control, early warning, and communications systems to unauthorized electronic intrusion is worthy of serious concern and analysis. In my experience, the deficiencies in these networks defy comprehensive discovery, and evaluating their danger is highly complex, particularly when assumptions about the nature of “insider” collusion are varied.

Why take these real risks for unnecessary, anachronistic deterrent purposes? The United States and Russia could greatly strengthen their nuclear security and safeguards (and demonstrate their commitment to honoring their pledges to pursue nuclear disarmament as required by treaties in force) by standing down their nuclear missiles, taking them off of hair-trigger alert, and extending the time needed to launch them from the current period of seconds to a much longer period of days, weeks, and, eventually, years. By physically de-alerting their forces, the two nuclear rivals would buy a large margin of safety against a host of dangers and risks of an apocalyptic magnitude. De-alerting would also allow nuclear weapons to be locked down and secured through Nunn-Lugar and would virtually eliminate risks of theft and unauthorized or inadvertent missile launch.

Russia and the United States need to deepen their cooperation beyond Nunn-Lugar and realign their nuclear postures to fit with the current political reality, for the sake of nuclear security on both sides. This has become clear to me in personal terms through hundreds of conversations with Russian nuclear experts over the past two decades. It was driven home most vividly on New Year’s Eve, 1999, when I joined up with a group of Russian and U.S. military officers in Colorado.

Readers may remember that our countries set up a joint center there to monitor the rollover from 1999 to 2000, in order to prevent an accidental nuclear war from being triggered by the computer bug dubbed Y2K. Despite spending billions of dollars to rid their military and intelligence computer networks of this so-called millennium bug, the two countries took the additional precaution of bringing their early warning officers together to jointly interpret the near real-time data from U.S. satellite and ground radars used to detect enemy missile launches. These officers’ job was to diagnose any missile launch reports coming from these sensors during the rollover period, to ensure that they were not caused by Y2K bugs. I was allowed to watch this joint operation as the clock ticked down to midnight around the world. We were, of course, all jubilant as the rollover proceeded without a hitch from one time zone to another, moving from Russia west through Europe and the United States. I was there at the moment of truth for U.S. nuclear control, when the clock struck midnight Greenwich mean time without any false alarms from our missile attack warning sensors or any computer-induced accidental launches of strategic missiles.

This joint center was actually a prototype for a permanent joint center that was to be built in a Moscow suburb. Its purpose was not only to prevent false alarms of nuclear missile attacks from triggering World War III, but also to share intelligence and real-time data on ballistic missiles being developed and tested by proliferant states such as Iraq, Iran, North Korea, and many others. If we had finished building this joint center, today both the United States and Russia would be closely monitoring the test of North Korea’s Taepodong II ICBM, which is being designed to loft a nuclear bomb to targets many thousands of miles away. We would be jointly tracking nuclear missile proliferation around the world. We could have invited China and other interested parties to become partners in the venture.

The center unfortunately was not built, stalled over a minor dispute about who would assume liability for construction accidents. This is one small but telling indicator of the level of priority actually accorded nuclear safety and proliferation by the White House and the Kremlin. It is lower than most people realize. If we were really serious about it, and wise, we would end the nuclear hair-trigger status quo, de-alert, cut the liability knot, and open this joint center in Moscow.

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A damaging designation

BY WOLFGANG K. H. PANOFSKY

The deadly semantics of “weapons of mass destruction.”

Ironically, the term “weapons of mass destruction” (WMD) was first used to describe an attack with conventional weapons—the 1937 German cluster-bomb attack against the city of Guernica during the Spanish Civil War. Since then, WMD has been applied to unconventional weapons, including nuclear, chemical, and biological arms. This terminology is most unfortunate, since these three categories of weapons are very different as measured by their legal status, their physical effects, the evolution over time of their effects, the potential of preventive and remedial measures to mitigate their damage, and the ease of hiding their production and deployment.

If the only complaint against the term WMD were an error of nomenclature, then this oversimplification might...
Nuclear weapons

be pardoned as merely an illogical use of the English language. Unfortunately, the problem is more serious. This commonality of designation has severely inhibited efforts to control the most lethal and destructive weapons now deployed: nuclear weapons.

Chemical weapons (CW) do not merit inclusion in the category of WMD under any circumstances. The effects of CW as measured in terms of lethality per unit weight or size carried by specified munitions are not significantly different from those delivered by conventional explosives. And whereas biological weapons (BW) have the potential of enormous lethality stemming from advances in biotechnology and genetic engineering, they have not been used in warfare except in very limited instances. The means of delivering BW are complex and pose risks to the attacking party. And while very little can be done to alleviate the devastation wrought by a nuclear attack, a host of protective measures—including specialized clothing, respiratory equipment, vaccines, and other public health initiatives—exist to mitigate a BW attack.

Nuclear weapons have not been used in war for more than 60 years, and no atmospheric nuclear explosions have occurred since the Limited Nuclear Test Ban Treaty of 1963. Yet governments worldwide still cling to their nuclear arsenals, or seek to acquire them. Today’s decision makers regard them as symbols of national strength or even of international prestige. This symbolism itself incurs dangers, since it can weaken the taboo against using nuclear weapons and mask the reality of their destructive power from the public.

That reality is awesome indeed. In 1945, just two nuclear weapons—possessing an average energy that was one-twentieth of the average yield of the weapons in today’s U.S. and Russian stockpiles—killed a quarter of a million human beings in Hiroshima and Nagasaki. Nuclear weapons kill through immediate effects—in particular blast, heat, and prompt radiation as well as delayed effects. A 1-megaton nuclear explosion produces a lethal blast of about 70 kilopascals (10 pounds per square inch) at a distance of more than 1.6 kilometers (1 mile), killing exposed human beings over an area of about 7.8 square kilometers (3 square miles). The delayed effects of this explosion, including radioactive fallout and devastating fires, increase this lethality by a major factor.

An international norm against stockpiling or using chemical or biological weapons exists in the form of the Chemical Weapons Convention and the Biological and Toxin Weapons Convention. But no equivalent norm exists forbidding the stockpiling of nuclear weapons. Those stockpiles grew to a total of about 70,000 during the height of the Cold War and have now been reduced to fewer than 27,000—still an insane number. The Cold War is over, but nuclear risks remain in the form of accidental, inadvertent, or unauthorized use between Russia and the United States, regional use such as between India and Pakistan, and the possibility that weapons-usable fissile materials or nuclear weapons themselves will find their way into the hands of terrorists.

Proliferation of nuclear weapons has been retarded but not prevented through the Nuclear Non-Proliferation Treaty (NPT), which came into force in 1970. This treaty delineates a well-known bargain that nations not now possessing nuclear weapons will forego efforts to acquire them if the existing nuclear weapon states make a good faith effort toward elimination of their arsenals, and if non-nuclear weapon states can have unfettered access to peaceful applications of nuclear energy. All but

EXPERT TESTIMONY

Old habits die hard

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U.S. and Russian nuclear forces were created during the Cold War, and both countries have preserved most of their operational practices, thinking, and structure. As long as the technical capability is there, there will be a danger of an accident or some kind of a misunderstanding, miscalculation, or error.

We should not lightly dismiss the possibility of these kinds of things from happening. Neither should we overestimate the progress that we have made in changing the Cold War mind-set. The September 11, 2001, terrorist attacks occurred 10 years after the end of the Cold War. Yet, the lead pilot of the fighter squadron dispatched to intercept the hijacked planes later testified to the 9/11 Commission, “I reverted to the Russian threat... I’m thinking cruise missile threat from the sea. You know you look down and see the Pentagon burning, and I thought the bastards snuck one by us.”

Also, on that same day, the North American Aerospace Defense Command was scheduled to conduct an exercise, known as Vigilant Guardian, “which postulated a bomber attack from the former Soviet Union.” And Russia was in the middle of a strategic bomber exercise that involved flights in the direction of the United States. The Russian military terminated that exercise as soon as they learned about the events in the United States. But the number of coincidences on the day of the terrorist attacks is quite alarming.
four of the nations on this globe are parties to this treaty. Yet the NPT is under severe stress today, both due to the continuing reliance of the nuclear weapon states on their arsenals in the conduct of international relations and due to the potential of some non-nuclear weapon states to join the nuclear weapons club. Ultimately, proliferation can be stopped only if all non-nuclear weapon states are persuaded that their national security is served better without nuclear weapons than through their possession.

Essential ingredients to promoting that latter conviction can take the form of both negative and positive security assurances. Positive security assurances provide that nuclear weapon states will assist non-nuclear weapon states should they be attacked by a nuclear-armed aggressor. Negative security assurances embody a guarantee that nuclear weapon states will not attack non-nuclear weapon states with nuclear weapons. In 1978 and 1995, the Carter and Clinton administrations explicitly made such a pledge. The United States promised not to use nuclear weapons except: in response to attacks on the United States or its military forces by nuclear-capable states; in response to attacks on the United States or its military forces or allies by non-nuclear weapon states allied with a nuclear weapon state; or in response to attacks by a non-nuclear weapon state “not in good standing” under the NPT. Specifically, these negative security assurances implicitly included a guarantee not to retaliate with nuclear weapons even if a non-nuclear weapon state used chemical or biological weapons.

But recent U.S. government statements have diluted that guarantee. The Bush administration has sought to develop earth-penetrating nuclear weapons, ostensibly to launch preemptive strikes against underground stockpiles of biological and chemical weapons. And the White House declared in December 2002, “The United States will continue to make clear that it reserves the right to respond with overwhelming force—including through resort to all of our options—to the use of WMD against the United States, our forces abroad, and friends and allies.” In effect, by expanding the definition of WMD to encompass biological and chemical weapons, the United States has proclaimed new rationales for using nuclear weapons. In doing so, the United States emasculated its negative security assurances and thereby seriously undermined the nonproliferation regime by sending the clear message that nuclear weapons are vital to a nation’s security.

Seen in this light, the inclusive concept of WMD is not only illogical but has damaged efforts to stem the spread of the one and only true weapon of mass destruction.

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