Strategic Terrorism

A Call to Action

BY NATHAN P. MYHRVOLD

Technology contains no inherent moral directive—it empowers people, whatever their intent, good or evil. This has always been true: when bronze implements supplanted those made of stone, the ancient world got scythes and awls, but also swords and battle-axes.

The novelty of our present situation is that modern technology can provide small groups of people with much greater lethality than ever before. We now have to worry that private parties might gain access to weapons that are as destructive as—or possibly even more destructive than—those held by any nation-state. A handful of people, perhaps even a single individual, could have the ability to kill millions or even billions.

Indeed, it is possible, from a technological standpoint, to kill every man, woman, and child on earth. The gravity of the situation is so extreme that getting the concept across without seeming silly or alarmist is challenging. Just thinking about the subject with any degree of seriousness numbs the mind. The goal of this essay is to present the case for making the needed changes before such a catastrophe occurs. The issues described here are too important to ignore.

The Power of the Stateless

For generations, the biggest menaces to our nation have been other nuclear-weapons states, especially the Soviet Union and China. Russia is on a much less confrontational path than the USSR was in its day, but China will soon rival the United States as an economic superpower. It will outgrow us, but does China really pose a military threat? After all, launching an attack that might kill a million Americans would trigger a retaliatory attack that might kill 100 million Chinese. What's more, most of those million Americans would be wearing clothes and digital watches, and buying consumer items made in China. Killing your best customers just isn't good business, and besides, they are already on a path to great wealth and success. A direct military attack from China seems very remote.

Failing nation-states—like North Korea—which possess nuclear weapons potentially pose a nuclear threat. Each new entrant to the nuclear club increases the possibility this will happen, but

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this problem is an old one, and one that existing diplomatic and military structures aim to manage.

The newer and less understood danger arises from the increasing likelihood that stateless groups, bent on terrorism, will gain access to nuclear weapons, most likely by theft from a nation-state. Should this happen, the danger we now perceive to be coming from rogue states will pale in comparison.

The ultimate response to a nuclear attack is a nuclear counterattack. Nation states have an address, and they know that we will retaliate in kind. Stateless groups are much more difficult to find which makes a nuclear counterattack virtually impossible. As a result, they can strike without fear of overwhelming retaliation, and thus they wield much more *effective* destructive power. Indeed, in many cases the fundamental equation of retaliation has become reversed. Terrorists often hope to provoke reprisal attacks on their own people, swaying popular opinion in their favor.

The aftermath of 9/11 is a case in point. While it seems likely that Osama bin Laden and his henchmen hoped for a massive overreaction from the United States, it is unlikely his Taliban hosts anticipated the U.S. would go so far as to invade Afghanistan. Yes, al-Qaeda lost its host state and some personnel. The damage slowed the organization down but did not destroy it. Instead, the stateless al-Qaeda survived and adapted. The United States can claim some success against al-Qaeda in the years since 9/11, but it has hardly delivered a deathblow.

Eventually, the world will recognize that stateless groups are more powerful than nation-states because terrorists can wield weapons and mount assaults that no nation-state would dare to attempt. So far, they have limited themselves to dramatic tactical terrorism: events such as 9/11, the butchering of Russian schoolchildren, decapitations broadcast over the internet, and bombings in major cities. Strategic objectives cannot be far behind.

The Technological Rise of Terrorism

Trends in technology are shaping the rise of stateless power. Computers, the internet, cellular and satellite telephones, and satellite TV give people unprecedented access to one another. This connectivity is mostly good. It enriches daily life and millions of lawful pursuits, including many that save lives. It also, however, enables a small group of dangerous people scattered around the world to organize themselves more effectively than ever before. Terrorist groups can now assemble a command-and-control structure that previously would have been available only to a wealthy nation-state.

Communication has value to terrorists beyond command, control, and coordination. Terrorism works by instilling terror in large numbers of people and that goal requires mass communication. The international media have become, albeit reluctantly, the global marketing department for today's terrorists. Tragedy anywhere reaches our living rooms with amazing speed and clarity. Competition to get the biggest splash on CNN and al-Jazeera will ultimately lead to an escalation and elaboration of terrorist acts.

The internet and other communications technologies abet terrorist recruiting and fundraising as well. Nation-states finance their military ambitions through taxes and conscription. Stateless groups can't do the same, at least not in a conventional way. Instead, stateless actors solicit donations on myriad web pages and transfer funds via cell phone by

exploiting informal *hawala* banking systems. They use the internet to recruit the disaffected.

The new range of contact afforded by modern communications changes the nature of terrorism. Instead of being local, it is now global in its effects. Modern communications technology even offers terrorist groups the hope of conquering lands in a 21st century fashion. They do not seek to capture territory per se but rather to capture power over a population through intimidation or mass murder. The incredible reach of modern communications gives al-Zawahiri, Nasrallah, and their ilk an influence that crosses borders and transcends the local political structure.

Indeed, we seem to be entering the golden age of stateless organizations. During this age, the military supremacy and political influence of nation-states will be challenged by much smaller groups that can wield both political influence and power with cruelty and without the apparatus of a state. As a result, massive terrorist attacks like 9/11—as well as low-level events such as suicide bombings, kidnappings, and assassinations—will occur with greater frequency. Bad as that is, it is unfortunately only part of the story.

The Democratization of Death Dealing

Throughout history the lethality of weapons technology has inexorably increased. Yet a general rule prevailed: successively more lethal weapons required successively larger investments. Nuclear weapons were the zenith of this arc. A single device could destroy an entire city, but also cost as much as an entire city and was far harder to build.

The first nuclear explosives were created by the three-year Manhattan Project, which at its peak employed 130,000 people. It cost more than $2 billion in the currency of the time—the equivalent, in 2013, of more than $26 billion. But that is just money. To put the engineering and industrial effort in perspective, the project became comparable in manpower and capital cost to the entire prewar U.S. automobile industry.

The cost of nuclear weapons has had two stabilizing effects. First, the list of nations that could afford to play the nuclear game was very small. Second, each leader with a finger on "the button" bore the full responsibility for a large and complex state—each understood that using the weapons would bring a very dangerous reprisal. The inescapable equation tying highly lethal weapons systems to high cost and complexity meant that the power to devastate was available only to the richest and most sophisticated states—until now.

Two major factors change this equation. The first is that nuclear weapons are now in the hands of countries like Pakistan, North Korea, and perhaps soon Iran. These countries have an official posture toward United States that is hostile, and each has internal elements even more radical than their official policy, some supporting state sponsored conventional terrorism. It is hard to discount the possibility that their nuclear weapons will be stolen, or diverted to terrorists by corrupt, ineffective or ideologically motivated elements in their own governments. Stealing is much cheaper than building, and it could be a route for nuclear weapons to reach stateless groups.

A nuclear weapon smuggled into an American city could kill between 100,000 and 1,000,000 people, depending on the nature and location of the device. An optimist might say that it will take decades for such a calamity to take place; a pessimist would point out that the plot may already be under way.

The second major factor is that modern technology allows very small groups the ability to create immensely powerful weapons with small teams of people and trivial budgets compared to nuclear weapons. Chemical weapons, particularly nerve agents, are part of the terrorist arsenal. Sarin, a frighteningly lethal poison was produced and released in locations in the Tokyo subway system in 1995 by Aum Shinrikyo, a Japanese religious cult. The attack injured nearly 3,800 people and killed 12. A botched distribution scheme spared many of the intended victims; better dispersal technology would have resulted in a vastly higher death toll. Experts estimated that Aum Shinrikyo had the ingredients to produce enough Sarin to kill millions of people in an all-out attack.

Frightening as such possibilities are, nuclear bombs and chemical agents pale in lethality when compared with biological weapons. The cost and technical difficulty of producing biological arms has dropped precipitously in recent decades with the boom in molecular biology. A small team of people with the necessary technical training and cheap equipment can create weapons far more terrible than any nuclear bomb.

Taken together, these trends utterly undermine the lethality-versus-cost curve that existed throughout history. Access to extremely lethal agents—even to those that may exterminate the human race—will be available to nearly anybody. Access to mass death has been democratized; it has spread from elite superpowers to nearly anybody with modest resources. Even the leader of a ragtag, stateless

At the UN in 2003, U.S. Secretary of State Colin Powell holds a model vial of anthrax, while arguing that Iraq is likely to possess WMDs.

group hiding in a cave—or in a Pakistani suburb—can potentially have "the button."

Turning Life Against the Living

The least-deadly biological weapons are those that are not contagious. These were developed for use in military conflicts during the 20th century. Because the pathogens used are not contagious, they are considered controllable: they have at least some of the command-and-control aspects of a conventional weapon. They are deadly but do not cause epidemics.

Anthrax is the most famous example. In early 20th-century outbreaks, it killed nearly 90 percent of those infected by inhaling bacterial spores. In the fall of 2001, anthrax was used in a series of mail attacks in the United State. Even with advanced antibiotic treatment, 40 percent of those who contracted inhalational anthrax died.[1]

That crime is believed to have been the work of a lone scientist who sought to publicize the threat of a biological attack and boost funding for his work on Anthrax vaccines. Indeed, the letters carrying the spores thoughtfully included text warning of anthrax exposure, recommending that the recipient seek immediate treatment.

What if such an attack were made instead by a real sociopath? Theodore J. Kaczynski, known as the "Unabomber," was brilliant enough to earn a Ph.D. in mathematics from the University of Michigan, yet was mentally disturbed enough to be a one-man terrorist cell operating for nearly two decades. Kaczynski had enough brain to use sophisticated methods, but because he opposed advanced technology, he made untraceable low-tech bombs that killed only three people. A future Kaczynski with training in microbiology and genetics, and an eagerness to use the destructive power of that science could threaten the entire human race. Indeed, the world has already experienced some true acts of biological terror.[2]

A 2003 study found that an airborne release of one kilogram of an anthrax-spore-containing aerosol in a city the size of New York would result in 1.5 million infections and 123,000 to 660,000 fatalities, depending on the effectiveness of the public health response.[3] A 1993 U.S. government analysis determined that 100 kilograms of weaponized anthrax, if sprayed from an airplane upwind of Washington, D.C., would kill between 130,000 and three million people.[4] What is more, because anthrax spores remain viable in the environment for more than 30 years, portions of a city blanketed by an anthrax cloud might have to be abandoned for years while extensive cleaning was done.

Unfortunately, anthrax is not the worst case; indeed it is rather benign as biological weapons go. The pathogen is reasonably well understood, having been studied in one form or another in bio warfare circles for more than 50 years. Natural strains of the bacterium are partially treatable with long courses of common antibiotics if taken sufficiently quickly. Vaccination soon after exposure seems to reduce mortality further.[5]

But bioengineered anthrax that is resistant to both antibiotics and vaccines is known to have been produced in both Soviet and American bioweapons laboratories. In 1997, a group of Russian scientists even published the recipe for a super lethal strain in a scientific journal.[6]

Numerous other agents are similar to anthrax in that they are highly lethal but not contagious. The lack of contagion means that an attacker must administer the pathogen to

the people he wishes to infect. Thus, the weapon can be directed at a well-defined target, and with luck, little collateral damage will result.

Unfortunately, many biological agents are contagious and can spread quickly. Infectious pathogens are inherently hard to control because there is usually no reliable way to stop an epidemic once it starts. This property makes such biological agents difficult for nation-states to use as conventional weapons.

Smallpox, for example, is highly contagious and spreads through casual contact. Smallpox, eradicated in the wild in 1977, still exists in both U.S. and Russian laboratories.[7] Experts estimate that a large-scale, coordinated smallpox attack on the United States might kill 55,000 to 110,000 people, assuming that sufficient vaccine is available to contain the epidemic and that the vaccine works.[8] The death toll may be far higher if the smallpox strain has been engineered to be vaccine-resistant or to have enhanced virulence.

Moreover, a smallpox attack on the United States could broaden into a global pandemic. Planes leave American cities every hour of the day for population centers around the globe. Even if "only" 50,000 people were killed in the U.S., a million or more would probably die worldwide before the disease could be contained, and containment would probably require years of effort. As horrible as this would be, such a pandemic is by no means the worst attack one can imagine.

Advances in molecular biology have utterly transformed the field in the last few decades. High school biology students routinely perform molecular-biology manipulations that were impossible even for the best superpower-funded program back in the heyday of biological-weapons research. Tomorrow's terrorists now have far more deadly bugs from which to choose.

Consider this sobering development: in 2001, Australian researchers working on mousepox, a nonlethal virus that infects mice, discovered that a simple genetic modification transformed the virus.[9] Instead of producing mild symptoms, the new virus killed 60 percent of mice, even those already immune to the naturally occurring strains. The new virus was unaffected by existing vaccines or antiviral drugs. A team of researchers at Saint Louis University, led by Mark Buller, picked up on that work and, by late 2003, found a way to improve on it. Buller's variation was 100 percent lethal.[10] While the genetically altered virus is not contagious, it is quite possible that future tinkering will change that property, too.

This case is just one example. Biotechnology is advancing so rapidly that it is hard to keep track of all the potential threats. A virus genetically engineered to infect its host quickly but generate symptoms slowly—say, only after weeks or months—and to spread easily through the air or by casual contact would be devastating. It could silently penetrate the population before unleashing its deadly effects. An epidemic would be almost impossible to combat.

That terrorist groups could achieve this level of technological sophistication may seem far-fetched, but keep in mind that it takes only a handful of individuals to accomplish these tasks. Indeed, terrorists may not have to develop it themselves: scientists may do so first and publish the details.

Never has lethal power of this potency been accessible to so many, so easily. Hundreds of universities in Europe and Asia have curricula sufficient to train people in the skills necessary to make a sophisticated biological

weapon, and hundreds more in the United States accept students from all over the world. The repercussions of their use are hard to estimate. One approach is to look at how the scale of destruction they may cause compares with that of other calamities that the human race has faced.

The Grim Calculus of Mass Mortality

Grappling with the mind-numbing statistics of mass death is nearly unfathomable. However, using a logarithmic scale to count fatalities by powers of 10 can encompass the large range of possibilities. Thus, an event that kills 1,000, or $1x10^3$, people would be magnitude 3—M3.0 for short. Table 1 gives some examples.

The first thing that is apparent from these tabulated values is that some causes of death have much greater psychological impact than others, regardless of the number of people killed. For example, 9/11 ranks below annual U.S. traffic deaths—indeed, almost as many people perish in a typical month on American highways as died in the 9/11 attacks. So why were we so worked up?

We have had over 100 years to become used to the fact that roads are dangerous and we expect a certain level of risk when driving.

Table 1 : Relative magnitudes of human populations and mass fatalities, expressed as a power of 10

EVENT OR POPULATION	POPULATION OR FATALITIES	MAGNITUDE
Total World Population	7,000,000,000	9.8
Population of China	1,350,000,000	9.1
Population of the United States	313,000,000	8.5
HIV/AIDS Cumulative Deaths + Currently Infected	64,000,000	7.8
World War II, Total	56,125,262	7.7
Influenza Pandemic of 1918, Total	20,000,000	7.3
World War I, Total	14,958,886	7.2
Deaths In U.S. From All Causes In 2011	2,468,435	6.4
Vietnam Conflict, Total	1,900,000	6.3
AIDS Deaths In 2011	1,700,000	6.2
Worldwide Annual Traffic Deaths In 2011	1,400,000	6.1
Rwandan Genocide of 1994–1995	1,000,000	6.0
Influenza Epidemic of 1918 (U.S. Only)	675,000	5.8
World War II (U.S. Only)	500,000	5.7
Indian Ocean Tsunami of 2004	230,000	5.4
World War I (U.S. Only)	116,516	5.1
Nuclear Bombing of Hiroshima	90,000	5.0
Vietnam Conflict (U.S. Only)	58,153	4.8
Traffic Deaths in 2011 (U.S. Only)	29,757	4.5
Murders in 2011 (U.S. Only)	14,612	4.2
September 11th Terrorist Attack	2,996	3.5
Aircraft Crash Deaths in 2011 (U.S. Only)	494	2.7

Sources: *U.S. Census Bureau, UNAIDS, wikipedia, U.S. National Center for Health Statitics, U.S. Department of Transportation, Federal Bureau of Investigation, National Transportation Safety Board, U.S. Department of Defense*

Death coming as a bolt from the blue tends to get our attention. This attention is the same sort that terrorists wish to inspire through dramatic acts of violence. Which would be easier to perpetrate, one M5.0 event or thousands of individual attacks? All factors point to one large strike, which, depending on what was done, could very well push the death toll toward M6.0. At some point, terrorists will figure this out.

Would They Do It?

Would terrorists really try to kill millions, or will they stick to convincing their own youth to blow themselves up in small-scale suicide bombings? Several lines of reasoning suggest that stateless terror groups will acquire and use weapons having high-M impact. Table 2 shows the possible M impact of terrorist weapons.

Stateless groups have the same level of ambition as nation-states and ought to be treated as operating on the same footing. Was it rational to worry that the Soviet Union would launch a nuclear war to further their communist hegemony or simply to destroy the United States—or out of fear that we would attack them in this way first? Dealing with those questions consumed $1 trillion of defense spending and shaped the Cold War.

When compared to the Soviets, the risk that al-Qaeda or some future group will use high M-impact weapons seems higher on every level. Their geopolitical goals are more ambitious. The ideology is more extreme. The vulnerability to counterattack or reprisal is low. Terrorists have demonstrated a shocking degree of ruthlessness. Under any rational theory of risk, these foes must be considered likely to act.

Plus, it is no secret that the United States aims to exterminate al-Qaeda and similar terrorist groups—and rightly so. With revenge and self-preservation on their minds, our primary adversaries are not likely to show us unnecessary mercy. Additionally, terrorism survives by making a big impact; when the world gets desensitized to car bombs, mass shootings, and beheadings, the temptation to one-up the last attack increases.

The belief that terror groups will not use terrible weapons if they get them seems foolish in the extreme. To borrow a phrase from *A Streetcar Named Desire,* to hold this belief is, in effect, to rely "on the kindness of" terrorists. Any rational analysis must assign a substantial amount of the terror risk to large-scale, high-magnitude events. Yet that is not how our defenses are organized and not how we are spending our resources. Instead, we focus most

Table 2 : Range of fatalities plausible for terrorist attacks of various kinds

Terrorist Event	Low M	High M
Shooting Rampage	1.0	1.5
Suicide Bombing	1.0	2.5
Truck Bombing	2.0	3.0
Aircraft As Weapon	3.0	4.0
Dirty Bomb	3.0	4.0
Nuclear Weapon	5.0	6.0
Neurotoxin Attack	4.0	6.5
Natural Virus Pandemic (U.S. Only)	5.0	7.0
Smallpox Attack (U.S. Only)	4.7	6.5
Natural Virus Pandemic	6.0	8.0
Smallpox Attack	6.0	8.0
Pandemic From Engineered Bioweapon	6.0	10
End Of Civilization	9.5	10
Extinction of *Homo Sapiens*	9.8	10

of our counterterrorism efforts on thwarting small-scale attacks.

Tactical vs. Strategic Counterterrorism

The enormous range of possible terrorist actions mirrors a situation encountered in modern warfare. Military commanders must confront war at many levels, from hand-to-hand combat to global thermonuclear war. That broad range is difficult to cover with a single organization. The military answer is to split the problem into pieces by both scale and approach. The division by scale is usually phrased as the difference between strategic and tactical.

Tactical terrorism is important to fight. We want to keep hijackers off airplanes and suicide bombers out of shopping malls. Referring to such problems as tactical does not suggest they are unimportant. Rather, it highlights the need to make even greater efforts to thwart strategic terrorism.

Strategic counterterrorism is another matter altogether. The security forces inside the United States are ill prepared for the threat from terrorists intent on using contagious biological agents or nuclear weapons. By the time such terrorists have arrived at the airport or harbor, they have all but won. Are U.S. authorities doing enough to combat terrorism at the strategic level? The indirect evidence indicates that the answer is most certainly no. Aside from a few inadequate efforts to screen a fraction of ships and aircraft overseas before they depart for American shores, the problem is simply not being managed.

Effective Threat Management

A basic principle of management accountability is to ask the following question: Who is the most senior person in the organization whose full-time job is dedicated to function X? So ask, "Who is the most senior government official whose full-time job is defending the United States against strategic terrorism?" In the worst possible case, no single leader is focused solely on this problem. Instead, the people who are focused exclusively on terrorism are relatively low-level government workers employed in different departments and agencies with conflicting missions.

Contrast this with our efforts to prevent strategic nuclear war, for which an elaborate and well-defined chain of command exists. We have a comprehensive set of early-warning systems and contingency plans that cover every foreseeable eventuality. An extremely well-defined set of people have full-time jobs preparing for and responding to a strategic nuclear attack.

Where are our early warning systems for strategic terrorism? Who is in charge of building them? What is the remedy if an attack takes place? When it comes to devising a response to biological terrorism, who is in charge? Is this an issue for the Centers for Disease Control and Prevention? Or should it be handled by the uniformed Public Health Service? Or is the Department of Homeland Security (DHS) supposed to be organizing hospitals? Currently, token and understaffed efforts are fragmented across dozens of government agencies.

The Sleeping Dogs of War

To understand the government agencies responsible for defending us against terrorism, we must consider the handful of men that influenced the building of American intelligence and defense institutions—men like Hitler, Tōjō, Stalin, Khrushchev, and Brezhnev.

Prior to World War II, the United States turned inward and steadfastly ignored the threats from Germany and Japan. The assault on Pearl Harbor (coupled with dogged scheming by Franklin Delano Roosevelt egged on by Winston Churchill) persuaded America to confront the threat from Japan and Germany. In a very real sense, Tōjō and Hitler were, in effect, the fathers of the modern American defense establishment. Stalin took over where Hitler and Tōjō left off and launched us into the Cold War. This was a long and tiring struggle. If at any point American interest or determination flagged, Khrushchev was there to bang his shoe on the table to get our attention.

Following the dissolution of the Soviet Union in 1991, no adversary has so dominated our attention. Inertia and the absence of a compelling threat have kept the large bureaucracies in the defense establishment doing largely what they had done before. The 9/11 attacks and subsequent military operations in Afghanistan and Iraq have brought some changes. But the vast machinery of the Cold War, built up over five decades, has yet to retool.

If our future threats were the same as those of the past, we could stay this course. Unfortunately, there is every reason to believe that the most significant dangers we will face will be completely new. The precautions we take must be novel as well. The steps necessary to prevent nuclear and biological terrorism are qualitatively different from those needed to plug the holes that allowed 9/11 to happen. Yet our military forces and government agencies seem not to recognize this difference. Nearly all personnel and resources are focused on the immediate problems posed by tactical issues in Afghanistan and by low-level terrorism directed at the United States.

The Long View, Backward and Forward

Your car has a very large windshield, through which you can see the road ahead, but only a few small mirrors to view what is coming up behind. That's because the threat is largely from the front, the direction in which you are moving.

A bureaucracy (particularly one that exists within a democracy) has the opposite arrangement: an enormous rearview mirror and just a tiny peephole facing forward. The structures and mandates of bureaucracies are based on what has already happened, not what will happen. They cite history to justify their operations. Actions based on a view into the future are speculative and open to criticism, especially when the problems of the present loom large. The only force with a proven ability to shake the complacency inherent in bureaucracies is a determined adversary that persistently and openly fights or antagonizes us.

For much of the last decade, both we and al-Qaeda have been distracted by Iraq and Afghanistan. For al-Qaeda, attacks in Afghanistan are cheaper and easier to mount than direct operations against the United States. Attacking the U.S. mainland now would only antagonize the American public and recommit us to the war on terrorism.

Eventually this strategic calculus will change. Whether it changes tomorrow or in 2033, it is hard to believe that another major attack won't occur within a generation. If the next major incident is "only" a 9/11-scale (M3.5 attack) it will be traumatic, but our society will survive largely intact. The problem is that we are not apt to be that lucky.

The clear pattern of al-Qaeda—from Somalia, to Khobar Towers, to the African embassy bombings, to the U.S.S. Cole, to the

World Trade Center and the Pentagon— is one of infrequent attacks which escalate in severity. The next one could be an M5.0 or M6.0 nuclear or biological event. Waiting until it occurs to begin our preparations is utterly irresponsible, but that is just what we're doing.

Meanwhile, we are only beginning to look beyond al-Qaeda to the groups that will succeed this faltering foe. This is alarming when one considers that 20 years ago, neither al-Qaeda nor any other radical Islamic organization were on anybody's list of major threats to U.S. security.

Twenty years from now, new terrorist groups and causes will exist. Radical Islam is likely to remain a concern in 2033, but it won't be the only one. Some of today's players will leave the international arena, and new ones will enter. But strategic terrorism is here to stay.

It is crucial that we realize that the fundamental problem is not limited to a specific organization like al-Qaeda or to a specific ideology like radical Islam. Bin Laden is dead and gone, yet this general threat persists. Just as managing nuclear weapons became a permanent part of the world order after World War II, combating strategic terrorism must become a permanent part of ensuring global security today. This challenge demands dramatic shifts in American defense and foreign policy. It isn't a temporary crisis. It requires a fundamental and long-lasting adjustment to the new state of affairs. The investment needed is similar in scale to that spent during the Cold War—hundreds of billions of dollars.

This doesn't mean a Cold War revival. The Cold War was about building a deterrent—implementing the strategy of mutually assured destruction for any party foolish enough to

Kohbar Towers bombing in Dhahran, Saudi Arabia on 25 June 1996

initiate nuclear hostilities. It was relatively straightforward: create a defensive deterrent by building ever more terrible offensive weapons in multiple redundant systems. The war on terror is fundamentally different. We cannot win by developing more powerful offensive weapons than our adversaries. Deterrence of the old sort simply does not work.

The war on terror is also marked by the growing irrelevance of nation-states. The nation-state is the fundamental unit of international diplomacy, law enforcement, and discourse. We assume a country is responsible for its sovereign territory. When a criminal crosses a national border, we rely on the country he or she then resides in to handle the arrest, and we go through a formal extradition process to get that nation to hand over that criminal. This hierarchical approach is rendered useless when a tiny group can create weapons that threaten the population of entire continents.

A strategic terror attack, whether nuclear or biological, will very likely be planned by people residing in Western Europe or the United States—countries with strict laws protecting individual freedoms. Terrorists in a desert outpost in Sudan or a cave on the Pakistani tribal frontier have to worry about Special Forces commandos, Tomahawk cruise missiles, and Hellfire rockets. In Paris, Munich, or San Diego, they won't have any such concerns.

Clearly we need new international tools to combat strategic terrorism. The aftermath of World War II and the Cold War created a number of new international groups and structures—including the United Nations (UN), the North Atlantic Treaty Organization (NATO), and the Warsaw Pact. These international groups were a direct reaction to the challenge posed by the threat of nuclear war and the emergence of highly polarized communist and capitalist ideologies. We must develop a new set of extra-national organizations, perhaps akin to NATO or the UN, to cope with the new threat of strategic terrorism.

The Audacity of Courage

Studying this issue without becoming depressed about our prospects is challenging. The challenge is not impossible to solve, just very difficult. When discussing bioterrorism, I'm frequently told that I'm being a scaremonger, just like those who exaggerated the danger of global nuclear war—which didn't happen. But if nuclear weapons had not been widely feared, would all those actions that have been taken to avoid their use been done? Nuclear weapons truly scared people—hawks and doves, Soviets and Americans alike. But frightening people by itself isn't enough. Instead, fear has to be mixed with something more actionable—a plan to allay the fear.

The problems of strategic terrorism can be managed, but it will be a multi-decade struggle that will affect as many aspects of people's lives as did the Cold War. Indeed, the Cold War provides us with a useful model. One can list the ways in which it affected scientific research, intelligence gathering, military planning, diplomacy, public policy-making, and other activities. Each now has a set of challenges that must be met.

The Research Challenge

In most wars, scientific research is a secondary activity rather than a frontline effort. This approach is emphatically not appropriate in the struggle against strategic terrorism, a primarily technological and scientific battle. For more than two decades, we have allowed an unprecedented explosion of work in molecular biology to occur without providing substantial

funding for understanding and preventing the misuse of this knowledge.

Scientists routinely publish results that either implicitly or, in many cases, explicitly contain recipes for mayhem. Yet, no funding agency has devoted substantial resources to understanding these threats in detail or to developing countermeasures against them. Ironically, this sort of research is precisely the kind at which our society excels. But developing solutions will be impossible if we don't identify the problems and do the work.

As it stands, we do neither. The reason is simple enough—little, if any, funding is available for countermeasures research. The National Institutes of Health (NIH), the National Science Foundation, and other government grant-making agencies provide research funding in biology and medicine to combat natural scourges, but not bioterrorism. Why? Because plenty of here-and-now diseases, such as cancer, diabetes, and AIDS, are vying for their attention. Spending money to fight speculative future threats is far more risky and, hence, is rarely done.

The only way to change this situation is to forge a comprehensive plan for research, development, and deployment of technologies to detect, cure, or prevent a biological attack. In addition to creating counterterrorism strategies, a well-funded research initiative to develop bioterrorism defenses would give an enormous boost to biomedical research in some areas that may ultimately prove just as useful. At the moment, all of humanity is susceptible to natural infections that are very similar in some ways to those that might be unleashed during an act of bioterrorism: a novel strain of pandemic influenza or an emergent pathogen such as the one that causes SARS. Counter-bioterrorism research could lead to broad-spectrum antiviral drugs and vaccines or to monitoring systems for detecting outbreaks early. We could expect enormous dividends from this research in areas well outside of bioterrorism defense itself.

Scientists will rise to this challenge if given adequate resources—indeed the United States excels at such scientific and technological research. Still, considerable patience will be required: countering strategic terrorism isn't a single, isolated problem. Instead, it is hundreds of disparate problems.

However, the situation is not hopeless. The R&D capabilities of the United States are still unmatched in the world. A full description of the research agenda is beyond the scope of this treatment, but it could be put together in short order.

The Intelligence Challenge

Preventing nuclear war and fighting common crime are similar in some ways. Both efforts typically exploit the principle of deterrence by inflicting punishment after the fact. This approach works well when the deterrence is real—when it is clear that the probability of punishment or retaliation is high. With strategic terrorism, we already know we cannot retaliate effectively.

Besides deterrence, the other main approach to security is guarding: preventing crime by having forces on the scene that stop criminals or attackers in their tracks. Guarding is used quite a bit in counterterrorism—air marshals on flights, security screeners in airports, and bomb-sniffing dogs at large events.

Unfortunately, guarding does not prevent strategic terrorism. If the goal of a terrorist is to spread an infectious disease in the United States, it is simple to put a few infected volunteers on a plane headed into our country. It

would be difficult for security to notice anything amiss. The terrorists wouldn't be obviously sick or carrying suspicious items. Even if a way existed to detect such attackers, by the time someone found them in the United States, it would already be too late.

Even with nuclear, chemical, or noncontagious bio warfare, guarding the country is of limited use. Intercepting a nuclear bomb in a shipping container works only if you stop it in a place you don't mind losing if the weapon detonates. Having a nuclear bomb explode in a Port Authority facility in New Jersey may be marginally better than having it explode in midtown Manhattan, but it would be a Pyrrhic victory.

The only way to beat strategic terrorists is to go after them, either in their home territory or, if they are already here, before they have built a sufficiently dangerous weapon. We need to strike preemptively. The Iraq War, however, has given preemption a bad name. Destroying Saddam Hussein's weapons of mass destruction was the goal, yet investigators ultimately found that he didn't have any. This not only discredits the intelligence process that led us into Iraq, it discredits preemption itself. Both the country and the world will be highly skeptical of any rush to a preemptive attack. Most preemptive action will not be at the level of a full-scale war and thus will require lower thresholds of certainty. Nevertheless, any sort of preemptive attack places tremendous demands on intelligence gathering—demands that our intelligence community, in its current form, cannot meet.

The need to battle strategic terrorists preemptively sets the bar for 21st-century intelligence services: they must provide information of sufficient quality and timeliness to enable policy makers to decide whether or not to act. The intelligence community needs a complete bottom-up review to determine whether its structure and methodologies match present and future needs. The new approach will require large and unpopular budget increases. Existing program budgets will need to be redistributed. Congress will vigorously defend current projects affecting their constituents and contractors will howl. Action is nevertheless imperative.

The Military Challenge

Gathering intelligence is only the first step. The second is what to do with it when it indicates a threat. What sort of team do you send in? What are

Gerald Nino

CBP officer with his explosive detection dog clears vehicles entering the Super Bowl area.

the risks of collateral damage? What if we're wrong?

The primary military challenge is to develop enough depth and breadth of new forms of special operations to give decision-makers an appropriate set of options. Taking out a terrorist camp that is building a nuclear weapon or brewing up smallpox is a very specific challenge. What if that camp is in a city? What if it is in an American city?

First, we need to develop new weapons. For example, our military lacks practical weapons that can destroy a bioweapons facility in a way that guarantees the contents are sterilized. The so-called "surgical" air strikes of the past have improved greatly but a tremendous amount of collateral damage still occurs. Weapon systems must be rethought and optimized for a wide range of special operations, from small-scale covert action to large-scale efforts such as the current one in Afghanistan.

The U.S. military also needs to retool its organization. Troops involved in special operations—Rangers, Green Berets, Delta Force members, and so forth—have been treated as adjuncts to the "real" forces. This is a World War II mindset and is unlikely to be useful. Instead, attacks will often use special-operations units without involving conventional forces. The years since 9/11 have seen an increase in the size and importance of special operations, but this increase appears to be a small down payment on the capabilities the future will demand. It may even make sense to unify all special operations under a separate branch of the armed services, one more on par with the Army, Navy, Marines, and Air Force than today's Special Operations Command (SOCOM).

The reach of military operations inside the United States must also change. Most acts of terrorism are treated as criminal activities and are left to local SWAT teams or the FBI. It is unrealistic to expect such forces to have the training and expertise to deal with strategic threats. Instead, we need a nationally trained and nationally funded force, even more developed than the FBI's WMD Directorate and Critical Incident Response Group (CIRG).

Strategic terrorism spans a wide range of possibilities from a criminal act by one or a small number of people to an all-out invasion. Our military must be prepared to handle the full range of possibilities, domestically and internationally.

The Domestic-Policy Challenge

American jurisprudence is firmly grounded in the sentiment expressed by Sir William Blackstone, an 18th-century jurist: "it is better that ten guilty persons escape than that one innocent suffer." Thus, there will be a seemingly insurmountable clash between the American tradition of liberal freedoms for its citizens and the extreme circumstances of strategic terrorism. There is substantial logic to the idea that trampling the rights of millions of citizens is, in aggregate, worse than letting a small number of criminals escape justice. The implicit calculus of harm is that whatever havoc a guilty party may wreak is less odious to society than the damage that may be caused by prosecuting the innocent or abridging their rights through unreasonable search and seizure or other police behavior.

When the Founding Fathers established the Constitution and the Bill of Rights, constraining the power of the state was a radical, untested, and unprecedented experiment. Liberal protection of human rights, pioneered on a large scale first in the United States and

then exported to Europe and other developed nations, has been a great success.

Indeed, the project has expanded substantially. The actions of the U.S. Congress in writing new laws, of the courts in interpreting the Constitution, and of advocacy groups such as the American Civil Liberties Union and a very active criminal-defense bar have expanded the civil rights of Americans. Indeed, the number of rights and privileges enjoyed by Americans has steadily increased over time.

This entire endeavor is, however, called into question by the nature of strategic terrorism, whose potential for harm is enormous enough to demand a reexamination of the quantitative bargain. We need to ask, "Is the cost to society in lives really worth more than the cost of constraints on civil liberties?"

Sir Blackstone's trade-off implicitly assumes that the harm done by causing one innocent man to suffer is worse than whatever harm the ten guilty men may do with their freedom. Is he still correct if one of those ten guilty men is a strategic terrorist who could kill millions of innocent Americans?

The purely principled tend to reject quantitative arguments—instead, they regard civil liberties as absolutes that must not be subjected to a cost-benefit equation. But, morally speaking, can that really be true? Can those charged with protecting public safety really make absolute tradeoffs without considering that millions of deaths could result? Civil-rights advocates say, "yes!" They contend that legal precedents indicate that once you allow some backsliding, you step onto the slippery slope.

These are very serious issues that need to be weighed carefully and rationally, but Americans tend to lurch from one extreme to another. During peacetime, we expand rights steadily. Then during war, we have routinely violated those rights in ways that were not simply unconstitutional but also ineffective and unnecessary. One of the most shameful examples was the internment of Japanese-Americans during World War II. The modern version of this debate focuses on the Patriot Act, the definition of torture in military and CIA interrogations, the detainment of "enemy combatants" at Guantanamo Bay, or the scandals about warrantless wiretapping and e-mail interceptions within the United States by the National Security Agency.

Inept, incompetent, or illegal government actions, like the deplorable treatment of Iraqi prisoners at Abu Ghraib, cast a long shadow and reinforce the point of those who seek to defend our civil liberties. The set of rights we are willing to surrender to the government is, in large part, a function of how competent and fair we think the government is. Unfortunately, ample evidence exists that the government can be unworthy of our trust.

The domestic-policy challenge is to tackle the issue while rationally steering a balanced course between protecting citizens from misuse of government power and protecting them from strategic terrorism.

The Diplomatic Challenge

Whatever trade-offs we make in our country, the approach we take to strategic terrorism is important in the international setting. How can we create diplomatic relationships to help stop strategic terrorism?

The answer to this question may seem straightforward—cooperation in addressing nuclear or biological terrorism seems to make sense for all concerned. But it is never quite that simple. Most countries will continue to have conflicting interests. This situation can be

seen clearly in the international debate about the wars in Iraq and Afghanistan. Political, diplomatic, and other forms of cooperation exist today and include some cooperation at the intelligence and counterterrorism level. But if we are to succeed against strategic terrorism in the long run, much more cooperation is required.

By analogy, the prescription for strategic terrorism would be to extend NATO-like cooperation from the military to intelligence and counterterrorism organizations. With the set of nations currently in NATO, this approach may be possible. However, future strategic-terrorism alliances would have to include Russia and China, as well as some Islamic countries. Is such cooperation possible and practical?

Conclusion

Several powerful trends have aligned to profoundly change the way that the world works. Technology now allows stateless groups to organize, recruit, and fund themselves in an unprecedented fashion. That, coupled with the extreme difficulty of finding and punishing a stateless group, means that stateless groups are positioned to be lead players on the world stage. One small group can be as lethal as the largest superpower. Such a group could execute an attack that could kill millions of people. It is technically feasible.

Our defense establishment was shaped over decades to address what was, for a long time, the only strategic threat our nation faced: Soviet or Chinese missiles. More recently, it is retooling to address tactical terror attacks like 9/11, but the reform process is incomplete and inconsistent. An effective defense will require rebuilding our military and intelligence capabilities from the ground up. Yet strategic terrorism has received relatively little attention in defense agencies, and the efforts that have been launched are fragmented.

History suggests that the only thing that shakes America out of complacency is a direct threat from a determined adversary that confronts us by repeatedly attacking us or hectoring us for decades. Our present foes are not doing that. Instead, they wait patiently between attacks. For now, they are satisfied with tactical terrorism, but eventually, they will have the means, opportunity, and motive to turn to strategic-terror weapons.

We will most likely continue to lumber along on our current path, addressing some issues and ignoring others. Then the terrorists will launch the next attack. With luck, we will detect it in time to prevent a major disaster, but a more likely scenario is that a strategic-terror attack in the next decade or so will kill between 100,000 and one million Americans. Then, we will surely get serious about strategic terrorism.

Or we could start now. PRISM

NOTES

[*] An expanded version of this paper was published as part of the Lawfare Research Paper Series: MyHvold, N.P. (July, 2013) "Strategic Terrorism: a call to action", *Lawfare Research Paper Series*, No. 2-2013

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