

**THE CARNEGIE ENDOWMENT FOR INTERNATIONAL
PEACE**

**“A CONVERSATION WITH HISTORIANS OF
THE NUCLEAR AGE”**

SPEAKERS:

ROBERT NORRIS,
NATURAL RESOURCES DEFENSE COUNCIL

RICHARD RHODES
AUTHOR OF THE MAKING OF THE ATOMIC BOMB

JONATHAN SCHELL
YALE UNIVERSITY

MODERATOR:

CARLA ANNE ROBBINS,
THE WALL STREET JOURNAL

NOVEMBER 7, 2005

*Transcript by:
Federal News Service
Washington, D.C.*

MR. JOSEPH CIRINCIONE: Very much, that was just wonderful. We are going to seat the historians panel, so they can -- so that they can enjoy the short film clip we are about to show you. So if you just wait one second --

(FILM CLIP STARTS)

MR. STEVEN SOTOR: So we went back to Steven Schwartz to see who to interview next?

MR. TRACE GAYNOR: He recommended Leon Lederman.

SPEAKER1: Leon Lederman is the President of our board of sponsors, he is a Nobel laureate, and he in fact, it was his hand that moved our doomsday clock most recently in 2002.

MR. LEON LEDERMAN: Why did we build an atomic bomb, should we have used it? We should not have used it? We didn't need to actually prove it existed in order to convince the Japanese that they were facing impossible problem in their war against us.

MR. GAYNOR: Do you think we would need to use it today?

MR. LEDERMAN: It would be terrible if we would use today. I -- of course, we all hope that it will never be used and I certainly would not approve of ever using it because, these weapons are so terrible that it does not take too many of them like, 10 or 20, or 30 to destroy everybody living.

MR. SOTOR: Has the atomic bomb been used since Hiroshima and Nagasaki?

MR. LEDERMAN: No, nuclear weapons are very, very dangerous things. These are not good things to have because if you use them and they are used against you, you know, essentially millions of people will die and there is no war that's worth that. One nuclear weapon is a terrible threat. Thousands of nuclear weapons are just crazy.

MR. SOTOR: Trace and I got to meet the man of Hiroshima; he speaks for all of those survivors of the atomic bomb.

SPEAKER1: These children are the ones who are telling the stories right now and who are saying that no one else should suffer the way they did.

MR. GAYNOR: As a laureate for peace, he wants to get rid of all nuclear weapons by the year 2020.

SPEAKER1: I hope that the children will try to understand, what these people went through by listening to their stories or reading their testimonials.

(END OF FILM CLIP)

[Applause]

MR. CIRINCIONE: These are the two directors, writers and producers of the film, Trace Gaynor and Steven Sotor. How do you say your last name?

MR. SOTOR: Sotor.

MR. CIRINCIONE: Sotor and Trace Gaynor, now I just like to talk with you just for a few minutes and ask you a couple of questions about this. It's my Art Linkletter invitation. So Steven, well, why did you make this movie?

MR. SOTOR: Well, we learned a little bit about it in school and we thought, well, if they are not teaching this in school, then we really got to do something about it and educate people and it just turned out great and first of all, I would like to thank – [Laughter.] - Steven Schwartz and Trace --

MR. GAYNOR: I would like to thank Ploughshares Funds, because they are the - - helped with the financial part of the movie and they really got us paid for the flight and everything so, thanks.

[Laughter]

MR. CIRINCIONE: Yes, you flew here from Chicago today?

MR. GAYNOR: Yeah, today.

MR. CIRINCIONE: And you -- last night, you were, where were you last night?

MR. GAYNOR: Last night.

MR. CIRINCIONE: Hold the mike.

MR. GAYNOR: Okay.

[Laughter]

MR. GAYNOR: Last night we were at the Chicago International Children's Film Festival. We entered in March and yesterday was the showing and –

MR. CIRINCIONE: So, how did you do, did you win?

STEVEN SOTOR: We don't know yet. They are going to e-mail us, because we couldn't stay for the award ceremony because we had to get ready for the trip here.

MR. CIRINCIONE: Oh, it's great, who came here with you?

MR. GAYNOR: Mrs. Sotor, who really helped us with the movie.

MR. CIRINCIONE: Where is she?

STEVEN SOTOR: Thanks mom.

[Laughter]

MR. CIRINCIONE: That's great. Okay, let's -- obviously, this will go on for quite a long time because you are completely adorable and talented, but we are going to, we are going to have to move on to other adorable and talented people, so what we would like to do, I understand you brought some copies of the full DVD with you?

STEVEN SOTOR: Yeah, this is only a small part of the movie, and we will be handing out the full feature at lunch with -- the director's interview that was shown on Link TV and --

MR. CIRINCIONE: Okay, great, and what do you guys going to do next?

STEVEN SOTOR: We're going to do a film about space weapons, satellites, ---.

MR. CIRINCIONE: Watch out -- watch out man, thank you very much, thanks guys, we'll see you, you can go right down on there, that's good.

[Applause]

MR. CIRINCIONE: Kids and pets -- never share the stage with kids and pets. So, that was just great, they are going to have there about -- brought about 200 copies of their DVD with them and thanks for generosity of the Ploughshares Foundation. They will be able to hand out some of them, they are going to be in the lobby in just a little while and they are going to come back and listen to this historic panel and then they are going to join us at lunch.

Let me quickly introduce this history panel. Robert S. Norris is a senior research associate at the Natural Resources Defense Council where he directs the Nuclear Weapons Data Book Project. He's a 20-year veteran of counting nuclear beans and the author of *Racing for the Bomb*, *General Leslie R. Groves*, the Manhattan Project's Indispensable Man. With Richard Rhodes, we are moving from Nobel Peace Prizes to Pulitzer Prizes. He won the Pulitzer Prize for *The Making of the Atomic Bomb*, also a National Book Award, a National Book Critics' Circle Award and his *Dark Sun: The Making of the Hydrogen Bomb* was shortlisted for the Pulitzer.

Finally, we have Jonathan Schell, who is a distinguished Visiting Fellow at Yale University Center for the Study of Globalization. He of course is the author of *The Fate of the Earth*, which received The Los Angeles Times Book Award and was nominated for the Pulitzer Prize and chairing our panel is Carla Anne Robbins, the chief diplomatic correspondent for *The Wall Street Journal*. She was a member of two Pulitzer Prize winning teams for the journal, the 1999 prize for International Reporting and the 2000 prize for National Reporting. Thank you very much for joining us; please give us a warm welcome to this discussion of the last 60 years.

Carla Anne, take it away.

[Applause]

CARLA ANNE ROBBINS: Thanks Joe. However, this is just a really fabulous conference. What we'd thought we would do here is because we love anecdotal leads in the news business and it's a way to get people to think about serious things in a fun way, talk to these three fabulous historians about the three moments that are defining for them about when this all went off the rails and then talk a little bit about the possibilities of bringing it back particularly because we live in such dangerous times when it looks like we could end up having a lot more nuclear weapon states than we had ever hoped for. So, we thought we would start with Stan, who is going to talk about the early 1960s for us.

ROBERT NORRIS: Thank you very much. As you can tell here, I have a serious cold, so I'll do my best to keep it short. My defining moment is December 7, 1962, in the aftermath of the Cuban Missile Crisis, when President Kennedy visited headquarters of Strategic Air Command in Omaha and toward the underground command post. His host that day was General Thomas Power and the commander-in-chief of SAC from 1957 to '64, a protégé of General Curtis LeMay, who that point was Air Force Chief of Staff. Power reportedly spoke of a requirement of 10,000 Minuteman ICBMs and is known to have personally suggested that for a year to President Kennedy. Of course, an eventual figure of 1,000 missiles was arrived at and we could cite other examples from the Army and the Navy from their wish lists as well. My point is that as bad as the arms race was, it could have been even worse. We could have had two or three times as many nuclear weapons as we ended up with and in an examination of what actually did happen in buying of all of those weapons, I think reveals that there was never really a convincing answer to the question of how much is enough or any rational logical way to determine it and there still isn't today.

Another point of my anecdote suggests that rather than a bad turn, that some restraint was imposed on the Air Force in this instance. Secretary McNamara, who in this instance and in many others and even in Joe's remarks earlier today, citing President Kennedy, imposed some discipline at the Pentagon. Just a final point is I think that in this period of the late '50s and the early '60s was the high-point on, shall we say, military enthusiasm for nuclear weapons. LeMay, Power and others throughout this period

wanted a nuclear weapon for every conceivable mission and by a decade later in the '70s we began a decline, and I think that it's largely because of the military that many of these weapons went away.

We might pursue afterwards this military/civilian divide over the enthusiasm for nuclear weapons and ask whether it is an American phenomenon, which I think it is, or whether it might also be a phenomenon with other of the nations' militaries. Thank you.

MR. RICHARD RHODES: Just to add a footnote to Stan's story, there is a record from the Eisenhower era, of someone coming into President Eisenhower with a list of maybe a hundred of these ICBMs and his saying, throwing up his hands, and saying, "Well, why don't we just go completely crazy and build 500 of them." So his sense clearly was different. This is like picking your best poisoned apple, but in the incident that I have been looking at very carefully lately occurred in 1983, a concatenation of events, you're all familiar with the model of accident, hi-tech accidents that argues that there are a series of failures, a series of events along the way that just happened to line up in the right way like tumblers in a lock, something like that happened in 1983.

Earlier in 1981, to start the story, Yuri Andropov had gone in to see Brezhnev, and had expressed his great concern; he was head of the KGB at the time. His great concern that the US might be preparing to fight -- preparing for a first strike. He proposed and then carried out something that was called Project RYAN, using the Russian initials, charging the KGB officers around the world with their first responsibility of watching for signs of American preparations for a first strike. So, we move forward to January 1983, when he told, Warsaw Pact leaders that he was greatly concerned about the Reagan arms build up. He said and I think this is important and perhaps the President of Iran could think about this today, he said it's difficult to distinguish between mere rhetorical blackmail and preparations to take what he called a fatal step.

In that context, Bill Casey when he took over as a director of the CIA had proposed, and President Reagan had endorsed, a program of psychological operations that were designed, I don't know what psychology this is, designed to upset and disturb and threaten the Soviet Union in the interest of bringing it to the arms control table. That included flying bomber fleets over at the North Pole toward the Soviet Union. It included flying squadrons of fighter bombers directly toward Soviet radars, the last time I am familiar with that operation was at the height of the Cold -- of the Cuban Missile Crisis, when, in fact, we had everything we owned in the air, flying toward the Soviet Union. In any case, then the next event, the shooting down of Korean Airlines Flight 007, which the Soviets summed -- some Russians still to this day maintain it was a spy plane, because I think it fell into the context of the SIOP operations that had been going on before, but of course, it also revealed frighteningly from the Soviet's side the vulnerabilities of their early warning system.

At the same time, President Reagan was going through what turned out to be a real reversal in his attitude, toward using this kind of muscle against the Soviet Union.

One event surprisingly or not surprisingly, was the showing of the American television film *The Day After*, which upset him deeply, and the same month, October '83, he finally agreed to submit himself to a briefing on the SIOP, the US plan for nuclear war, and he was horrified by it. I guess he'd expected to be and had really avoided it for a while. There was then the suicide bombing in Beirut that killed 241 US sailors and Marines at the Marine barracks there. The US invaded Grenada that same month and then and this was the perhaps the crucial event.

A large NATO exercise called Able Archer, November 2 through 11, 1983, which included the nuclear release simulation and for the first time all of the communications were in code. This really did make the Project RYAN people in the Soviet Union deeply worried. They weren't at all clear and, in fact, Soviet Air Forces in East Germany forward-loaded tactical nuclear weapons on Sukhoi-17 long-range strike aircraft to strike West Germany. The good part of the story is that we avoided a nuclear war at a time when it was closer perhaps than it had been since the Cuban Missile Crisis and at the same time, these events taken together seem to have convinced President Reagan to take a different course towards the Soviet Union. So, finally in December of that year after he had observed these various events, he asked Secretary Shultz to prepare a foreign policy address. He had already, by that time, spoken to the Japanese Diet and for the first time said, "When I say our dream is to see the day when nuclear weapons will be banished from the face of the earth." Thus began what led to Reykjavik and the attempt by both sides, but it's important to realize that nothing happened on the Soviet side, as a result of Reagan's new attitude until Mikhail Gorbachev came into office as General Secretary. The Soviets, in other words, were suspicious of our efforts toward moving to the arms table as we have been of theirs.

MS. CARLA ANNE ROBBINS: Richard, let me just ask you a question about that, which is with the Able Archer exercise and then the shoot down of the Korean airliner, was there a moment in which it looked like the Russians were going to do something preemptively, did they come that close, and did the US know how freaked out the Russians were?

MR. RHODES: You know, it's interesting because our people were even through Able Archer and afterwards in comprehending that the Soviet Union could imagine that a nation as peaceful as the United States would commit a Pearl Harbor on their country. Our people, it really took a while, well President Reagan in particular, was just appalled that anyone would think that of him personally. So, there was a kind of turnaround that of realization on our side that we were going to -- that we really couldn't simply imagine ourselves to be the good guys and make as much noise or as many efforts towards scaring people, as we indeed had been doing in those early years of the Reagan administration.

MS. ROBBINS: And when you talked about how the Russians had loaded the bombers, I mean how close did we come?

MR. RHODES: Well, that's hard to say. There was a pervasive feeling and a pervasive kind of revisionist historical effort after this on the part of conservative

historians to argue that no one was ever really convinced that it was happening. There was a President's Foreign Intelligence Advisory Board restudy, however, in February 1990 that said the Soviet leadership actually believed the United States was planning a nuclear first strike. After all, the Soviet plans for the first strike usually involve escalating from an exercise, so here was an exercise that seemed to be escalating. They couldn't read the codes as before they had been able to do. It left them I think in the position of really having to decide, but I don't know yet and I'm not sure the record will tell us yet how close we really came.

MS. ROBBINS: And that do we know when the Russians figured out that we were that close to the brink?

MR. RHODES: Well there are some studies that indicate that the East German secret police, who were following all this very closely, were the ones who decided not to alert Moscow and really blow everything up. The argument then is that the Stasi basically saved the world, which is perfectly possible given all of the confusion in this event.

MS. ROBBINS: So I think the lesson here is the notion, the deterrence -- were rational balance that existed was not so rational at that time of period?

MR. RHODES: Yes.

MS. ROBBINS: The frightening is that -- so Jonathan, your favorite moment?

MR. SCHELL: Yes, the Stasi saved the world, but they couldn't save East Germany. Well, my choice of a scary moment of the nuclear age is perhaps paradoxical and counterintuitive because normally it's being seen as a wonderful moment, which had also was by the way, and I am speaking at the end of the Cold War. What's also notable about it is that in the nuclear realm really nothing happened effectively. Nothing on a big scale in the nuclear area and it's that very nothing that seems to me to be definitive about that moment because it seems to me that a prime characteristic of the nuclear age now most regrettably as we -- close out the sixth decade has been that we haven't done enough. So, that not doing enough is really what I want to talk about.

Let me just set the stage by reading -- Dick mentioned the Reykjavik summit just to set the stage here because there were some very bold things as we know now and especially since the records of the meetings have become available. Let me just read a quotation from the Reykjavik summit. This was a late night meeting. I think the last of the summit and a plan was brought forward to get rid of all ballistic missiles and --

MS. ROBBINS: Brought forward by whom?

MR. SCHELL: -- brought forward by the American team, from a team that was in other room was brought into the negotiating room with Reagan and Gorbachev and also a Secretary of State Shultz there, and Gorbachev said, "Well, now this only mentions

ballistic missiles, what about the rest of them could we get rid of those? And, Reagan says, "fine, lets -- lets get rid of them all," and Gorbachev says, "We can do that, we can eliminate them." And then this is my favorite line and maybe one of my favorite lines of the whole nuclear age and it comes from that usually undramatic character, Secretary of State Shultz, he just burst out "let's do it." So, here he is, he is with the two decision makers, its not an after, you know, the end of an after dinner speech or something, it's something real, it's something in the urgency of the moment. Well, we know very well that it didn't happen of course because SDI was really the deal maker for Reagan and it was the deal breaker for Gorbachev and they couldn't get it together with the results that we know. Anyway --

MS. ROBBINS: I'm sure everyone knows that SDI is colloquially referred to as Star Wars.

MR. SCHELL: Yeah.

MS. ROBBINS: Okay.

MR. SCHELL: -- SDI as Star Wars, thank you. Anyway, we come to the end of the Cold War. This is a kind of bold thinking that had gone on towards the end of the Cold War while the Cold War was still going on, so it certainly raised out certainly in my breast that even more bold proposals would be forthcoming, after all, the end of the Cold War was in my view something like a miracle, an unexpected thing and this unexpected miracle seem to call for a deliberate miracle, as I saw it in the nuclear field. Well, in a word it didn't happen, instead, we got that nothing along with it we got assurances, which rings strangely today, I will just read out what President Clinton had to say back at that time, "In this world our children are growing up free from the shadows of the Cold War and the threat of the nuclear holocaust." Well know better now than to think that threat had gone away.

There was one brief episode and I don't want to belabor it, it was the Nuclear Posture Review 1993-1994 following the bottom up review in the Defense Department, it was really launched by Les Aspin and Ashton Carter who will be talking later today can address the details better than I can, I won't try to--it's a long story, but it had a very short ending, and the short ending was that basically everything remained as before.

Ballistic missiles were not gotten rid of, much less nuclear weapons as a whole of the triad remained intact and one official said, that we pretty much got the Cold War posture, but just with somewhat fewer weapons and basically business went on as usual. As I said, I'm not going to go into the details on that, but I will just make a comment about it, and that is certainly across the board one of the most riddlesome questions of the nuclear age is the relationship of nuclear arsenals to political objectives whether you are looking at military strategy or disarmament strategy.

Now, here as it seemed to turnout after this true revolution in international affairs, nothing dramatic was done in the nuclear field and so it seemed and so it still

seems to me that it turned out that no political justification at all was needed in order to have a very large nuclear arsenal, which certainly couldn't be justified by anything else at that time or since such as rogue states or terrorism or what have you or maybe a couple of them if it is some would argue, I would argue otherwise, but certainly not an arsenal of 10,000, 5,000, 3,000 nuclear arms.

So, you know, we like to say and I think it's true that during the Cold War most invaluable tradition of non-use gained traction and we will see if it holds, that was a very good thing, its something very well worth holding onto, but also another tradition gained traction I'm afraid and that was that the tradition of possession because really the idea was instilled that you nuclear weapons were really now part of the world's furniture. You didn't need an emergency such as you had in the Cold War, in order to maintain them; you could just keep them sort of for a rainy day.

Now, that lesson it seems to me, although it was rather unnoticed here in the United States, I can't speak for Russia where some similar process must have gone on and others can speak to it, was very much noticed in other parts of the world -- parts of the world where we now see nuclear proliferation. I am thinking, of course, of India, which spoke of a nuclear paradigm, and what they meant was that happily most of the world was covered by nuclear arsenals, nuclear deterrence in one way or another, but poor unfortunate India lacked this privilege and planned to obtain it and did so with the result that South Asia is now nuclearized so that nothing that occurred or failed to occur whatever nothing does at the end of the Cold War did set a benchmark and set a paradigm if you like that is very much with us today and exacting a high cost.

MS. ROBBINS: I want to ask a question about the summit. You said that the American team came in with this proposal of just getting rid of all those nuclear weapons, I mean, who was driving and then did they -- I mean was it something that they just sort of put out there thinking that the Soviets would reject it or what was the game at that point?

MR. RHODES: Different people had different games. Bob MacFarlane, who was the National Security Adviser, saw SDI as a bargaining chip, but President Reagan didn't see this bargaining chip. He saw it as -- for him -- the personal answer to the question how do you build down to zero? You must have -- he thought some way to keep that last weapon or two. So from his --

MS. ROBBINS: Why did -- why did the American team come in raising this idea of clearing a board?

MR. SCHELL: The specific idea that they brought in was getting rid of all ballistic missiles. The idea being that the land -- that land-based, I should say, ballistic missiles, the idea being that those were the most destabilizing and so forth.

MR. RHODES: Those requests were also what the Soviet Union had a preponderance of, so I am sure that was a strategic piece of negotiating on their part.

MS. ROBBINS: Yes.

MR. SCHELL: And that may have been the reason that Gorbachev said what about the rest of them.

MR. RHODES: Exactly.

MR. SCHELL: And then Reagan takes the leap and says, "Well, let's get rid of those two and Gorbachev agrees and Shultz says "yes, let's do it."

MR. RHODES: It does appear that the real sticking point for the President was whether or not it was okay just to stick with laboratory scale research for ten years, which is what they finally came down to on the Soviet side, and at that point Secretary Weinberger and Richard Perle, name which turns up under every rock I've have been turning over about this period of time, convinced him that it would kill SDI to confine it to the laboratory, and since he insisted on SDI, that was the end of that event.

MS. ROBBINS: Let me ask Stan a question which is the Presidents that you have looked at, did they understand nuclear weapons, did they understand the plan for their use, did some of them like them more than other ones? When you were talking about Reagan's, you didn't even want to get briefed on this SIOP itself, and the complexity of it. Is it -- Kennedy seem to have a -- to get the notion and certainly McNamara that these were bad things, but did they leave this to the generals?

STAN: I spoke of this military-civilian divide here and certain Presidents have been more or less interested and Jimmy Carter really immersed himself in what it was and others seem to be almost oblivious and leave it to the generals, which is both a problem and a potential aid, I think, in getting rid of these things because the civilians tell the military well figure out something to do with it, make a war plan and the military salutes and goes about it's business and makes very elaborate plans, which, of course, require weapons and is a kind of stimulus in engine for keeping it all going, but when the opportunity presents itself, and I think I disagree a little bit with Jonathan, I think something was done at the end of the Cold War. The stockpile got cut in half, George Herbert Walker Bush got rid of half of the weapons with great ease here in terms of getting rid of all the army weapons, Marine Corps portion of the Navy weapons and that had to be with the help of the Joint Chiefs, and I think that goes to my point that I was making before that when confronted with having these things or not, the military -- most of the military, it's not universal, many of them are disposed to get rid of them, and when they have an opportunity they do so and the history of the stockpile demonstrates that.

Now, we have gone to a kind of a core group, we've called this sort of Cold War Lite and it's still the triad, it's still driven by a war plan and -- but 15 years after the Cold War, we still have at the moment about 10,000 as the Secretary mentioned earlier, that's going to be cut in approximately half again but still by the time 2012, we will still have some 6,000 weapons.

MR. SCHELL: Can I comment on that?

MS. ROBBINS: Yeah, but I did want to move on to some other countries as well because of the -- but because of Iran -- but yes, please.

MR. SCHELL: Yeah, I think that what surprised me and still surprises me, as you are perfectly right of course there has been that very happy drop in the numbers, and I think that Bush, the father, tends to get less credit than he should for what we did at that time, it somehow seems to go rather unnoticed, but what didn't happen was a change in the fundamental framework of nuclear strategy of deterrence, mutual assured destruction all the rest of it that was built up for the Cold War and then when the political underpinnings of that whole strategy fell away the strategy somehow survived as if it was good for all seasons and for all countries and to this day the Soviet and the -- I would say Soviet might as well because they were Soviet to begin with -- but the Russian arsenal and the American exist in the kind of limbo, I have a quote here from the current President, "The era in which the United States and Russia saw each other as a strategic end has ended." Well, they don't see themselves that way anyone, nevertheless they are gearing arsenals of thousands of nuclear weapons at one and other still on hair-trigger alert and all the rest of it. So, that's the difference I withdraw, yeah.

MR. RHODES: It's up here because there was something gained with the end of the Cold War. It was not as perhaps as obvious as rethinking the plan by the two powers, and that is the delegitimization really of these arsenals and of the whole model of mutual assured destruction with the end of the conflict between the two nations. Hans Blix speaking at Stanford a few months ago made the right comment that it looked to him as if the United States was running an arms race with itself these days, and there is a very real sense where that's true. So, in the longer run, I think the fact that there is no legitimate purpose for these large MAD, sort of programs, has its effect on policy and has its effect of course as this conference is looking at in terms of nuclear proliferation issues. The ambassador's comment, the Egyptian ambassador's comments were I think very well taken today about the fact that there is another side to the NPT that has been pervasively neglected, and ultimately has to undercut the whole thing if it isn't dealt with.

MS. ROBBINS: Can we talk a little bit about countries that took the pledge, there are countries who did have the active nuclear weapons programs, some above boards, some less so, who were persuaded to give them up, now obviously, the South Africans that was a fact that white people didn't want to leave them to black people, but you have the Swedes, you got the Brazilians and the Argentines. Talk a bit -- little bit any of you jump out here about why these countries decided to give them up, what pressure, what incentives were given and whether any of that is applicable right now to a country like Iran, anybody want to?

MR. RHODES: I can tell you about the Swedes, because I interviewed several Swedish scientists who worked on their bomb program and I asked them why did you give it up -- they were building tactical -- moving towards building tactical nuclear

weapons with the idea of deterring Soviet forces from entering their country, and when the Soviets developed hydrogen weapons and the Swedes realized that it would take maybe two to wipe out the entire country, they realized their tactical nukes were of no value and, indeed, were a danger to them. So they gave it up in the context of the NPT in 1968, having learnt a very valuable lesson which they then applied in 1991, when South Africa was going through this discussion as the scientist said to me, "we knew all about this so, we could help to convince the South Africans and this was a good idea." That's one example.

MS. ROBBINS: And the Brazils -- Brazilians and the Argentines?

STAN: Well, and there you have a regional competition between two military-driven regimes who saw each other that the best defenses and offense here and they stated programs. That got fairly well down the track before there were changes in government and wiser heads decided not to, and I think that's been the case in some other places, often times, larger power has to impress upon a country like Taiwan or South Korea to halt a program, but this is a question that probably has no final answer, because there will still be countries to decide to go forward with them for -- for reasons that counter all of the ones that I just mentioned.

MR. RHODES: Brazilians and Argentineans though --

MS. ROBBINS: Uh-huh.

MR. RHODES: -- gave up their programs in the context at the end of the Cold War, specifically it was in 1991, when this happened for them.

MS. ROBBINS: But they were also transitioning from military to --

MR. RHODES: No doubt.

MS. ROBBINS: -- civilian, of course it's been a long transition there, but you know, it does raise this very important question here which is, it is true that the Russians and the Americans are not cutting their arsenals fast enough certainly from the perception of living up to their NPT commitments, but you know, I personally -- you know, I think it's an excuse for -- you know, I don't think the Indians or the Pakistanis get to build up nuclear weapons because we have them, and I don't think that you know, our failure to persuade them to give them up is because of our failure to move down and move toward a notional zero which everyone knows, we are never going to go to. So, is it just a question of -- you can't persuade them but maybe you can persuade the rest of the world if we look like we're good -- if we are good guys, how much does it matter what we do in other countries what are fundamentally to my mind is security decisions?

MR. SCHELL: Oh, I think it's absolutely central, the United States has always been the leader for better and for worse in the nuclear age inventing the bomb, using it, really developing the strategic theories, also in the disarmament field, technically in

almost every area, we have been the leader and we can't put ourselves forward as the leader in the world and then suddenly turn around and say, "Who us?" - When it comes to a nuclear disarmament and I don't think that's going to work, but the deeper point is that certainly, it's probably true that the Indians did not say, "Oh, we have to defend ourselves against the United States, although they did notice it when the carrier Enterprise sailed into their waters in 1971, I think it was during the India-Pakistan war at that time and they sided rather more often, than you would imagine, but what does matter is that the United States is at the center and not with the sole responsibility because there are seven or eight other nuclear powers if you count North Korea, but of a network of threat and counter threat that is global in character, so we threatened let's say, China -- China threatens India, India responds to China, or Pakistan responds to India, and so forth, and those aren't the only things involved there is also the prestige factor you know, they are joining the club as Mohamed ElBaradei said this morning that the minor league wants to get into the major league and part for a domestic political reasons, but all that to me is one single global apparatus.

I don't mean to pin too much blame on the United States, but the center that sit the nuclear powers and what they do matters totally, for what other powers who maybe interested in getting in this business will do so, it's in that broader context that what we do, here in the United States is because I am an American of course, it seems to me to be absolutely along with what the other nuclear powers do.

MS. ROBBINS: Do you think it matters you know, I have been intrigued by things that have been going on in Asia certainly we -- there has been a lot of talk already this morning about the Rokkashomura plant and plutonium separation plant the Japanese are going to be separating nine metric tons of plutonium a year for peaceful uses—A Mox plant, they say. We have the intriguing experience of the South Koreans who just got a little bored on the Saturday night, the X-box was broken, so they decided to use their lasers and enrich a little bit of uranium. It gets boring out there you know, if you look into -- our knowledge of mixture of these nuclear programs how much of this is been driven from the bottom up? I mean are the scientists that are pushing it, is it the military that's pushing in some of these countries, is it you know, I did always find it quite interesting that the South Koreans said they didn't know about it, you know, that this was not -- that it didn't go high up, it did cost, you know, quite a lot of money and somebody seem to be able to check the uranium out, but how much do we see that these programs over the years have been driven in places like South Africa or Brazil, or Argentina or even the United States have been driven by the scientist versus the policy makers?

STAN: I don't think so -- and I think in almost every instance a big decision has to be taken on high, you are going to commit some amount of money, you know, there is a question here, is it cheap or is it expensive to get a nuclear bomb? And initially, I think, it was quite expensive and certainly in the US case, we did it in spades with everything, but I mean in the South African case shows that it can be done sort of on the cheap, but nevertheless it's still a commitment, mobilization of resources that has to be, you know, a General Groves somewhere to put the same as together with the engineers and to get the

material. So, I don't think it kind of creeps up from the bottom, I mean you have to have some level of expertise at some level, or you are not going to do-- you know, Botswana is not going to the bomb, I don't think.

MS. ROBBINS: And how much is there -- how effective is public embarrassment? I mean there was a conscious decision made not to refer the South Koreans to the Security Council, mainly because the South Koreans came here to Washington because the Bush administration was pushing it for a while because as I said you know, we have to be fair here and we don't want a double standard with, but then the South Koreans came and they had their meetings and they said, "first of all, don't embarrass us, and you know this, we really it was a mistake, some rogue scientists, you know, we've got it all under control." The second item by the way did we mention to you how much problem we are having keeping those troops in Iraq? It was a very -- it was a effective leveraging, it doesn't matter for all the other countries that are looking right now, that a country like South Korea doesn't get referred that there isn't a more vigilant public embarrassment or it was a small program, it was a tiny amount of uranium and there is bigger problems out there.

MR. RHODES: You know, I think with all the countries that have gone nuclear and with the many countries that are virtual nuclear powers today and I would say based on many estimates, I have seen 30 to 40 nations, could be nuclear powers within a year or two. Clearly, any country that -- well there are probably two basic reasons as Jonathan said, security concerns, that's the most important and issues of prestige and even domestic political advantage, but everybody who could take a look at this since the beginning, since 1939, has taken a look at it. In a sense, it would be insane not to, from a point of view over the people responsible for the security of their country. The question always is, is there more benefit to the nation to be a nuclear power or not to be a nuclear power and the whole story I think of this conference and of the NPT and everything else is trying to move those assets over to the side that says to every country in the world, it's benefit not to be a nuclear power, but everybody is going to figure out how to do this and surely the Koreans were dealing with that as well.

MS. ROBBINS: Okay, I think we have five more minutes Joe, okay do you want say something and then I am going to ask you all a question.

MR. SCHELL: Yeah, Stan was certainly right there, that a moment does come in almost all countries that have them where a decision is made, on the other hand, there is a fantastic momentum in these programs, I have been looking recently into the probably the most neglected country when it comes to acquire nuclear weapons, that's Britain. Of course, they were deeply involved in the invention of the bomb from the very beginning when the MAUD report came to the United States and then it turned out that the United States didn't want them to get into this business and reneged on it's agreement to cooperate and so forth when the McMahon Act was passed barring the sharing of atomic information. Well, but the British, of course, were just kind of quietly going on like a kind of moss growing in the basement. After the Second War, no decision was taken, no discussion occurred, in four years, between the end of the World War II, and for four

years after that there was just one mention of the British nuclear program in parliament and it wasn't until January of 1947, that Clement Atlee -- Prime Minister Clement Atlee actually sat down with one or two people and said, okay, we're going ahead with this, but the fact was that had very little operational effect on what was already happening which was just kind of creeping along, and I think if you look at the Indian case too, that almost half a century of the things stopping and starting, there was a tremendous momentum in the aspect of momentum, I think it's very important because it almost becomes a question for the politicians that can we stop this, you know, can we turn it down, can we turn it off and that's the tough thing, I think.

MR. RHODES: Well, you are really describing the Iranian situation today, because that program has been ongoing for a very long time and it leaves, of course, the problem with it -- it's ambiguous, but of course it would always be ambiguous because the technology is fundamentally the same technology to make the nuclear materials and that is what I mean by virtual nuclear powers.

MS. ROBBINS: I am going to ask you two -- three of you to predict rather than being historians, let's look forward to hear for a while and if you're wrong, we won't remind you, or maybe we'll remind you. Ten years from now, how many nuclear weapon states are going to be out there? Which country should we be looking at? What's the dynamic as you see going forward? What's your best guess, Stan?

ROBERT NORRIS: Well, I think -- dealing fairly well, I think using the past, not as many countries became nuclear powers as one suspected, and there aren't too many candidates at the moment who look promising, and some have decided like Libya and some others have decided not to go forward. So, I would say we are probably about where we are, we will be about where we are today with about the same number, a fewer nuclear weapons as a result of obsolescence and hopefully some more agreements and it's not as scary a proposition as we could have envisioned a while ago.

CARLA ANNE ROBBINS: You're worried about falling nuclear dominoes in Asia or the Middle East?

ROBERT NORRIS: No.

MR. RHODES: Ten years is too soon, I can't do that. Too many variables right now, if North Korea became a much more active nuclear power, would Japan become the nuclear power, all those issues, but I can do the 100th anniversary of the Trinity Test 2045, when the one I think, central issue about eliminating all nuclear weapons and having a world of virtual nuclear powers, which is how do you find the stuff and make sure you have it all under security and control, will be resolved by the continual technological erosion of privacy in the world, which within 20 years will be such that with the only privacy left will be the privacy we legislate for ourselves.

If you look, for example, at the new Korean ubiquitous city plans where everything is going to be chipped and wired, and wireless and so forth. I think the odds

on reaching the point where nuclear weapons really can be monitored and where an international last resort collection, small collection of dismantled weapons under international control would protect against breakout. You can begin to imagine a world without any nuclear weapons at all, where deterrents and all the classic theories of how these weapons might protect us would work even better than they work today.

MS. ROBBINS: Although, would you want to live in that world as a very --

MR. RHODES: Well it's not -- it's not going to be a choice.

MS. ROBBINS: Okay.

MR. SCHELL: Well, I think prediction is a fool's game frankly --

(Laughter)

MR. SCHELL: -- having said that, I --

MS. ROBBINS: Of course it was my game.

(Laughter)

MR. SCHELL: Excuse me.

MS. ROBBINS: That's all right, I can handle it.

(Laughter)

MR. SCHELL: I agree with Richard's positive vision is mine also and it's details as well as, and its broad outlook. I think that the -- you know, obviously, the places where you would be worrying about proliferation would be the Middle East, Iran clearly, and who knows, Iraq. The political future of that country is not clear by any stretch, they still have nuclear scientists put it mildly, and they may wind up an ally of Iran, who knows what will go on there.

MS. ROBBINS: And they probably still have the aluminium tubes, so --
(Laughter.)

MR. RHODES: Yeah.

MR. SCHELL: And if not they may acquire something, if they don't have them, we have learned that now, they don't have them, but they may have acquired the proper ones, the right ones, but to me another question having to do with prediction is I do buy into Richard's vision, but the question is will that come with or without the third use of nuclear weapons in history? In other words, will countries have the sense to go along that path without seeing another city or many cities or maybe a country down in South

Asia or two countries wiped off the face of the map, well we do it before or after that event, that to me is perhaps the key question.

MR. RHODES: Absolutely.

MS. ROBBINS: Well, with that cheery note, let us hope that it's without --

(Laughter)

MR. SCHELL: Before --

MS. ROBBINS: -- we are hoping -- we are hoping that in this -- in this race of time that sanity will win. Thank you all so much.

(Applause)

[END.]