in the Soviet Union's strategic forces—they knew where nuclear weapons were stored and how they were guarded. The Chechens had the capability to carry out large-scale commando-style operations, some involving scores of attackers. And they had motive. The Chechens ultimately did construct a "dirty bomb" containing a small quantity of radioactive material, which they buried in a park in Moscow. However, in their minds, the purpose of the operation was to create terror, and instead of detonating the device, they informed the news media of its location.

More recently, attention has shifted to whether ISIS (the Islamic State of Iraq and Syria) is acquiring nuclear weapons. According to media reports, ISIS militants have stolen radioactive material from university research facilities in cities they control, which they could disperse in a dirty bomb. A British militant serving with ISIS warned on social media that such a device could wreak havoc in London.

Nothing that we have learned since from captured documents or interrogation efforts indicates that any of these groups had fissile material or the requisite technical knowledge to make a nuclear bomb—a radioactive dispersal device, yes, but not a nuclear bomb. Indeed, the material uncovered at Al Qaeda's training camps indicates that Al Qaeda would not have known how to fabricate a nuclear bomb. And while there is evidence of interest, there is no evidence of a serious sustained nuclear program, which would be

prerequisite to fabrication. It is clear, however, that terrorists see nuclear boasts and threats as means of creating terror.

There have been a number of disturbing revelations about things that did happen during this 40-year period. Over time, there has been a significant accumulation of bomb-grade nuclear material unaccounted for. This is not to say that it has been diverted, but simply that we cannot say with certainty where it is. With a fair degree of certainty, we know now that a major diversion of nuclear material took place in the 1960s, which was inadequately investigated. Several hundred pounds of highly enriched uranium disappeared from the NUMEC plant in Apollo, Pennsylvania, and probably went to the Israelis.⁴

We know now that AQ Khan led a rogue operation in Pakistan to sell nuclear weapons know-how and provide other assistance to clandestine state nuclear programs. Owing to a fascinating project led by Henry Sokolski, we know now that in several instances during revolts, coups, civil wars, or other periods of political turmoil, government control of nuclear weapons was challenged or temporarily lost. We know now that the United States accidentally lost control of some of its nuclear weapons, although these were recovered.

We know now that there were some close calls, not just the Cuban missile crisis in 1962, but in 1983 and other times when we had come closer to nuclear confrontation than we knew at the time. Terrorists were not involved in any of these episodes.

In trying to assess the threat of nuclear terrorism, we face the same analytical challenge today that we faced 40 years ago. We are dealing with an event that is of terribly high consequence and, therefore, cannot be ignored. We have some indications of interest by several terrorist groups, but these cases are arguable, and do mere expressions of interest indicate a serious acquisition effort? We have a couple of examples of terrorist boasting about nuclear capabilities—these appear to be propaganda. We have reports of low-level thefts of small quantities of nuclear material and numerous scams, but little evidence that these are connected or that they reflect a trajectory towards nuclear terrorism.

The debate about whether terrorists could actually build a nuclear bomb continues. Personally, I can't add a lot here. People who design and build nuclear weapons debate among themselves about how easy or how difficult it is. When I wrote my book on nuclear terrorism in 2008, I conducted an informal survey of experts. By "experts" I meant people at the national laboratories in Los Alamos, Sandia, and Livermore, similar people overseas, as well as some in the intelligence community who dealt with these issues. My survey asked a simple question: What is the likelihood that terrorists will detonate a nuclear device—a bomb, not a dispersal device—or attempt to do so in the next ten years? The responses ranged from a probability of one—not if, but when—to one in ten million. And there was no bell curve. The distribution of odds was pretty flat right across the spectrum.⁵

Even without a bell curve, you can still count to the middle. It turned out to be 10 percent. I don't know what validity this number has—it is the median of a bunch of guesses. If the Americans and European responses are counted separately, the median for the Europeans is one percent while the median for the Americans rises to 20 percent. We Americans obviously worry more about this.

4. Victor Gilinsky and Roger J. Mattson, "Did Israel steal bomb-grade uranium from the United States?" *Bulletin of the Atomic Scientists*, April 17, 2014, available at <http://thebulletin.org/did-israel-steal-bomb-grade-uranium-united-states7056>.

5. Brian M. Jenkins, *Will Terrorists Go Nuclear*, New York: Prometheus Books, 2008, p. 294.

In one sense, nuclear terrorism is an invention. In pointing to theft of nuclear material by terrorists, the Lumb Panel took a shot. Theodore Taylor created a terrorist scenario to make a point about design. Neither was offering a threat assessment. The threat of nuclear terrorism floats above the concrete evidence. That does not mean nuclear terrorism can never happen. It does give the debate a theological quality.

Arguments about the likelihood of nuclear terrorism reflect belief systems. At one end of the spectrum stand the “Apocalypticists”, who subscribe to a kind of Murphy’s Law of human behavior—if something bad can be done, someone bad will eventually do it. At the other end are the disbelievers who argue that we have worried about this for decades and it hasn’t happened and we have no evidence that anybody even seriously tried—there has to be a reason. The comeback to this observation is that the absence of evidence is not the evidence of absence. All one can say is that it hasn’t happened *yet*. The other response can be found in the more lurid offerings by the conspiracy theorists who claim that terrorists already have nuclear weapons, but “your government isn’t telling you.”

The 9/11 terrorist attacks had insidious effects on the analysis of nuclear terrorism. They confirmed the disturbing escalation of terrorism—a long-term trend. The median of the deadliest terrorist incidents in the 1970s was 72 fatalities. This ascended to 224 in the 1980s, and 263 in the 1990s. On 9/11, 2,977 people died—an increase of two orders of magnitude. Extrapolating that trend would mean terrorist incidents with tens of thousands of fatalities in the following decade or so. Terrorists could achieve those body counts only with biological or nuclear weapons. Fortunately, thus far 9/11 has proved to be not an elbow in an ascending arc, but a statistical outlier. The median of the deadliest terrorist incidents in the 2000s turned out to be 331, and for the 2010s, so far, it is 286—but we did not know that at the time.

In the immediate shadow of 9/11, things looked a lot different. For one thing, 9/11 fundamentally altered our perceptions of plausibility. Scenarios that had been dismissed as far-fetched before 9/11 became operative presumptions the day after. At the same time, the threshold for concern was lowered. If something had even a one percent chance of occurring, it had to be preempted. This was nonsense since all such estimates are still guesses rather than quantifiable indicators. Could anyone seriously claim that this scenario has a two percent chance of occurring so we should worry while we can dismiss this other scenario, which has only a half a percent chance of happening. Operationally it meant that there was nothing that we could dismiss.

The intelligence was seen to have failed on 9/11. Worse, not anticipating the attacks was seen as a failure of imagination. The country could not tolerate another failure of imagination. Imagination here is the key word. Our perception of terrorist threats was being driven by not wanting to have a failure in the realm of imagination. Fear of nuclear terrorism achieved its independence of evidence of nuclear terrorism. These became independent and disconnected domains.

In Renaissance religious paintings, angels and saints, lifted by faith, float above the ground. Similarly, nuclear terrorism, lifted by fear, became gravity free. It was not the intelligence that propelled the fears, but the fear that compelled intelligence analysts to seriously consider often dubious reports. The one percent doctrine and fear of imagination failure made it impossible to dismiss any threat with high confidence. High confidence does not often appear in intelligence estimates, and if you hear someone say, it’s a “slam dunk,” reach for your pistol.

Freeing the fear of nuclear terrorism from evidence enabled media savvy terrorists to play upon those fears. Al Qaeda, for example, pretended that they could get or had nuclear weapons. Al Qaeda’s online followers embellished these fantasies. That created an aura of nuclear capabilities, which were in fact mere assertions. Our own anxieties filled in the blanks. There is probably not a terrorist scenario that

hasn't been discussed in detail on national television—prospects of doom get attention. Terrorists read what we write and listen to what we say. Then they start talking about it. In turn, we listen to them, completing a feedback loop that confirms our own worst fears.

Freeing nuclear terror from evidence of nuclear terrorism also enables the threat to be manipulated to achieve other ends. A lot of the terrorist threat literature is agenda driven. Raising the specter of terrorism can help persuade governments to adopt better security measures to protect both fissile material and other radioactive substances. Nuclear terrorism can be used to slow nuclear proliferation, advance nuclear disarmament, or increase international pressure on states suspected of developing nuclear weapons.

While we should not dismiss the threat of nuclear terrorism, nuclear states may be the bigger problem. I would argue that nuclear proliferation is undesirable. The more nuclear weapons states there are, the more fissile material, the more transport, the more possibilities that governments will lose control of their arsenals and rogue actors or terrorists will get their hands on them. It sounds imperialist to say so, but the United States, the former Soviet Union, Great Britain, France, and perhaps today's China are reliable actors. The same cannot be said of some of the more recent acquirers or aspirants who currently are embroiled in civil wars or confront stability issues. International concern about the security of Syria's chemical weapons arsenal during its ongoing civil war, ISIS's possible acquisition of nuclear material in Iraq, and the continuing chaos in Libya—all once nuclear weapons aspirants—underscores the point.

Also worrisome are rogue operations driven by profit or fanaticism. We do not yet have what I would call a nuclear underworld. In the future, states may try to clandestinely acquire nuclear weapons without large Manhattan Projects. The proliferation of secret nuclear weapons programs raises the possibilities that Ralph Lumb and his colleagues were worried about.

The spread of fissile material and nuclear weapons know-how will require increasingly stringent security measures, not just at nuclear facilities, but affecting all of society. Even without nuclear terrorism, we see disturbing trends in this direction. This is not an original thesis. Robert Jungk, in his 1977 book, *Der Atom Staat* (in English, *The Nuclear State*, but the title, which evokes Nazi Germany's *polizeistaat*, is much more powerful in the original), warned that the spread of nuclear technology would bring with it an increasingly oppressive state. Such concerns are a pale shadow now, but even an attempt by a non-government adversary to acquire or use a nuclear weapon will change the world dramatically. The rules won't be the same. While much will depend on the scenario, the occurrence of such an event could bring in its wake extraordinary security controls, preemptive military action, even other desperate measures to prevent repetition.