Evidence-based policy or policy-based evidence?
Nuclear weapons decision making in Europe

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I was a bit puzzled when I was invited to be a member of a panel on "nuclear weapons decision making in Europe." I'm an American, and I've never lived in Europe much less been involved in nuclear decision making here. But when I was told that the meeting was in Barcelona, I immediately accepted the invitation. I thought I would figure out later what I could say on the subject that might be useful.

One possible topic is the deployment of U.S. nuclear weapons in Europe, and the doctrine concerning their possible use. I had a brief and somewhat dismaying experience on this issue during the Clinton Administration's nuclear posture review, which took place from early 1993 until mid-1994. The NPR was intended to be a thorough, bottom-up review of all U.S. nuclear weapons policies and deployments, including U.S. nuclear weapon deployments in Europe. You'll recall that, in 1991, President Bush ordered the withdrawal from Europe and dismantling of several thousand artillery shells, missile warheads, and landmines. President Gorbachev reciprocated, withdrawing all Soviet tactical nuclear weapons from Eastern Europe. But in 1993 a few hundred U.S. bombs remained—and still remain today—in Western Europe, and unknown thousands of tactical warheads probably remain in Russia.

One possibility examined during the NPR was the elimination of all U.S. tactical nuclear weapons, in exchange for a Russian commitment to do the same. A different but related question was whether the U.S. should pledge not to be the first to use nuclear weapons.

In 1993, it seemed reasonable to raise both of these questions. During the Cold War, nuclear weapons were at the center of U.S. and NATO security policy. Nuclear weapons were seen as an essential counterweight to the presumed overwhelming superiority of the much larger Soviet army. To enhance the credibility of nuclear deterrence of a Soviet conventional attack, thousands of U.S. nuclear weapons were deployed in Europe, with plans to use them to repel a Soviet invasion.

But by 1993 the Cold War was over. The Warsaw Pact and the Soviet Union had disintegrated and the threat of invasion had evaporated. The rationale underlying U.S. nuclear deployments in Europe and related plans and doctrine had been shattered. But when some asked whether it might now be wise to withdraw these weapons or declare that they would not be used except in retaliation to a nuclear attack, others argued that our European allies were against it, that it would undermine NATO and weaken our security relationships.

The only evidence of this concern, so far as I know, where confidential statements from officials within the European defense establishment—particularly by people who had long overseen nuclear weapons policy—sometimes for decades. But there was no apparent basis for this position. There was no analysis, no plausible scenario offered in which U.S. tactical nuclear

weapons might be useful for the defense of Europe, much less necessary. There was only the vague need to guard against "an uncertain future," and the symbolism that some people believed was attached to these nuclear weapons. The fear was that withdrawing the nuclear weapons might be seen as an indication of the U.S. abandoning Europe now that the Cold War had been won. The possible security gains that might be achieved by eliminating tactical weapons never received serious consideration.

It was a frustrating experience for a policy analyst who believes that policy should be based on evidence and analysis. It was like being inside an echo chamber. European policymakers worried that the withdraw of U.S. nuclear weapons would be evidence of a weakening of the U.S. commitment to Europe; U.S. policymakers worried that such a withdrawal would be interpreted in this way. There was no discussion of whether such concerns were reasonable or well founded; no discussion of how Europe could be reassured; no discussion of security benefits that might be gained.

That was not the only frustration resulting from the Clinton nuclear posture review, or the subsequent Bush nuclear posture review in 2001. The remarkable thing is that the basic structure of U.S. nuclear policy and posture remains unchanged from the Cold War. The number of warheads has been reduced, but the U.S. still retains thousands of nuclear weapons on alert ready to be launched against targets in Russia in a few minutes notice. And we still maintain tactical nuclear weapons in Europe, for which we continue to maintain the right to use against the threat of conventional or other non-nuclear attacks. There is no discernable logic or strategic analysis underlying this nuclear posture, beyond simple inertia.

But there are notable differences between nuclear weapons policymaking in the United States and European countries, which are related to the structure of our various governments, and I thought it might be interesting to talk a bit about this.

First, there is a large flow of people into and out of the U.S. government—much larger than in any European government. In 2001, about 5,000 senior officials that had been appointed by President Clinton left government and were replaced by 5,000 people appointed by President Bush. The same will happen in 2009 if Obama is elected. The total flow is even larger, because the average length of service of senior officials is relatively short; for the 200 or so assistant secretaries and undersecretaries, the average tenure is only about two years. These former officials—many of whom return to universities or think tanks—represent a deep well of expertise that can be used to evaluate the policies of the current government—including nuclear weapons policies, where much of the key information is classified but is well known to former officials. The outflow of knowledgeable people extends to the military services and the nuclear weapons laboratories, and to the various fellowship programs designed to bring scientists and other academics into government for a year. It probably is not an exaggeration to say that there are as many former "insiders" as there are current insiders in the United States.

Second, U.S. government is usually divided. In only 6 of the last 28 years have both houses of Congress been controlled by the party of the incumbent president. This opens up opportunities for Congress to hold hearings and invite knowledge former officials to critique the president's policies and proposals. Congress can request studies of issues from the National Academy of Sciences, which forms committees of independent scientists and former policymakers.

Professional organizations, such as the American Association for the Advancement of Science and the American Physical Society, and nongovernmental organizations, such as the Federation of American Scientists and the Union of Concerned Scientists, also form expert committees to analyze issues and make policy recommendations. I've had the pleasure of participating in many such studies over the past decade, and some have had a noticeable effect on policy. I thought I would mention two of these studies today.

One study concerned the "robust nuclear earth penetrating warhead" or RNEP that was proposed by the Bush administration. The RNEP request grew out of the 2001 Bush nuclear posture review, which noted that potential adversaries had many hard and deeply buried targets that could not be reliably destroyed with current weapons. The administration proposed the development of a new nuclear warhead that would penetrate into the earth before detonation, thereby coupling most of its explosive energy into the ground and delivering a much larger ground shock to deep underground bunkers than if the same warhead had been detonated at or above the surface, as would be the case with current warheads.

There was much confusion in Congress about the RNEP proposal. Some prominent members of Congress misinterpreted RNEP's potential to destroy bunkers hundreds of meters underground to mean that the warhead itself would burrow hundreds of meters underground before it detonated, and that the effects of the explosions would therefore be largely contained underground. Others appeared to believe that the increase in ground shock meant that RNEP would have a low yield—on the order of one or ten kilotons. In either case, they believed that RNEP might allow underground targets in or near cities to be attacked with greatly reduced or even minimal civilian casualties. Administration officials fostered—or at least did not dispel—these mistaken views of RNEP, suggesting that RNEP would make the use of nuclear weapons more credible.

To clarify the situation, in 2003 Congress asked the National Academy of Sciences for a report on the effects of using an earth-penetrating warhead. Our committee—of which Dick Garwin and I were members—was able to explain clearly that a warhead could not penetrate more than a few meters into hard rock. This modest depth does not significantly change the lethal effects of the detonation. The number deaths and injuries from the detonation a few meters below the surface would be about the same as those from the detonation of the same weapon at the surface. The explosive yield required to destroy a given underground target is reduced by a factor of 15 to 25 if an earth-penetrating warhead is used, so an EPW with a yield as low as 10 kilotons might be used instead of a regular warhead with a yield of 250 kilotons. But the number of casualties would be reduced by as little as a factor of two, and no more than a factor of eight. Most underground targets are located in or near cities, and a 10-kiloton earth-penetrating warhead detonated in or near a major city could cause on the order of 100,000 deaths. Moreover, to destroy facilities buried 200 or 300 meters underground, earth-penetrating warheads with yields of 300 kilotons to a megaton would be needed, each of which would kill a million or people if used in or near a city. Adversaries could simply dig deeper, beyond the destructive effect of even the largest nuclear weapons—and, indeed, some known facilities could have been destroyed by the proposed RNEP warhead. But even the deepest bunkers can be defeated by destroying tunnel entrances and other surface facilities—often using only conventional weapons.

Soon after Congress was briefed on the results of our study, Linton Brooks, director of the National Nuclear Security Administration (NNSA), apologized to Congress for his "lack of

precision if we in the administration have suggested that it was possible to have a bomb that penetrated far enough to trap all fallout." He went on to say that, "This is a nuclear weapon that is going to be hugely destructive and destructive over a large area. No sane person would use a weapon like that lightly, and I regret any impression that anybody, including me, has given that would suggest that this is going to be any easier a decision. I do want to make it clear that any thought of [the] sort [that] nuclear weapons that aren't really destructive is just nuts."

Congress responded by canceling the program. I think this is an example where clear analysis helped produce the correct decision.

A more recent example is the debate in the United States over the Reliable Replacement Warhead, or RRW. The Bush administration had become concerned over the very-long-term reliability of nuclear warheads. The warhead designs currently in the stockpile, it argued, are highly optimized and have little margin for error. As warheads age old parts must be replaced with new parts that aren't identical. These life extension programs introduce small changes in the design of the warhead, which have to be carefully evaluated without nuclear testing. NNSA proposed developing a new generation of warheads—reliable replacement warheads—that would have larger margins and would be more tolerant of small changes or errors. They also argued that more advanced safety and security features could be incorporated into RRWs, to make them more resistant to accidents or unauthorized use. Finally, it was argued that the process of designing and building these new warheads would be essential to train the next generation of nuclear weapon scientists and engineers.

Once again, Congress has had difficulty assessing these claims. In this case, the American Association for the Advancement of Science (AAAS) formed a committee of independent scientists and former officials to examine the Administration's arguments in favor of RRW.

Our committee found that the existing stockpile stewardship program had done an excellent job in assessing and maintaining the safety and reliability of the existing U.S. stockpile. There was no evidence that the reliability of warhead current designs could not maintained long into the future, given sufficient funding and staff. But designing and building RRWs while simultaneously maintaining current designs would impose substantial additional burdens on the nuclear weapon complex. This could result in a self-fulfilling prophesy, in which the response to theoretical concerns about the safety and reliability of current warheads—in the form of RRW—could divert so much effort and attention from the proper maintenance of current warheads that they would, in fact, become less safe and reliable. There is, moreover, no guarantee that the RRW would, at least initially, be any more reliable than existing designs. In the past, most of the problems with new warhead designs were discovered soon after deployment, and the RRW might also have "birth defects" that will have to be corrected in the years after its deployment.

Probably the biggest concerns about RRW are its effects on international perceptions and nonproliferation efforts. The RRWs would widely be seen as a renewal of nuclear weapons development, and as indicating a very-long-term commitment to nuclear weapons by the United States. On the other hand, by reducing concerns about warhead reliability RRW might facilitate ratification of the CTBT and the elimination of thousands of warheads that currently are being stored as a hedge against unreliability.

Our most important conclusion, I think, was that it did not make sense to more forward with a program to design and build RRWs without first having a clear vision of the future need for and role of nuclear weapons in U.S. security policy.

I was very grateful when the key Congressional committee declared, soon after the release of the report, that it would not fund RRW until the Administration produced a clear statement on the role of nuclear weapons in dealing with current and future security threats, the size and nature of the nuclear stockpile sufficient to serve that strategy; and the size and nature of the nuclear weapons complex needed to support that future stockpile. With no such plan delivered, Congress denied funding for RRW both last year and this year.

I look forward to a fundamental reexamination of nuclear policy by a new presidential administration. I hope that this will result in a dramatic change in U.S. nuclear policy—one in which there is a commitment to very deep reduction in the number of nuclear weapons, with the ultimate goal of a global prohibition on the possession of nuclear weapons. A strong case can be made, I think, that the United States and its allies in Europe and elsewhere would be more secure if nuclear weapons were prohibited everyone, than if we continue to rely on nuclear threats to deter the use of nuclear weapons by an ever-expanding number of countries.

Of course, reason does not always prevail. U.S. plans to deploy a ballistic missile defense system have gone forward, despite detailed analysis showing that the system can be defeated by simple countermeasures. But I think that the relative openness of U.S. government and the large flow of scientists from universities and think tanks to and from government agencies and laboratories gives us a good chance to bring evidence and independent analysis to bear on even the most sensitive policy issues, including those involving nuclear weapons. I’m not sure to what extent this flow of nuclear expertise exists in European countries, but perhaps mechanisms, such as fellowship programs, can be created to increase it.

Thank you for your attention.

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