

Preface

The 9/11/2001 and 11/13/2015 attacks

Four days after the attack on Paris, the New York Times headlines showed signs of panic:

- Call to Arms in France Amid Raids and a Manhunt
- Hollande Asks Parliament to Act Quickly to Help in Eradicating ISIS
- Distrust, Even Fear, as Secular France Cools on Muslims
- GOP Governors Vow to Close Doors to Syrian Refugees
- Gloves Off, Director of the CIA Faults Surveillance Curbs
- After Paris Attacks, Vilifying Refugees
- Paris Changes Everything
- Parties Split on Response but United Behind France
- Obama says Strategy Against Militants Will Work
- US Airstrikes Destroy Scores of ISIS Oil Trucks in Syria

It is *deja vu* (*all over again*), we are reminded that modern society is vulnerable to modest-sized attacks, that then evoke big responses. Death of 129 at the Baticlan music hall and elsewhere caught the attention of the democracies and dictatorships. Should we install boots on the ground, as we did in Afghanistan and Iraq? Is that what Osama bin Laden wanted us to do in the first place? Are we being provoked into future Armageddon confrontations? Or, are we moving too slowly? Will the 1,800 metric tons of global weapons useable plutonium and uranium be diverted to nuclear weapons? There should be no doubt that ISIS would use crude nuclear weapons if they can gather the materials. But then we followed that false siren call into Iraq in 2003.

The death of 129 is very serious business, but the following issues are greater in scope:

- Nuclear arms races with China, Russia, and the US;
- Proliferation of nuclear weapons to India, Iran, Israel, North Korea, Pakistan, and other states;
- Control of weapons-usable fissile materials by the International Atomic Energy Agency (IAEA);
- Nuclear power and its various cycles;
- Improvised nuclear weapons;
- Radioactive dirty bombs;
- Drone attacks;
- Biological and chemical weapons;
- Improvised chemical explosions;
- Cyber attacks on the Internet; and
- Privacy issues.

Two approaches can be used to describe our uncertain world. We will apply both historical and technical approaches. Because we participated in crafting legislation in the Senate, negotiating arrangements in the State Department and studying at the National Academy, we cannot help but describe its rich history. The first chapter of our text examines the historical context, as well as many sections of chapters, and especially Chaps. 7 and 8 and Appendices A and B.

We want to go beyond particular historical examples because history is continually being reinvented with new arrangements in new ways. The Sunni–Shiite rivalry is a major cause of conflict in Syria. Bashar al–Assad, Syria’s dictator, is strongly supported by Shiite Iran and its Hezbollah terrorists, as well as expansionist Russia. Syria is under attack by the barbarous, overly religious ISIS and Al–Qaeda, as well as the “democratic” Free Syrian Army. US participation is further complicated because of Turkey’s disdain for Kurdish forces. Plus, the US and Russia disagree because of Russian adventurism in Crimea and eastern Ukraine. At the same time, Iran and the P5+1 (the five UN veto nations plus Germany) have agreed to reduce both centrifuges and financial sanctions. And don’t forget that Israel, Saudi Arabia, and Egypt live in this neighborhood. Our text is not an analysis of this complicated witch’s brew of global politics, because of this large degree of uncertainties. Our task is to understand the weapons of mass destruction first, then use this data to proceed to political understanding, if that is possible.

New technical paths can be different from past actions. If we wait long enough, all empires will collapse. The laws of science will continue during these changes and give terrorists and proliferators new ways to attack. I have not abandoned my heritage of physics. It is helpful to have training in this area to describe nuclear events. But it is also advantageous to remember to live the two-culture conflict between science and humanism. I’ve striven to do that in my life, which began with a year’s hitchhiking 25,000 miles before age twenty-one. One culture isn’t enough.

Nuclear Proliferation and Terrorism in the Post-9/11 World

This text is intended for upper-division undergraduates (juniors and seniors) of all majors, including the liberal arts. It also is a useful reference book, but that is not its primary purpose. The chapters contain ample homework questions and seminar topics. It is a lone *text of this type*. The text describes technical devices but without mathematics. The text is reduced to that which would be needed by a foreign service officer in the State Department with a bachelor's degree in history. Foreign service officers are expected to know many things from culture to history to politics to economics to geography to military affairs, with basic science. Finally, we are human beings trying to learn, no matter what your major or your role in life.

This text evolved over 43 years at Cal Poly University, San Luis Obispo, California in a course that has been variously named *the Nuclear Arms Race* or *Nuclear Weapons Proliferation and Terrorism in the Post-9/11 World*. Students initially are concerned about having to learn some science in a general education science class. They calmed down when they learned that the students were going to present 25 % of the course material in the seminar portion of the class. My students knew little of these matters, but they were able to look quite sophisticated with the help of Google and Wikipedia. And they liked to hear each other as it became less threatening. We do have a society that is shy about science and more lecturing won't solve it. A 4-minute talk a week is not a great burden. If you can't verbalize the issue, you won't understand the issue.

Implementation of This Text

I departed from campus for a dozen years of involvement with arms control matters, in the Senate Foreign Relations Committee and elsewhere for 5 years, in the Arms–Control and Disarmament Agency for 1 year, in the State Department for 3 years, and in the National Academy of Sciences as study director for 2 years, as well as 4 years in the national laboratories at Los Alamos, Argonne, Berkeley and Oak Ridge, and for 2 years at Stanford and Princeton. This allowed me to make contact with the START Treaty, the Nuclear Nonproliferation Treaty, the Nuclear Nonproliferation Act of 1978, the ABM Treaty, the Comprehensive Nuclear-Test-Ban Treaty, the Conventional Forces in Europe Treaty, the collapse of the Soviet Union while in Moscow, ending the US plutonium economy, responses to the 9/11 attack, and chairing the External Review Panel of Los Alamos's Nonproliferation Division. Hopefully these diverse experiences will make this text a description of actual work, not just an academic theory.

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