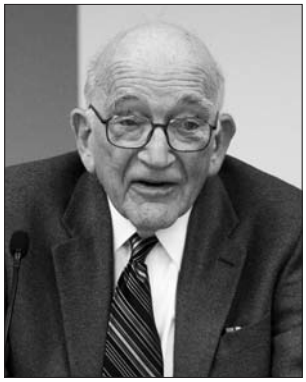
Academy Meetings

Condensation Cloud of a Nuclear Blast. Photograph © Hulton-Deutsch Collection/Corbis

A World Free of Nuclear Weapons

Sidney D. Drell, William J. Perry, Sam Nunn, and George P. Shultz

These remarks were given on the occasion of the awarding of the Rumford Prize to Sidney D. Drell, William J. Perry, Sam Nunn, George P. Shultz, and Henry A. Kissinger (in absentia) at the 1929th Stated Meeting, held at Harvard University on October 12, 2008.



Sidney D. Drell

Sidney D. Drell is Senior Fellow at the Hoover Institution at Stanford University and Professor of Theoretical Physics Emeritus and Deputy Director Emeritus at the Stanford Linear Accelerator Center. He has been a Fellow of the American Academy of Arts and Sciences since 1971.

Thank you very much for this award. To me, an academic scientist, this award from the distinguished American Academy is a great honor indeed. Benjamin Thompson – Count Rumford – established this prize to recognize contributions to advancing our understanding of nature, and with particular emphasis on understanding light and heat, which, in the words of the Academy, can be very broadly interpreted. Early in my career as a theoretical physicist, my primary goal was to make such contributions; but over time I realized that I could not escape the reality that progress in nuclear science made back in the 1920s and 1930s had led to terrifying new dangers to the very survival of our civilization on a global scale. I am speaking of nuclear weapons, of course, capable of unimaginable destructiveness. Increasingly, I found my scientific work drawn to the challenge to prevent a nightmare of that sort from occurring. This opened a second track in my career and led to my forming working bonds and friendships with political scientists and government leaders, such as my fellow honorees here today. I want to recognize the importance of the American Academy and its committee on International Security and, in particular, the leadership of my good and longtime friend Paul Doty in helping me form such bonds.

Today I am being honored for contributing to an effort not to advance our understanding of heat and light, but to get rid of the means of creating here on earth explosions that produce such monstrous quantities of heat and light and other forms of energy that they could destroy us all. Since this initiative presents technical as well as political chal-

lenges, and Count Rumford was a physicist who was also interested very much in gunpowder and in various forms of armaments in general, I guess it is reasonable to conclude that awarding this prize this way fits appropriately in the guidelines as the Count set them down to the Academy.

The only way I know to get rid of the means of creating devastatingly destructive explosions that pose a threat to our civilization is to dismantle and destroy all nuclear weapons. Realizing the vision of a world free of nuclear weapons is precisely the goal of our program. It is the vision that President Ronald Reagan and General Secretary Mikhail Gorbachev brought to their remarkable summit in Reykjavik, Iceland, in 1986. Although they failed to close the deal – recall that in 1986 the Berlin Wall still stood and we were still in the midst of the cold war – Gorbachev and Reagan did start down the path of reducing the sizes of these bloated nuclear arsenals. However, without a vision of a world free of nuclear weapons, the nations of the world have not pursued, with the intensity and the boldness that the times require, the measures that could reduce nuclear dangers that we face. No doubt, rekindling or realizing the vision will be a very difficult goal to achieve. It will require nothing less than a new deal between states that have nuclear weapons and those who, for now at least, have volunteered to forgo them. Progress will require cooperation on a global scale between nations with very different economic and strategic aspirations as well as forms of governance. We recognize this in our program and have proposed a series of steps that we consider both practical and necessary for the United States to take, together with other nations in the world, to begin the journey and convince skeptics that our vision is not a flight of fancy, but a practical goal. We have been encouraged by strong and broad international support.

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There are also, of course, some who have protested that our initiative is not only futile, but even unwise and dangerous, a distraction from a policy of nuclear deterrence. After all, the United States and the former Soviet Union relied on nuclear deterrence to navigate successfully through the perilous years of the cold war. Against what seemed to me to be insurmountable odds, not one of the many thousands of existing nuclear weapons was detonated in military combat, although there were numerous opportunities to do so. But it would be dangerously wrong to draw comfort from that achievement. Relying on nuclear weapons for deterrence is becoming increasingly hazardous and decreasingly effective in a world with an accelerating spread of nuclear know-how, weapons, and material. Today we are teetering on the edge of a new and more perilous nuclear era, facing a growing danger that nuclear weapons, the most devastating instrument of annihilation ever invented, may fall into the hands of those who do not shrink from mass murder on an unprecedented scale. With the spread of advanced technology and renewed international interest in nuclear technology for civil power generation, the threat of such a catastrophe looms more and more likely.

What will it take to prevent such a catastrophe? First, a sense of urgency that was lacking when two bold leaders, Reagan and Gorbachev, at Reykjavik posed the challenge to escape the trap of nuclear deterrence. It is lacking still today. And second, strong leadership, with the United States at the helm but with partners, to create and inspire that sense of urgency. This means forging an effective international effort to implement a set of practical steps to prevent the proliferation of nuclear weapons. My fellow honorees, 35 other endorsers, and I proposed such a set of steps in a *Wall Street Journal* op-ed of January 2008, "Toward a Nuclear-Free World." And just as rekindling the vision of Reykjavik will be essential for these steps to be broadly accepted as fair and urgent, the steps themselves are essential to achieve that vision of a world free of nuclear weapons. There is a lot of work to do. Thank you again for this honor.

William J. Perry

William J. Perry is the Michael and Barbara Berberian Professor at Stanford University, with a joint appointment at the School of Engineering and the Institute of International Studies. He is a Senior Fellow at the Hoover Institution, a Senior Fellow at the Freeman Spogli Institute for International Studies, and Codirector of the Preventive Defense Project, Institute for International Studies. He has been a Fellow of the American Academy of Arts and Sciences since 1989.

For the last few years, working to reduce nuclear danger has taken up most of my time; indeed, it has become a top priority in my life because I believe that the gravest danger facing the world today is a terror group detonating a nuclear bomb in one of our cities, and that this danger is not remote. It is also because my experiences during the cold war have conditioned me to be especially sensitive about the dangers of nuclear weapons. To make this point, I will share one experience from the most dangerous period of the cold war, when I was the Under Secretary of Defense for Research and Engineering.

During the summer of 1978, I was awoken at three o'clock in the morning by a phone call from the watch officer at the North American Air Defense Command. As I sleepily picked up the telephone, the general got right to the point. His computers were indicating 200 ICBMs on their way from the Soviet Union to the United States. I immediately woke up. That was a false alarm, but the general had only 15 minutes to reach that judgment. He called me in the hopes that I could help him determine what had gone wrong so that he would have a good explanation when he briefed the President the next morning.

That call, of course, is engraved in my memory; but it is only one of three false alarms that occurred during my tenure in office, and I do not know how many more might have occurred in the Soviet Union. So the risk of a nuclear catastrophe was never academic to me.

Ironically, during that same period I was responsible for the development of our country's nuclear weapons. In my tenure, I supervised the development of the B-2 bomber, the MX missile, the Trident submarine, the Trident missile, the air-launched cruise missile, the ground-launched cruise missile, and the sea-launched cruise missile. While I saw clearly the risk in building this deadly nuclear arsenal, I believed at the time it was necessary to take those risks in the face of the threats of the cold war. But after the cold war ended, I believed that it was no longer necessary to take those terrible risks, and that we should begin to dismantle this deadly cold war legacy.

My first opportunity to act on this belief came in 1994, when I was invited by President Clinton to become the Secretary of Defense. As the Secretary, my first priority was to begin to dismantle the cold war nuclear arsenal. The greatest immediate danger was that the nuclear weapons in Ukraine, Kazakhstan, and Belarus would fall into the hands of terrorists. The tools that I had available to deal with this were the START Treaty, in which Secretary George Shultz had played a key role; the Nunn-Lugar program, in which Senator Sam Nunn had played a key role; and the cooperation of Russia. My major concern was the nuclear arsenal in the Ukraine. When the Soviet Union collapsed, Ukraine inherited all of the nuclear weapons then on its soil. At the time, they had more nuclear weapons than the United Kingdom, France, and China combined. Worse, they were going through a period of social, economic, and political turbulence. Fortunately, the Ukrainian government made a courageous and enlightened decision to give up their nuclear weapons, and using the Nunn-Lugar program, we assisted them in the dismantlement process. With permission of the Ukrainian president, I personally supervised the dismantlement of their nuclear weapons, visiting four times their primary ICBM base at Pervomaysk, which at the time had 700 nuclear warheads, all aimed at targets in the United States.

On the first visit, I went to the control center and observed a practice countdown, and after that unnerving experience, I then observed the removal of the first batch of warheads. On my second visit, I observed the removal of the first batch of missiles, and on my third I joined the Ukrainian and Russian defense ministers in pressing the buttons that blew up one of the silos. Then, in the summer of 1996, I returned to Pervomaysk for my final visit. I went with the Ukrainian and Russian ministers to the site where the silos had previously been, and together we planted sunflowers at that site.

The gravest danger facing the world today is a terror group detonating a nuclear bomb in one of our cities – and this danger is not remote.

During my term in office, we dismantled about 10,000 nuclear warheads in the United States and in the former Soviet Union, and we helped three nations go from being nuclear powers to non-nuclear powers. This was the first time since the dawn of the nuclear age that proliferation had been reversed, and I thought we were well on the way to containing the deadly nuclear arsenal of the cold war. Since then, though, the efforts to reduce the nuclear danger have stalled, and even reversed. Both Russia and China are now developing new nuclear warheads. The START Treaty expires in 2009, and there have been no further treaties to dismantle nuclear weapons. The United States has not yet ratified the Comprehensive Test Ban Treaty, signed more than 12 years ago. India and Pakistan have gone nuclear. A.Q. Khan has covertly sold Pakistan's nuclear technology to an unknown number of nations. North Korea has built a small quantity of nuclear weapons and tested one of them. Iran is developing the capability to produce nuclear fuel, which, if completed, would give it the option of building nuclear weapons within a few months. If Iran and North Korea proceed on their present path, there is a real danger of a veritable cascade of nuclear proliferation.

All of this is happening in parallel with the emergence of catastrophic terrorism: 9/11 made real to the United States, indeed the world, just how catastrophic terrorism could be. But a nuclear bomb detonated in one of our cities would dwarf 9/11 in its catastrophic effects. It is impossible to overstate the human, social, economic, and political catastrophes that would result from such a detonation, and it must be the priority of all nations to work seriously to prevent that outcome. The nuclear powers have a special responsibility in that regard, and I believe that the United States must lead the way. One important way for our new president to demonstrate American leadership is by embracing the goals of our nuclear security project.

Since the initiation of this project last January, I believe that we have turned a corner in dealing with the nuclear danger. More than a century ago, Victor Hugo wrote, "More powerful than the threat of mighty armies is an idea whose time has come." I believe that working to eliminate this deadly nuclear legacy is an idea whose time has finally come, but I also believe that it will take decades to achieve the final goals of the project. Thus we must train a new generation of security specialists to carry on the task as we retire from the scene. All of the members of our nuclear security project are in their 70s and 80s, and friends ask us why we are still working on security projects. I work every day at Stanford with young security specialists, and I will happily pass the baton to them when I retire from the scene. But I'm not ready to do that just yet. Indeed, when asked why I am still teaching, why I am still taking red-eyes to Washington, and why I do not retire to some pleasant grove, I reply with words inspired by Robert Frost:

> The woods are lovely, dark, and deep.
> But I have promises to keep,
> And miles to go before I sleep,
> And miles to go before I sleep.

Sam Nunn

Sam Nunn is Cochairman and Chief Executive Officer of the Nuclear Threat Initiative, Distinguished Professor at the Sam Nunn School of International Affairs at the Georgia Institute of Technology, and Chairman of the Board of the Center for Strategic and International Studies. He has been a Fellow of the American Academy of Arts and Sciences since 1997.

I am deeply grateful to be here today and to receive this wonderful honor from the Academy. When you look at the history of the Academy and its contributions to the expansion and enhancement of knowledge, it is truly awesome and humbling. And when I think of receiving the Rumford Prize alongside George Shultz, Bill Perry, and Sid Drell, three of our nation's most effective and brilliant leaders, somehow I am reminded of the *Camelot* character by the name of Mordred, of whom Lady Guinevere once observed, "The only thing I can say for him is that he is bound to marry well, because everybody is above him." I am honored to be an apprentice in this group of, what shall I say, mature leaders.

Secretary Dean Acheson – George Shultz will identify with this, I'm sure – was once asked to define foreign policy. He thought a moment and replied, "Foreign policy is one damn thing after another." I realized at a relatively young age that nuclear weapons were not just another thing, but that indeed they held hostage the future of mankind. I was a 24-year-old lawyer for the House Armed Services Committee on a three-week Air Force trip to Europe when the Cuban Missile Crisis broke out. During that period, while the world held its breath, our delegation met at Ramstein Air Force Base in Germany with the head of U.S. Air Force, Europe. The general explained that in the event of war, he had only a couple of minutes to launch all of what were known as quick-reaction aircraft, or they would be destroyed. These planes and forward bases were the first targets for the Soviets because they would deliver the first nuclear weapons to strike the Soviet Union, or at least that is what the Soviet Union anticipated. The fact that the fate of mankind rested on the shoulders of only a few people on each side who had only a few moments, as Bill Perry described, to decide whether to launch nuclear weapons made a lasting impression on me. I pledged to myself then that if I ever had a chance to work on the problem, I was going to tackle it.

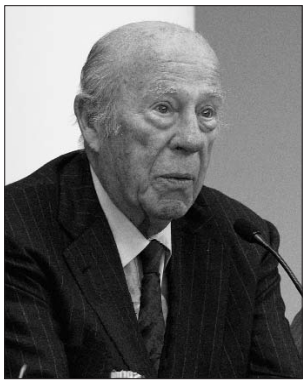
I believe that the greatest danger we face is the possibility of a catastrophic nuclear attack by a terrorist group that does not have a return address and therefore is unlikely to be deterred.

Today the cold war is over, but we face new nuclear dangers. I believe that the greatest danger we face – Bill just said this, and I agree with him completely – is the possibility of a catastrophic nuclear attack by a terrorist group that does not have a return address and therefore is unlikely to be deterred. As those of us being honored today have pointed out, the accelerating spread of nuclear weapons, nuclear materials, and nuclear know-how has brought us to a nuclear tipping point. Indeed, we are in a race between cooperation and catastrophe.

I frequently ask myself two questions: the day after a nuclear attack on one of the cities of the world, what would we wish we had done to prevent it? And why aren't we doing it now? In our *Wall Street Journal* article, we call for building a solid consensus for reversing reliance on nuclear weapons globally, as a vital contribution to preventing their proliferation and ultimately ending their threat to the world. We are all keenly aware that the quest for a world free of nuclear weapons is fraught with many practical challenges. We have taken aim at those challenges by laying out a number of steps, which I believe are doable even though they are very difficult. We cannot reduce the nuclear threat without taking these steps. We cannot take these steps without the cooperation of other nations. We cannot get the cooperation of other nations without the shared vision of ending these weapons and their threat to the world.

Many people's reaction to the vision of a world without nuclear weapons comes in two parts. On the one hand, most people say, "Boy, that would be great"; on the other, "We simply can't get there from here." But there is hope. In the 1990s, under Bill Perry's capable leadership as the Secretary of Defense, we made a deal to buy highly enriched uranium from Russian warheads that were aimed at the United States, blend it down, make it into nuclear fuel, and use it in our power plants. Today, after a number of years working on that program, we have made tremendous progress. If you think about it, approximately 20 percent of the electricity in the United States is supplied by nuclear power; 50 percent of the nuclear fuel that goes into that nuclear power is supplied by highly enriched uranium that has been blended into low-enriched uranium and made into nuclear fuel that 20 or 25 years ago was in warheads aimed at the United States. So when you look at the lights in this room or any other room in America, theoretically 10 percent of those light bulbs are fueled by material that was in the form of weapons aimed at America in the 1970s and the 1980s. Swords to plowshares: we have hope.

When I think about the goal of a world free of nuclear weapons, to me it is like a very tall mountain. It is tempting and easy to say we can't get there from here. It is true that today our troubled world cannot even see the top of the mountain. But we can see that we are heading down, not up; we can see that we must turn around, that we must take paths leading to higher ground, and that we must get others to move with us. I am profoundly grateful to the Academy for telling the world through this Prize how urgent it is for the survival of humanity that we stop our descent and find paths up the mountain toward a world free of nuclear weapons.



George P. Shultz

George P. Shultz is Thomas W. and Susan B. Ford Distinguished Fellow at the Hoover Institution at Stanford University. He is Chairman of the JP-Morgan Chase International Council, Chairman of the Energy Task Force at the Hoover Institution, and Chairman of the MIT Energy Initiative External Advisory Board. He has been a Fellow of the American Academy of Arts and Sciences since 1970.

I share with my colleagues gratitude to the Academy for this award; it is a great honor. But as Sam just said, it is also a way of calling attention to the urgency of our program. And in that respect, I welcome and applaud the Academy's continuing interest, demonstrated through its own programs focused on international security and the global nuclear future.

By this time in the program, what more is there to say? Well, I have thought of two things. First, I am struck by the contrast between the reactions of people to what happened at Reykjavik and to the initiative that we have launched. I want to talk about that and ask, why the difference in reaction? Second, I would like to discuss some of the implications of moving ahead for the status of our diplomatic capability, and the way it should be conducted.

In Reykjavik we were in a tiny room in Höfdi House. At one end of the table sat President Ronald Reagan; at the other, General Secretary Mikhail Gorbachev. I had the privilege of sitting beside President Reagan, and my counterpart, Soviet Minister of Foreign Affairs Eduard Shevardnadze, sat beside General Secretary Gorbachev. There we were for two full days, talking about a huge range of issues, but with the main emphasis on an effort to reduce the number of nuclear weapons that each side held. In the course of the discussion, Reagan and Gorbachev found themselves agreeing on the desirability of eliminating nuclear weapons altogether.

There were no leaks from the Reykjavik meeting because we were quite open about everything that happened. When I got back to Washington, Margaret Thatcher had arrived. She summoned me to the British Ambassador's residence, and I learned about a verb in the British language. Remember that Margaret used to carry a hard handbag all the time. Well, in the British language, there is a verb "to be handbagged." And I really got handbagged. She said, "George, how could you sit there and allow the President to agree to eliminating nuclear weapons?" I said, "Margaret, he's the President!" "Yes, but you're supposed to be the one with his feet on the ground, keeping things stable." "But, Margaret, I agreed with him." Her reaction was more dramatic than most, but it was the general reaction in Washington: that this was a crazy idea.

I believe we are not nearly as well-prepared as we should be to conduct, steadily and with people of high standing, the kind of imaginative global diplomacy we need.

Now, 20 years or so later, the reaction to our op-ed in the *Wall Street Journal* is entirely different. Yes, there are some people who don't like the idea; but, interestingly, most people think that the steps we outline in that article will move us toward a safer world. The positive reaction has been astonishing. By this time, something like three-quarters of the former secretaries of state and defense and national security advisors have publicly come on board, and we have had all sorts of indications from people in other countries of their interest. It has been quite heartening.

So I ask myself, why the difference in the reaction? First, during the height of the cold war, people were convinced, even though we had all of the close calls that Bill Perry outlined so dramatically, that deterrence – the ability to wipe each other out – kept the peace. It was pretty tenuous. Ronald Reagan considered it immoral to think that we defend ourselves that way, but people thought that it worked. The *Wall Street Journal* piece, as I see it, jolted people. Since the end of the cold war, people had gone to sleep on this issue, and they now saw what had been happening. As Sam puts it, we are going down the mountain, toward a situation of great danger. People suddenly perceived that, and now they are interested.

I think also – and this is a lesson for moving ahead – people were struck by the series of steps that were outlined in the article: they saw the task not just as a great idea, but as something that might actually be achieved because there was a roadmap of things that could be done and that were seen as doable. I think, too, there may be an instinctive reaction, at least by people who work on the subject, to improve our stance as we think ahead to the Nonproliferation Treaty review and other such efforts. In a way, saying *nonproliferation* puts you in a defensive stance: you are trying to defend against something to stop it. I think what we perhaps have achieved, or are in the process of achieving if we can go forward with this, fits that old saying, "the best defense is a good offense." This puts us on the offensive; we are for something. Within that framework, you can talk about nonproliferation in a much more convincing way. At any rate, I can't help but notice the difference in reaction between Reykjavik and now, and it is very heartwarming.

We have published a book that reprints the full transcript of the conversation at Reykjavik between Reagan and Gorbachev (and a few words by me and Shevardnadze, but the two leaders totally dominated the discussion). A wonderful scholar at Stanford, David Holloway, dug around in the Hoover archives and found, amazingly, the instructions the Politburo gave to Gorbachev, including all of his red lines, as he went to Reykjavik. That document is also reprinted in the book. I read it and said, "Boy, do I wish I'd had that document before the summit."

My second topic is: what about implications for the future, as far as our diplomacy is con-

cerned? There are lots of things that need to be done, but what about our diplomacy? First, I would say that I believe we are ill-equipped; we are not nearly as well-prepared as we should be to conduct, steadily and with people of high standing, the kind of imaginative global diplomacy we need. The Secretary of State or the Secretary of Defense can't do everything. You need really able people, and they need a support group that is strong. We need a bigger Foreign Service. We need to try to get some of those wonderfully skilled people, who are retiring at alarming levels just when they are at the height of their powers, to come back.

I don't think you really can get anywhere in negotiating on this issue without working alongside high-powered scientific people. It has to be a joint enterprise, which has to be built right into our diplomacy.

And we need to make it inviting for political appointees to come in. When I was in office, I had the likes of Paul Nitze, John Whitehead, Mike Armacost, Roz Ridgway, Chet Crocker, and Max Kampelman. You need to have big people like that. You can send them to a head of government anywhere and they are listened to, not just because they are representing the United States, but because they are Paul Nitze. Those heads of state know that when a representative like that comes home, everybody is going to listen to what he has to say, so it is worth talking to him. We have to strengthen ourselves dramatically compared with where we are right now.

I don't think you really can get anywhere in negotiating on this issue without working alongside high-powered scientific people. It has to be a joint enterprise, which has to be built right into our diplomacy. I don't mean by that that we should aspire to attract lots of high-powered, top-notch scientists to take full-time jobs in government; that's probably out of the question. But in my experience, if you have an important mission and ask scientists to come and work at it part-time or give it a burst of attention, they are anxious and willing to do it. We have to identify the Sid Drells of this world. There aren't very many Sid Drells, but there are lots of people who can be extremely helpful. There is no point in sending a person who doesn't have deep scientific training out to negotiate on these issues, because the intrinsic content of the issues requires someone who understands them from the inside out. That's another attribute of our diplomacy that needs to be developed very strongly. It is an interesting, somewhat ironic development that the most eloquent spokesman for improving our diplomatic capability right now turns out to be the Secretary of Defense, Bob Gates, who talks about this all the time. He realizes how important it is.

These are some impressions on reactions to Reykjavik, then and now, and some thoughts about the kind of effort we must make to improve our diplomatic capability in order to support a president if he decides to go forward with this. It is wonderful to see that both presidential candidates have, to some extent, endorsed this program. I hope whoever loses will support the winner in going forward. It is sometimes said to us as authors of the *Wall Street Journal* piece, "Isn't it nice that this initiative is bipartisan?" And we all say, "Really, it's not bipartisan, it's nonpartisan." This is not a Republicans-versus-Democrats subject. It is a subject to be debated among Americans on its merits, and it should go forward on those merits. That's the way we work at it.

Once again, thank you for the honor, and thank you for the opportunity to talk to this distinguished group and to listen once again to my colleagues. I always learn from any association with these gentlemen. ■