Nevada Test Site Oral History Project
University of Nevada, Las Vegas

Interview with Herbert F. York

July 18, 2004
La Jolla, California

Interview Conducted By
Mary Palevsky

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Mary Palevsky*: It would be useful to begin with some of your thoughts on the significance of the Joint Verification Experiment [JVE] and how that worked.*

Herbert York: Well, it was the first chance to talk with scientists who were deeply and currently involved in the nuclear weapons program. You mentioned earlier Pugwash, and there were other things—like the Dartmouth Group and so on, academy groups, separate from Pugwash—where we *did* have a chance to meet with people who had *been* in the program, like [Peter] Kapitza and then sometimes [Andrei] Sakharov, [L.A.] Artsimovich. But generally speaking, the Joint Verification Experiments were the first time that people in the American—currently in the nuclear weapons program had a chance to talk with Soviets currently in *their* program. And for me, when I first had a chance to meet [Evgeni N.] Avrorin, not because of the JVE, but it was the JVE that had first *brought* him to this country, I met him in Washington quite separately from that. I found it just very interesting to meet somebody who came, in his case, from Chelyabinsk, the Soviet Livermore, and talked with him about it. And *I* already knew that they were real human beings trying to accomplish a result for what they thought was a good purpose; but I think a *lot* of the people at our laboratories and elsewhere, for them it was a discovery that these are just people like them who, unfortunately, had been totally isolated. In other words, Americans who knew the weapons program *did* occasionally travel in Russia for scientific and other meetings. Soviets in their program were totally isolated. It wasn't a symmetrical situation at all, until after the Cold War. Well, the JVE is what opened it up, and then the end of the Cold War, it blossomed. What year was the JVE?

Nineteen eighty-eight.

So just *before* the dissolution of the Soviet Union [USSR]. It was on its way but hadn't yet happened.

Right. So is there any connection, then, between some of the earlier work that—you mentioned the Dartmouth Group. Tell me what the Dartmouth Group was, because I don't know.

Well, that was one of the half a dozen Soviet-American, or East-West bloc, discussion groups of academics and people with connections but not employed by the government at the time of the talks. The Dartmouth Group was mostly non-technical. It included David Rockefeller. It included Norman Cousins. But technical people did attend. I attended a couple of times. And it was always the same Soviets. Georgi Abratov was one of the key figures at Dartmouth. Then the American Academy. There were academy-to-academy relationships which had a strong overlap with Pugwash but they were separate from it. And it was Paul Doty, George Kistiakowsky, I can't just remember—[Wolfgang] Panofsky. And many of those people were the *same* people who were involved in Pugwash. There were others. The president of Pepsi-Cola sponsored one, if you remember that.

No.

Well, he was working with one of the big computer executives in this country, I think it was Computer Development Corporation or something, along with the man who was the president of Pepsi-Cola, co-sponsored frequent meetings in the Soviet Union. So there were a *lot* of different contacts, but they *never* included people from the Soviet weapons program. And that was true of Pugwash. They had some *scientists*, but they were not people who had any current contacts with the weapons program, *or* the missile program. When I finally got into this overseas as a negotiator, I looked into the question. It was obvious they had a complete different set of people,

except for the KGB man. He showed up both in the official negotiations and in the Pugwash meetings. The KGB man with the *thin* cover. You never know about those with the *thick* cover. But **[00:05:00]** I did find that a *few* of the people that were involved in negotiations did in fact have direct contacts with the people who were involved with Pugwash. But they were not the same people, but back in Moscow they did have some connections.

So do you think in the long run, looking back, with the establishment of Pugwash and Russell-Einstein Manifesto and this whole worry, do you think there was actually work there that ended up being useful at all when the end of the Cold War came?

Yes, there was, but it wasn't so much involving the details of anything, as it just simply kept the phone lines open and kept people talking and acquainted. And there are a small number of things where, in fact, Pugwash played a role in the details. They played a role in breaking the ice for contact between Washington and Hanoi. When [Henry] Kissinger first contacted people in Hanoi, he actually used the French Pugwash group, which were heavily Marxist. *They* had contacts in Hanoi and Kissinger, who had been to one Pugwash meeting, *used* that. So the opening contacts with Hanoi actually went through Pugwash.

That's interesting.

The best communications between Israel and Russia during the half-dozen years following the Six-Day War *also* took place through—they were opened up in Pugwash and it was Israeli and Soviet Pugwash people who were the contacts. Pugwash didn't *provide* it; it just simply was, they got together *privately*.

Got it.

Well, Shalheveth Freier on the Israeli side, one of the founders of Mossad, and the guy who headed the Middle East Institute in Moscow and then was also the prime minister for a while, [Yevgeny] Primakov. Primakov and Freier formed a link.

Freier was actually born in Berlin, went to Israel. When the Germans started coming across Africa, he just said, I'm not going to run again, joined the British Army, and then he was active in the Israeli terrorists or whatever, and there's the foundation of Mossad, and the Israeli nuclear program. But he was also a Pugwash guy, and a charming guy. I got to know him and talk about a lot of these things.

But then they also may have played a role in getting the idea of a ban on ABMs [antiballistic missiles] accepted. They certainly worked at it, and we dealt with people who were not themselves decision-makers, but some had some access to them, for sure. But it was simply keeping the communications open, was the big thing. The formal communications were very poor, or virtually nonexistent at the time, and very hard to transact anything serious, even *approaching* serious. I mean, the formal communications were characterized by semi hostile behavior. So Pugwash played a role.

But that doesn't have a lot of connection with the test site, except that Pugwash was a hotbed of opposition to testing. The Russians who were there had really nothing to do with their testing, and really, it was ABM and things like that, that they were talking about. We know through the laboratories—this is a little bit a diversion, but following the JVE and **[00:10:00]** following the collapse of the Soviet Union, there were a lot more contacts, laboratory-to-laboratory. And at one of the meetings, they talked about testing, or they talked about maintaining the stockpile without testing. And the Russians made it clear that they *doubted* the United States could maintain its stockpile without testing, but they were *certain* that they could

not. So the Russian nuclear community was, and probably still is, much more hostile to a test ban than the American nuclear community.

So maybe you can just tell me sort of what the logic of the notion of a test ban and arms control is, the idea that if you don't test, you don't continue to develop. What's the whole thing?

Well, let me come at it historically and then see if we can bring it right up to date. *Historically*, it happened because Eisenhower on this side, supported by just a few others, and Khrushchev over there supported by probably just a few others, too, really believed that something had to be done about the nuclear arms race. In general, something's got to be done. This isn't going anywhere where we want to go. Reliance on nuclear weapons, on an *enormous* stockpile of nuclear weapons, for peace and security can't be right. That's what Eisenhower believed and it's apparently what Khrushchev believed.

So how do you do it? It just turned out to be frustrating. How do you get a handle on the bigger problem? Eisenhower proposed Open Skies, he proposed Atoms for Peace. The Russians kept coming back with this very formulaic proposal, general and complete disarmament. First we disarm, and then we negotiate inspection systems. They were both serious, they both knew we couldn't do it, but they were miles and miles apart. And the notion of a test ban as *a* way into this came up because nuclear tests make such a tremendous commotion that it was felt that the *best* possibility of finding a limitation that would be easy to verify, the test ban was the best thing for that. So it had to do with the fact that a test ban looked more promising than anything else which you could see on the horizon. And it did, of course, get some *additional* support because of the fallout problem.

OK, talk a little bit more about that.

Well, there *were*, at the same time that Eisenhower was searching for something, the fallout accident in the Pacific happened—at the Bravo test—and that aroused a certain amount of passion in a small group of Americans. Linus Pauling is sort of the very important figure among them. But there were others. And Sakharov said the same on their side. We didn't *know* it at the time. But the idea that fallout's a serious problem and you got to *do* something about it, and the fallout's from a nuclear test, got a lot of extra support from various certain elements of the public. And a lot of people, when they finally got the atmospheric test ban, a lot of people were dismayed because they said that will take away the support for a comprehensive test ban, and it *did* greatly decrease it. The proper reason for a test ban was its connection to the arms race. It started out in the Eisenhower time as something that looked like you could do, that was headed in the right direction, and that could be done with the *least* intrusive kind of inspection arrangement. *Then*, when we got into nonproliferation, it was seen as having a powerful connection with nonproliferation because we thought that testing was a necessary step in proliferation. Now, the Israelis have shown that it *isn't*, really, but it seemed to everybody like **[00:15:00]** if you could forbid testing, you also were powerfully assisting the broader goal of nonproliferation. So it had *that* kind of rationale. It still has the nonproliferation rationale, both politically and actually—forbidding tests and making a big issue out of testing. When the Indians and the Pakistanis tested, we made a big issue out of it and so did other countries. Pugwash did. It's probably useful. And the Israeli case is not a general case; it's a special case.

How do they do it? How does that work?

Well, I think that despite what people say about how essential testing is, it isn't. You know, everybody's bomb worked the first time. Every single first bomb now in seven or eight countries worked without prior testing. That is, the first test worked. That became the test. The

Indians didn't do so well, but it worked anyway. And then there's some questions about how well the first French hydrogen bomb worked, so that's another question. But testing is a very powerful aid to developing nuclear weapons and to proliferation, and almost everywhere, people who work in nuclear weapons are agreeing on how important it is. All I'm saying is that every first bomb worked. And furthermore, one of the big issues we make in this country is how important it is to have a cadre of people with experience in weapons, and it's one of the most discussed questions. Every first bomb in the world was made by people with no experience designing nuclear weapons. And they all worked. Now, the answer to that is—the *rebuttal* is, well, yes, but they weren't so sophisticated as they are today. And that is true. Testing is what led to the very sophisticated versions, which means lightweight, slender, easy to deliver on an ICBM [intercontinental ballistic missile]. But you could have atomic bombs and they could make a big difference in the world without having that. Now that A has sophisticated bombs, B has to have them, too, but [if] neither of them had them, it wouldn't haven changed much. Well, anyway, the whole question of the role of testing is an extremely difficult question in which I tend to have a somewhat isolated view of what its role is.

Wouldn't you just articulate it there, what you just said, about that it's not really as necessary as it could be?

Well, you asked me, `How do the Israelis do it?` And I said, `Well, they did it because it isn't really necessary.` You can build *reliable* bombs *without* testing them. Now, *some* people would tell you that the Israelis *did* have a test, and maybe they did. Well, there *was* this incident in the deep south, where the South Atlantic and the Indian Ocean come together. There was an ambiguous event, and some people think it was a test and some people think it was not. But it *certainly* wasn't a test in the Nevada sense. It certainly wasn't a highly

instrumented test or anything like that. If it was a test at *all*, it was probably just a go-no go test to see if it worked, and it probably had a very low yield, and I don't think it told them much. I *doubt* that they had a test at all, but if they did, it wasn't the kind of test that *we mean*, or the Russians mean, when we talk about nuclear testing. It was a far cry from that.

Also, everybody in Washington and in other countries, all the *experts* in the world, are deadly afraid of what Saddam Hussein might *do* in the way of building an atomic bomb, with no experience, no experts, none of these things which we say are absolutely essential. And yet it doesn't matter. *We're* afraid of what they might do, and for good reason. They might be able to build a bomb that works, without any tests. You know, we're nervous about the North Korean bomb. We don't know what to do about them, but we're nervous about this North Korean bomb. They never tested it, they have no experts, or their **[00:20:00]** experts don't have any experience. They don't have any big computers. They don't have *any* of the things which we say are absolutely essential, but we're afraid of them.

Testing allows you to develop bombs which are more *elegant* than you otherwise would. And if you had *neither* testing *nor* computers, I don't know how different they would be from the World War II bombs. But they *would* be deliverable atomic bombs, with neither computers nor testing. Now, with computers but still no testing, you can go a *very* long way towards developing more sophisticated bombs. Not as far as we are, but my bottom line is, it doesn't *matter* that we're so sophisticated. It only matters in the competitive sense. If the Russians have sophisticated bombs, we have to have them, partly just for that reason. That's a reason all by itself, is that we can't stand the competition of *not* having what *they* have. But more than that, they're easier to deliver, you can put more of them on a submarine. If you didn't have the sophisticated bombs, then a typical submarine missile might only deliver four instead of twelve

or sixteen or whatever it is. But the nuclear world would be virtually just as dangerous as it is today, without testing, if the test ban had gone into effect long, long ago. Well, that's essentially what [J. Robert] Oppenheimer and the GAC [General Advisory Committee, Atomic Energy Commission] said way back there in 1949: We've got a stockpile of bombs that's pretty good and can deter anything we need to deter. They were right. It's only when you get sophisticated competitors that both sides have bombs that are sophisticated. If only Japan made automobiles with automatic shifts, we'd be out of business. Even though the world doesn't *need* an automatic shift, it's so desirable that you have to have it. Once *somebody* has it, *everybody* has to have it.

But in the world of nuclear testing, you're not talking about everyday consumers like you and me driving automatic cars; you're talking about some cultures of particular interest, whether it's the military—

Yes, but everywhere in the world, not just here, and well placed. No, I mean all of the big countries have *large* national security establishments who are very much involved in these things and would totally disagree with what I said, you know, you have to have these weapons. See, I say that there's nothing—talk about testing for reliability or for confidence. My view is there's *nothing* we could do that would persuade *any* of our potential enemies that our bombs don't work perfectly. We can even give them *documents* that said, We tested, here's a photograph of it when it's corroded. Misinformation, they'd say. There's nothing we could *do* that would persuade anybody that the American stockpile isn't *totally* adequate to the need. And yet the people in the nuclear establishment, including even many on JASON, say, Oh, no, you know, yes, we can get along without testing, but that's because we have the computers. And I say, bottom line, there's nothing we could do that would make

Saddam Hussein or Kim Il Jung or Putin or anybody *doubt* the American stockpile. *They know it works.* Because they know how many tests we had. They know how good GE [General Electric] is at building refrigerators. It's *unbelievable* that the American stockpile would not work.

Right. And then I would have to assume that you have to put another factor there, which was, there are so many *weapons that if some didn't work, that—*

Yes and no. The notion is there might be some defect we don't know about that would make an entire *class* of them unreliable. Now, I don't regard that as *right,* but that *is* the rebuttal.

But see, again, from an outsider's point of view, it's like, but aren't there lots of classes, so that even if this whole class went, then—

[00:25:00] There's that, too. But one peculiarity about all of this—and here I have to scold the doves a little bit, because *one* of the things that we could *do* is to make the bombs *vastly* more robust than they are, so that the questions like reliability and confidence would be gone forever. In principle, I'm not saying that this is what they should do, but in principle, you could build them all out of uranium so you don't have *any* of the problems that go with plutonium. Probably, you could get by with no boosters, so you don't have the tritium problem, either producing it or wondering what it's going to *do* inside the bomb. Now, they would be somewhat bigger. You probably couldn't build a ten-kiloton weapon for under five hundred or a thousands pounds, probably a thousand pounds. But you could *do* that, and a thousand pound bomb with ten kilotons or forty or something like that would play a role somewhat similar to what the stockpile now plays, would deter most people. Anyway, but there it's the doves who say any purpose, including making them more robust, the laboratories simply are not allowed to redesign the bombs.

Oh, I see.

Well, because there's just this idea, it's soundly based, that you can't *trust* them. And so they might be *telling* you that's what they're doing, but they would be doing something else.

Oh, wow.

Well, there is a lot of hostility between the hawks and the doves on issues like that.

Yes. When you mentioned earlier the competition and the idea of the competition between—

In other words, in *this* world, the way we talk about testing isn't legitimate because, given *real* people, not in the national security establishments of all the important countries, they don't think that way. They would not agree. You would only get a few mavericks to agree with me. My views are regarded as quixotic.

Well, that's OK. That's why I'm talking to you. I've talked to other people, too. Did you say they were legitimate or illegitimate? I didn't understand.

I don't remember which I said. I would say the nuclear weapons establishments, the national security establishments of all the big countries are made up of people who, given their *backgrounds* and their *responsibilities*, are honestly concerned about reliability and the possible role of testing, the possible *necessity* for testing. It's a *natural* outcome. So often when I talk to peacenik friends, they think it's because these people are somehow ill informed and deliberately evil and so on. They're not. They're just human beings with certain experiences and responsibilities and friends and colleagues and information that leads them this way. And there's not a chance in the world of getting rid of them in the current international—now I'm getting *really* deep—but the international system is characterized by lawlessness and chaos, and the lack of law, and anarchy. And in a world like that the people who are *responsible* for national security *do* have to use worst-case analysis. You *can't* assume that everything is happy and

everything's the way it ought to be. As soon as you start using worst-case analysis and realize these other guys really *aren't* nice, whether it's Saddam Hussein or Idi Amin or anybody, you overdo it. In other words, I don't say they're completely wrong. I just say they're exaggerating everything. So in summary, there isn't going to be a test ban for a long time. And proliferation's going to *slowly* go on. Take Iran, where there's a big fuss. The reason that we're opposed to Iranian proliferation—I mean our policies towards proliferation are way more than half-informed by **[00:30:00]** whether we *like* the other guy or not, not by *general* ideas about proliferation. It's OK for Israel to have atomic bombs; it's *not* OK for Iran. The difference is we don't *like* Iran. Well, and also in the case of Israel, in America *generally*, people understand the extremely delicate situation the Israelis are *in*, with all those enemies all everywhere. But Iran is surrounded not only by enemies but nuclear-*armed* enemies, with Pakistan, Israel, the Soviet Union, and the United States surrounding Iran. With nuclear weapons. Whereas the enemies of Israel don't *have* nuclear weapons. So, you know, Iran is in at least as bad a situation, from an Iranian point of view, but Americans will not understand Iran. You can't get anybody here to sympathize with Iran, because it's a crazy country with an unreliable government. I mean, they got this funny mix of mullahs and an elected parliament that still doesn't really work. I would say the Israeli government doesn't work very well either, but also, and again it calls for pessimism. I don't think anybody would do better. Take Sharon and his group. It's hard to imagine replacing them with anybody who would do better, *given* the situation. Given what *mothers* feel about having their kids blown up on a bus. I told you one of my favorite stories here about that, the way people react. We had a case here where—well, it was the captain of—I think it was the ship that the North Koreans had captured early on. Then he retired here. And anyway, it was a captain in a famous circumstance like that. And somebody put a bomb in his

wife's car and it blew up and she managed to survive. The case has never been solved to this day.

And where was this?

Right by the Marriott Hotel up on La Jolla Village Drive. I happened to *be* in the garage at the time. I *heard* it. But the point is, the wife of the captain, the one in the van, was a teacher at the La Jolla Country Day School, and they *fired* her because she represented an attractive peril of some kind. And I talked with one of the—not a mother, but an older woman who knew people there. Of course, she said. I mean, who wouldn't? They might come after her again, closer to the school. So not only did they fire her, but they were widely supported in that. I'm now getting back to Israel. You imagine a situation like that in La Jolla, and then it happens a hundred times in Israel, in a smaller country. The way that people are reacting there, the remarkable thing is that there's any doves at all. There are. So that what I'm saying is that at one level of abstraction, this whole testing argument is full of holes. On the other level, I can't imagine the country going substantially differently. I wrote Harold Brown a letter relating to all of this. It's actually public. It never got much distributed. See, when Harold Brown became secretary of defense, he got a letter from [Norris] Bradbury and [Richard] Garwin—I think they wrote it to *him*; maybe they wrote it to somebody else—supporting a test ban—this same issue—saying, It's OK, we don't need it in order to maintain the stockpile adequately. Same question. This is 1977. Harold asked me, What do you think about that? And so I wrote him a letter, and the letter says—I might be able to find it, but the letter says, They're right, technically. We *do not need* testing in order to maintain **[00:35:00]** that stockpile adequately. *But* the American national security system can't cope with the uncertainties that will inevitably arise. And I think I even used words like, you know, Eventually they'll get frantic about it

and demand the resumption of testing. So the only reason we can have such a *long* moratorium as we're now having is that the world's got other worries. The nuclear issue tends to be a side issue [when] we're worried about terrorism in airplanes and even chemical and biological war. But in '77, that was my answer to Harold, They're right. You don't need nuclear tests, but *our* defense establishment can't cope with the uncertainties that will inevitably arise. And it was about one year after that that I was appointed to be the chief negotiator on the test ban. And the people in the arms control agency didn't like my letter one little bit. And so there was a little bit of dismay over there in the State Department when I was appointed. Because the White House did it. The ACDA [Arms Control and Disarmament Agency] didn't. I think they were just *informed* that I was going to be the new negotiator.

So the White House appoints you and the Arms Control and Disarmament Agency says—

They were worried. Kistiakowsky was worried also.

That you would do what? That what would happen?

Well, that I wouldn't take it seriously, that I wasn't *really* in favor of the test ban. My attitude was the test ban's a good idea. I also don't believe we can get it, but I mean it's worth trying.

So that was how you went into the negotiations, then?

Yes. Well, I went in with enthusiasm and optimism. I thought, well, if that's what [President Jimmy] Carter wants, I'm going to try and do it because I think basically it's a good idea. But, at the beginning and at the end, when I really thought about it in a *non*-enthusiasm environment, I never believed it could be done.

Just from sort of realistically looking at the way people—

Yes, I met frequently with Senator Alan Cranston. Some political heirs of his have a big research institute now that is constantly soliciting funds. Well, I don't remember their name.

But when he was the whip in the Senate, that's when I was the negotiator on the test ban. And I would drop in on him occasionally to get some support because it was quite evident that there's just not much support for a test ban out there, anywhere. Brzezinski was against it. Carter and [Cyrus] Vance were in favor of it. That's about it. Well, and the ACDA people and, well, the doves. By that time, there was a big dove community. And so—I lost the thread. Where was I going?

You were saying, let's see, Cranston—

Oh, yes, I had seen Cranston, and I would say, `Test ban, let's hear it for the test ban. Say something nice about the test ban. What about the test ban here? What are you saying on the test ban?` He would pull out from his coat pocket, and we all wore jackets, even in the hot Washington, pull out this tally sheet. He is Senate leader. They had this pre-printed, all of the senators, their names, and then "for," "against," or "uncertain." The tally sheet wasn't for the test ban; it was for SALT [Strategic Arms Limitation Treaty]. And that was his rebuttal to the test ban. I mean, `You guys are in the way. We got this bigger problem. Don't bug me.` He didn't *say* that, but I was, `Let's hear it for the test ban,` and Alan Cranston would show me that there *was no sure two-thirds vote ever* in favor of SALT. This is *before* the question of—I remember Senator [Frank] Church made this big speech about Russians and Cuba that was totally off base, and that *finally* put the death knell to SALT. And then they invaded Afghanistan. You know, everything went wrong. But first Church and then Afghanistan. But well before either of those, **[00:40:00]** Cranston was telling me, `There's no majority on SALT. There's no sure two-thirds vote on Carter's version of SALT. So don't talk to me about the test ban.`

So when you look back at those negotiations with your—

And Margaret Thatcher was against it, too.

Yes. So what's your realist sort of judgment on whether that was a worthwhile thing to even be doing?

Well, Winston Churchill said, Jaw, jaw, jaw is better than war, war, war. And we did explore ground. We did push each other on things like inspections. And we did *further* develop the understanding of what the *basic* requirements were on each side. And furthermore, *all* of those things *together* helped to create a bureaucracy in the Soviet foreign ministry which, like all bureaucracies, developed its own self-interest. So they had a big arms control bureaucracy by the time the Cold War ended. It was the result of everything, you know, not just us.

See, I had that experience with the Chinese at the very beginning of their serious involvement in these matters. When I was in Geneva negotiating the test ban [Comprehensive Test Ban Treaty], they took their seat in the United Nations. *Then* they started moving in on the committees, the various committees, and they accepted a seat on the disarmament committee. It was forty countries, a committee of forty countries, which met half a year in Geneva and half a year in New York. They accepted their seat but there was no one there. Then after a few months, they send the team. Four guys show up, or three. But there's a visitors' gallery—they're already there, it's so dull, but there's a visitors' gallery. And *I* occasionally went there. See, I wasn't part of that committee but I was [negotiating] the test ban, which is directly related. And they came, the Chinese came, and they sat in the visitors' gallery. And the place at the table is always there. China, it says. Right between Canada and Cuba, there's this empty chair. And every month, the table, the whole committee would rotate one person, and there'd be a new chairman. The whole table rotated. Everybody's in alphabetical order. And part of the alphabet

is Union of Soviet Socialist Republics, United Kingdom, United States. That's the order. It ends with Zaire, obviously. The guy never knew anything about it. Mongolia, too.

But anyway, the Chinese showed up. And China had made a constant stream of statements about test bans and how everybody's doing it wrong and, `We're in favor of no first use and we're in favor of cutting off production.` They're in favor of all these good things, no first use being one of them, but it was purely polemics. I mean, there was no thought behind it at all other than, `We Chinese know which side we're on.` But I mean, there was no staff work of any kind behind these pronouncements. So now we got these three guys in Geneva that are going to take this seat, and they're going to be obligated to *discuss* things. And they would never do what—the Zairians, the Mongolians, and then my experience with the Turks, just speak nonsense. The Chinese are not going to speak nonsense. It might be purely polemic but I mean they won't say *dumb* things. So they need to know more than they knew, because they had come from Beijing without any staffing or any studies. And so they couldn't ask the British. They wanted to ask somebody. They couldn't ask anybody who already is there on the disarmament committee. There are lots of other ambassadors around in Geneva. But they weren't about to ask the Japanese, they weren't about to ask the British. Even *more*, they weren't about to ask the Russians. So *who's* left that *knows* anything? There's the Americans. What American? Me. *They* came at *their* initiative to *my* house for three or four afternoons, seminars, with me just simply telling them everything I knew, **[00:45:00]** that wasn't classified, about what had been going on in Geneva all these years, to the extent I knew. Because they *trusted* me. I felt that both personally and patriotically, you might say. The only people they trusted were the Americans. And among the Americans, it was, by chance, me. By accident. Well, they must've had a dossier or something. But I've always thought it was one of

the most heartwarming things in my life, was the fact the Chinese turned to me. When they *finally* got *serious* about arms control, they talked to me. Met at my house for this seminar. Then finally, they still don't take their seat, but finally the deputy foreign minister comes through on some kind of a trip and he's going to *speak* to the disarmament committee. So he gets up there, and of course everybody speaks their own language, he's speaking Chinese, which I could follow where he was without understanding it. And of course there's simultaneous translation. And not very far into it he says, This is a wonderful purpose and we're here and we want to accomplish it, but with the Soviets here, how can anybody believe that we can really *do* this? Look at them, you know, and all the things, they can't trust them, *la-da-da-da-da.* Anyway, not so on-and-on, just a few sentences, and the Soviet ambassador, an Armenian with the name Victor Israelyan, Victor son of Israel, is the Soviet ambassador. Bangs on his microphone, Point of order, in English, Point of order. The Canadian was in the chair, the Canadian ambassador was in the chair. And he [Israelyan] said, Point of order is that this speech is not relevant to the purposes of this committee. I object. So the Canadian takes hardly a moment and he says, I rule the speech to be in order. And so the Chinese—and that's where my knowing a little Chinese helped—he went back a full paragraph so we got the very same insults a second time. Israelyan again bangs his microphone, Point of order. Same point of order. And the Canadian chairman, the same thing, he ruled it in order, at which point I remember Israelyan just throwing up his hands, but not leaving. He just threw up his hands, What can you do? His point of view was the same as the Chinese: What can you do with those people? As far as the Russians were concerned, dealing with the Chinese was impossible, and *vice versa*. "You couldn't trust them. They're erratic."

Then the very next session, they took their seat, these guys that I'd been briefing, finally took their seat. One of them, and the other two were staff or something, I don't know if they even *came,* but the head of the group did. He had been to Columbia University, so that his English was great. He was there *just* before they cut off *all* relations with United States, just before the so-called liberation. But a friendly guy who knew America middling, and his wife was another Chinese student whom he'd met in America. I think two out of the three of them spoke good English. Maybe all three.

That's so interesting.

Yes, it's one of my more interesting moments, is dealing with these Chinese. The fact it was *me*, in my role as an American ambassador, because they trusted Americans. I came to know later, during the worst days of the Mao time, we didn't have anybody—they didn't have any ambassadors abroad either. There was a Chinese ambassador in Warsaw who dealt with the American ambassador in Warsaw. They had *more* serious conversations with us than *any* other country.

Really?

Well, they weren't many, but there were serious conversations, pretty stilted. They were terribly polemical and political. Nevertheless, they dealt with us more seriously than anybody else. Because they think we're *dumb* to be—they *think* we're straightforward. The whole world does. **[00:50:00]** But they also think it's a little stupid. I mean, these Americans are pretty naïve. But they *trust* us because we are naïve. It's not necessarily all good. But we're not naïve. We're just straightforward, more so than almost anybody. That's what George [W.] Bush is blowing. It's so sad about him. I don't think he can destroy it but he's causing a lot of harm to American's reputation. It's too big for him to destroy.

I think so. How long were you in Geneva? How did that go?

Well, just over two years, just over *half* of the time during two years. Typically six weeks on, six weeks off for a period of—well, it really was very close to two years, because we adjourned after the Reagan election, never met again. They wanted so badly to meet, both the Russians and the Brits, partly for personal reasons.

What do you mean?

Well, the British ambassador was sixty, as I was that year, and he was in the Foreign Service. And they have a strict rule: you have to retire unless you're right in the middle of some kind of a mission, and he didn't want to retire. In the case of the Soviet deputy, he was—see, the head of the delegation was from the nuclear power world, but the deputy—who spoke beautiful English, it was part of the career in this sort of thing. He was just ready to be promoted to ambassador, just in career terms, and was *sure* they were going to send him to Anglophobe Africa and he didn't want to *do* that. So, these personal things that are in such a strange way.

That's so interesting, though, because of course they do, but you don't think *that they do when you think about it.*

No. But he didn't want to serve—

Go to Africa. Just in Geneva. That's a nice place.

Actually, they didn't. They assigned him to the UN. So he lucked out somehow.

So the negotiations basically ended because Reagan comes into power?

Yes, it simply—well, at first they didn't know what to do, but they were getting *very* powerful advice not to proceed, that the whole thing was bad, and one of the principal advisors who played more of a role than *usual*, the assistant director of the Arms Control Administration for administration, was an ideologue. Now, he *was* also a professional, but he was absolutely

against the negotiations all along, all the while they were happening. There was nothing much he could *do* about it, but he was very much against it.

Who was this?

Oh, I don't remember his name. He's not an important person, not a well-known person. And he didn't become the director, but they appointed [Eugene V.] Rostow, I think was the first one, and then it went on to [Ronald] Lehman who's now at Livermore, but not him. He was starting at the very end. A couple of guys who were against arms control. Oh, Lehman's against it, too. He'll be down here for Susan Shirk's seminar.

So then, that just ends. So the negotiations basically end?

Yes.

And then when the next wave comes along, how does that get picked up, or what happens there?

Oh, it's not hard to pick it up. What *did* happen is they *did* actually eventually open up a negotiation, but I forgot how they did it, and Paul Robinson was involved. But it was clear that we were willing to talk about it but we had no serious proposals.

This was during the Reagan time, then.

Yes. We were willing to talk about it, but I forgot how they did it now, but it was just all form and no substance. And they didn't start up right away. When then finally *did* send somebody to *talk* about it, and I think Paul Robinson was the one that got the **[00:55:00]** assignment. But as I say, I've always known him as being somebody strongly opposed to the test ban. Well, most of the people at the labs are opposed. Some more *strongly* than others. It was only old-timers who were sympathetic, like Bradbury. Some of them come from the war and who had memories about how bad things can *get*, instead of people who are just there for whom it's all entirely theoretical. But Carson Mark was the other important person at Los Alamos.

Right. And you think that really is what it is, that you get a certain distance from the war?

Yes. Well, I don't know whether it's the war or the Manhattan Project, but you see, the people who were recruited into the Manhattan Project, like me and thousands of others, saw the whole war as a terrible thing and you've got to *do* something. For those who were recruited in 1960, somebody has persuaded them that nuclear weapons are in the best interest of the United States. It's a complicated story. Deterrence is a complicated story. World War II was not. Many of the *older* people used the *Germans* as their rationale, especially the refugees, so the story was common that it's *vital* that we should accomplish this project before the Germans do. It was not an unreasonable idea for people who weren't up on all the latest intelligence. I often spend time with historians and others to remind them that that's *not* why most people joined the project. It's not why people in my generation joined it. We were aware of that and indeed that was an important additional reason, but doing our part to win the *war* was why we did it. And I think most of the people would've been easy to—well, when they finally did discover that the German program was, not there, Joe Rotblat, the only person who left, and the only other person I know who really had a lot of tears about it or fretting about it, was [Robert] Wilson. Then there were a lot of others, like [Victor] Weisskopf and your father [Harry Palevsky] who said, `Never again.` But that was after the *whole* thing is over and everything, whereas Joe Rotblat left, `Why don't you just leave?` Three or four months before they—`I've done it, my part.`

Right. Yes, it's so amazing to see how you do go from what you talked about, which is Oppenheimer and the GAC back in '49, with this very limited number of weapons, to what so rapidly comes into being, and then the logic seems to be based on that new reality.

`We never thought there would be so many.` That's a direct quote from [Hans] Bethe, but it's also my own quote. Bethe says it with a certain amount of passion at the fortieth

anniversary: *We never thought there would be so many.* And the fact is, they kept the numbers so secret that even the insiders, in the military as well as at the labs, didn't discuss the numbers.

Is that right? Because now, see, I have that book that I sent you that has *all the numbers of tests, and then you see the reports in the bulletin that those guys put together of the number of weapons.*

When [Robert] McNamara came in with his sort of budgetary approach to everything, and with Charlie Hitch as his comptroller, he put Charlie together making up a chart: I want to know how many there are, and I want them by categories and locations and so on. So Charlie Hitch, for the first time *ever*, drew up a single piece of paper that said, This is the nuclear situation. Well, the SAC [Strategic Air Command] had its plan for all the *offensive* weapons, but even they ignored the others. So there was a war plan, but even that war plan—that war plan didn't exist as an overall document, because the Army and the Navy and the Air Force each had them, totally uncoordinated, because they didn't *talk* about those things. And then when McElroy and [Thomas S.] Gates came in, they were pressed—well, Gates said to me later—

[01:00:00] *This is who?*

He was the *last* secretary of defense for Eisenhower. *Soon* after, but after, he said to me—I was asking him, Why did they prepare that first so-called SIOP? And he said, Well, Arleigh Burke and you told me that there ought to be some kind of a central plan for all of this. I don't remember. I could have, you know, in some kind of a—I don't even remember why I might've said that, but that's what—Gates said, Arleigh Burke and you– Arleigh Burke was CNO [Chief of Naval Operations] for the Navy, and Arleigh Burke was concerned because there was no connection between the plan for using the Polaris

submarines and the plan for using the airplanes and the bombs. Well, they had done it the easy way. They'd said, OK, the Navy's responsible for the Ukraine and southeast Russia. The Air Force is responsible for the rest of it. But there was no plan. And so anyway, then we made a plan and I saw it hadn't much changed. I saw what they *did* during the Eisenhower administration. They *did* put together a plan, and then called it SIOP, even from the beginning.

And tell me again what SIOP means.

Strategic Integrated Operational Plan. The "integrated" is the key word.

But this is for nuclear *weapons.*

Yes, all of them. How are you going to use strategic forces? We all talked about deterrence, but the question is, what do you do? And people that had been in—they'd been planning for little subcomponents, so there was no plan. And there was no accounting of the total number. Back in the Truman days, I'm told—I never was there—they would report to—the law requires that the president be briefed every year on the stockpile. And they would brief him. And they would give him two sheets of paper. One of them is the mark numbers, you know, Mark 6, 8—

The different kinds of weapons.

Different kinds. And then the other has these numbers that go—they would just be blanks on this, and there's another piece of paper with the numbers. And they didn't leave the numbers in the White House. If the president insisted, they would've left them, but he didn't ask to have them. So in the president's safe, there was a list of the stockpile models, but not the numbers of each model. It was *so* secret, and I remember when, in the early fifties, Johnny von Neumann at an Air Force science advisory board said, You know, these things are going to be much more numerous very soon. We've been thinking of them as if they were very special and very rare, and that's not going to be the case in the future.

We've got to change the way we think of them. Now, also implying plans and also implying that you use them for uses other than extraordinary and extra special.

He's saying *this?*

Yes, that's what Johnny's saying at this meeting.

Now, once you have the SIOP in place, does this mean that the different services are thinking there's pieces missing in this integrated plan and we need to fill them?

Oh, yes, there's never enough.

Does that in itself drive production?

Yes. *Everything* drives. You see, the *only* people who are *in* on everything are all hawks. You see, there are no doves there, or hardly any. There's only people with some doubts like me or Harold Brown. Or Eisenhower might have some doubts, or Andy Goodpaster. But most people don't. They don't have any doubts about it. America's right and what is there else to talk about?

And is this true no matter—you must reach—this is a question but I'm saying it as a statement. Don't you reach a point in the development of these things where the capacity of a weapon could be so awful that you would think, what's the logic of going this far?

Yes, if you're talking about just one, it's awful. I don't know if I've written—it must be written somewhere, but when I was director of Livermore, I used to write an annual letter—I've told you about that—describing what we were going to *do* the next year. And then insofar as it involved **[01:05:00]** tests, it had to be approved by the president. And in one of them, in the middle of the fifties, I had a paragraph in there about in the case of—we called them small weapons and large weapons, one stage and two stage—in the case of large weapons, we were going to start down a road of developing a hundred megaton bomb. I think we were just going to go to fifty. The Russians finally did fire one. But anyway, I had it in my list of things to do. And it's the only

time, it's a unique time, I got a call back from Washington—see, the bureaucracy was so thin in those days. I, as the director of the lab, wrote this to the Director of Military Applications. Lawrence didn't look at it. He might have looked at it but he never said anything. I didn't have to get anybody else's approval. I probably *did* talk it over with Brown, Foster, and four or five others. Well, it was a *result* of a conversation, a continuing conversation. And I sent it directly to the head of Military Applications in the Atomic Energy Commission [AEC], who took it directly to the president to get the approvals he needed from the president. And he took this in, this fifty megaton bomb, and the word came *right* back to me, `The president says they're too big already.`

I got put down by the president on another case where I was being too hawkish. That was with regard to non-lethal biological and chemical weapons. There. I found this on the web. I can probably find it again. But I was briefing, it's either the Cabinet or the Security Council, about non-lethal chemical and biological [weapons]. I thought they were worth *exploring*.

To make people sick but not kill them?

Yes, and the president said, `That's a dumb idea.` But I went on, and he said, `No, we're not going to hear about that, Dr. York.` So he just shut me up, and rightly so, because the problem is it's again you get too narrowly focused. They *did* have a lot of benefits, but introducing chemical and biological weapons into our war plans was a dumb idea, so [he] didn't want to hear, and these are just small steps in that direction. So he was right.

And what, when you're the director of Livermore, is causing you to think that, say, the fifty megaton—?

Well, we took a nearly purely technical—but we were *very* much aware—I was very much aware and so were we—one layer down thick, I mean Johnny Foster, Harold Brown, Gerry Johnson, Edward Teller—of what the policies were, what people wanted, what the plans in general were.

And then I took the *special* point of view that taking all of that and putting it together, adding another ingredient, that the way you keep the laboratory vibrant and our substitute for basic research is to always be working on the extremes. So we always have a program going, as small as possible nuclear weapon, the *largest*, the *slimmest*, whatever, the cheapest. We just were *always* exploring *all* of those. So this business of fifty megatons—if that's what it was, maybe it was only thirty. It was on the *way* to bigger. We were thinking about bigger—was just part of that. We just did that as a matter of course. *These* days, it's harder because the budget is so tightly controlled. Nowadays they argue in the Congress whether or not Livermore will develop a bunker buster. You see that in the papers. Well, we would've just gone ahead with that, and then only when we got to the point of testing it would anybody at a *very* high level intervene.

So is there any thought on the larger level? Is it purely technical and scientific or are you saying, We want to provide the government with as many choices as possible. Does the thinking even go that far?

No, it's more detailed than that because, right from the very start, the people at Livermore *and* Los Alamos were central players on all kinds of advisory committees: Air Force **[01:10:00]** advisory committee, Army, Navy, all the services. Then we would meet occasionally with the GAC but more often with the Joint Committee on Atomic Energy. Those are *all* discussions about strategy, tactics, you know. What does America need, what are the problems we face? There would be maybe some professional strategists *there*, but not many, just people who knew the—there would be the generals there who ran the center for the development of this and that, and some planners; occasionally people from a place like RAND, but not usually, and of course *never* anybody that you would identify with the academic community. Well, there were one or two individuals. William Kaufman was one and there was another one who occasionally were

there. But in the course of that, and these would be—each of us would be involved [in] a half a dozen meetings a year. It's a regular, ongoing thing and a major part of life, so we know from those meetings what's wanted, or we know what the people *we're* dealing with think they want. And all these committees reported direct to—we dealt with the chief of staff and with the secretary. We didn't see them every meeting, but I mean we saw them occasionally and they'd come to stimulate us and cheer us on. So we were dealing with strategy at the very highest level. So we didn't *wait* for them to—we didn't wait for the *system* to tell us what was required. We already *knew*. Or at least, we *thought* we knew. So when we started talking about a fifty-megaton bomb, we already knew. We'd already been in discussion elsewhere where people said, `Well, if you had a bomb so-and-so big, then you might just deliver it by boat. You'd put it in harbor, then there's this tidal wave`—I mean in other words, all those things are discussed, and whether to destroy ports is a good thing or not. But they were always bloodthirsty. There's no question about that. There was *nobody* around to say, `You sure you want to do something like that?` I've come to the point where when I lecture to people, and I just do this on the campus, I make a big thing out of the fact that Eisenhower was self-starting on this. I mean his interest in arms control, not only was *him*, it wasn't what the staff told him they ought to do. It was an uphill battle. He had almost nobody—he had very few people on his side, internally, until finally PSAC [President's Science Advisory Committee] came along.

We're at the end here—

[01:13:14] End Track 2, Disk 1.

[00:00:00] Begin Track 2, Disk 2.

So why was there a test ban? I guess that's the place to start.

Well, we had a long talk about that.

Right. So the move to the actual—what actually happens leading up to October '58.

Well, Eisenhower, who had been on this track on his own, with very little support from the bureaucracy. After *Sputnik* a lot of scientists come in to the President's Science Advisory Committee, and then me in the Pentagon, later, a little later, all of whom are *supportive* of Eisenhower's goals for a nuclear test ban. In fact, more than supportive, many of the people came in on the president's science advisory committee, *already* thought it was a good idea, were already convinced. But it took *Sputnik* to bring them in to a high level in the White House. Prior to that, the advisors that had been involved in the White House on *nuclear* matters were all nuclear hawks. There was [Harold] Stassen, who was *not* a nuclear hawk, but he headed Eisenhower's arms control team, and *his* principal advisors were the three guys from Livermore. Lawrence, Teller, and [Mark] Mills, who were Stassen's advisors, all of them dead set against a test ban—well, it *was* in the air—and doing what they could to forestall it. Then comes *Sputnik*, then comes a *new* set of advisors. Eisenhower's now got the support he needs to make it happen. But it was Eisenhower's idea.

Now, around the same year, a little bit earlier, Khrushchev writes in his diary, his memoir, about how when he first reached the top, they brief him on the nuclear war plan, and he said, I couldn't *sleep* that night. And then he said, I woke up the next morning and I realized, *It can't happen.* And I never had trouble sleeping since. I mean that's a typical Khrushchev kind of remark.

So *both* Eisenhower *and* Khrushchev, and ahead of their bureaucracies, are moving forward on a nuclear test ban, or trying to find *some* way out of the nuclear arms race. They finally settle on a nuclear test ban, as I said earlier, because it was practical, seemed practical. And then there was a meeting of the President's Science Advisory Committee at Ramey Air

Force Base, *just* to discuss the question of a test ban. That meeting concludes that it's in the best interests of the United States and it is probably feasible to monitor. Everywhere I've written, I've got that meeting in there.

Right. Feasible to monitor.

Adequately monitor. You know, you have to put in the word "adequately," because none of these things are perfect.

And then the President's Science Advisory Committee set up a special subcommittee chaired by Hans Bethe to study this whole question. I was a member, you know, Pete Scoville was a member. It was a fairly big committee. I think Norris Bradbury either was a member or a consultant. And so on. And so, then during the spring and summer of 1958, this idea is being talked about at home, in great depth and in much detail, more than ever before. And exactly how the diplomacy all worked, I don't know, except to say it was largely—it was *semi*-formal at the most. But Eisenhower and Khrushchev began to make public statements, *occasional* public statements, which more and more matched each other. And finally—I followed this very closely from Washington. I was already in the Pentagon. I was the *only* really senior official in the Pentagon who thought the test ban was a good idea. The secretary and some of the others were happy to go along with what Eisenhower wanted, but there was no enthusiasm, except me, that I remember. Oh, there was one guy, the Secretary of the Air Force. There were a few. **[00:05:00]** So finally we came to understand in the late summer that there were these *matched* statements from both which *we* understood to mean no more testing after October 31 [1958] on either side. And so, our people did—you know much more about it than I do—did tests—were talking about getting ready for tests in Nevada.

Now, just to back up a little bit, to reiterate what we were talking about more informally, how did these agreements that aren't an agreement happen? Are they statements made or letters written?

You know, that I don't really know, because it was probably both public and private, and I may even have once known the private ones but I've simply forgotten them. But essentially, they were *not* negotiated in *any* formal sense. There's no signed—there's nothing *signed*. It's just each leader has *said*, `We're going to stop testing on October 31 if` *you* `do,` and that sort of thing. And there must be *public* statements, and there are probably *private* statements. There was *no* formal negotiation. We called it a moratorium, not a treaty. That was its name. It means you *stop*. And Eisenhower's reasoning was that this will create the necessary political climate for *negotiating* a treaty. The *objective* was a treaty, but we were having a hell of a time getting together on *anything* in those days, and so one of the goals of the test moratorium was to create a climate in which we could negotiate a test ban treaty.

And you mentioned how close it was on our side and the difficulties with the weather. In Russia—and here again, it *must* be in the papers, in the newspapers—the Russians tested, I think, November 1, and then again, November 3. And I remember from the White House national security perspective how puzzled and really sort of disheartened and nervous everybody was. We thought there was going to be a moratorium and here they are, there's two tests. But even so, we figured maybe something's out of control, some special thing. And of course, they were so secretive. They never told us anything. Khrushchev could have *said*, `We've got this problem. We need these two more tests.` But they didn't, as far as *I* know. Maybe you can find *that* in the papers, too.

I can find that out, but my question that arises here is, now, how do we know that they've tested? Did they announce it or do we—?

Oh, no. We had very close track on what they were doing. In those days, it was in the atmosphere, and so that was how. It was just easy to tell. They might've been underground, but I don't think they were doing underground tests. No, we were quite confident in what we knew about their testing program. That's why we're so confident that it was probably monitored. We'd been monitoring all the time. Closely. And then there was other kinds of intelligence, too. So I mean we knew what was going on.

And then finally they *did* stop, just three days late, and we stayed stopped, and so the negotiations started in Geneva. Lawrence was one of the people there. Harold Brown was there. Harold was there as a consultant. He was much younger than the others. But Lawrence was there. I'm pretty sure Bethe was there. The American chairman was James Fiske from Bell Laboratories, and he was vice chair of the President's Science Advisory Committee. So the *new* President's Science Advisory Committee is much involved, but Brown and Lawrence were in addition to that, and there were some others.

And they tried to get serious negotiations going to work out a test ban, and the issue *always* was, from the American side, creating an adequate monitoring means. And *our* people *always* worried about it, and the political pressure is *tremendous* to make sure that you don't give **[00:10:00]** the store away. I mean `you ineffective test ban types, make sure that you really can monitor this.` And *they* were arguing about the size of the table. It just got nowhere. It was very frustrating. And it got frustrating at the talks. The Russians began to imply that they were fed up with it. And many of the Americans were, but *not* the ones in the delegation, but many of the support people and at home.

And *finally*, after fourteen months, and as I say, this will *all* be in the papers, President Eisenhower in December of ’59, because it starts in ’58, so now we’re December of ’59, he says, `There’s been plenty of time and they’re just not serious.` I don’t know what he said exactly but, `We’re not bound by this moratorium anymore.` So the first person to *denounce* the moratorium was President Eisenhower. He said that we won’t begin testing without giving notice. But he didn’t say what the notice *was*. I mean there was no discussion. There was no treaty. There was no paper anywhere. It’s all done by matched statements, and now the leader of one of the states has said, `It’s off. We’re not bound. But we won’t begin testing without giving notice.` That was the important point. Within a very short time, and this is in the press, too, Khrushchev met, I’m pretty sure it was with an *Argentine* newspaperman. You know, it’s just so unlikely. And he says, `Well, in that case, we’re not bound either. But *we* won’t begin testing unless the West does so first.`

So for another year—this is now December-January, ’59-’60—the moratorium is still there in the physical sense. Nobody’s testing weapons. And then finally, and I’m pretty sure it’s early ’60, but again you can find—early ’61, right after Kennedy came in, I think—the Russians start a big test series. Well, no, first the French test. And Khrushchev said, `That’s testing by the West.` Which had been his *condition* for resuming. We said, `Well, but you know, we don’t have anything to do with *that*.` But Khrushchev said, `That’s testing by the West.` And to what extent it was alibied or what extent he thought we were in cahoots, who knows? He could’ve *easily* thought both. He was a paranoid type also. But at any rate, the French testing ended the moratorium. It’s now over. Eisenhower says, `We won’t test without notice.` Khrushchev says, `We won’t test unless the West does, so now the West has tested.`

So there we sat in early 1961. Sometime *after* that, and the date's of *some* importance because it has to do with whether the Russians were already planning things or whether they had enough time to gin up a series, but sometime after that they started testing nuclear weapons. Kennedy was in office. Gerry Johnson was in the Pentagon as the special assistant for nuclear weapons to McNamara. And I remember Gerry *telling* me that when it first happened, everybody is amazed and disheartened, didn't know what to do. Kennedy says specifically, We're going to wait and see what happens next. Well, "next" is a day or two later there's *another* one, and another and another. So after the *second* Soviet test, Kennedy orders resumption of testing by the United States. And what they did is not very far from what the Russians did. They just went out to the stockpile and elsewhere, got a whole bunch of devices, started *testing* them in Nevada, and they weren't real tests in any sense. Our tests were simply in response to theirs.

We know in retrospect a little bit about Khrushchev's reasoning, in addition to the French and feeling they were no longer bound. Because [Igor] Kurchatov and Sakharov, *totally* unknown to American intelligence, tried to intervene and asked Khrushchev specifically *not* to resume testing. And especially, If you do resume testing, don't include this big one that is already under development, a hundred-megaton bomb, because of the fallout. I mean that was Sakharov's concern. He had two concerns: the *political* concern about continuing the moratorium, and then a *narrower* concern about the *huge* bomb and all the fallout. In Khrushchev's diary, or memoir, and in Sakharov's diary, this meeting is very **[00:15:00]** explicitly discussed, and it's clear from each—they both say the same thing, but in different words. Sakharov is concerned about safety and development, and Khrushchev says, You know, *you're* a brilliant scientist but *you* don't know politics. That's *my* business and I can tell you that Americans *only* understand strength. It's a standard argument over here: the Russians only understand strength. But that's what Khrushchev told to

Sakharov as *his* reason for going ahead with the tests. They'd already had some bad relations, you know, to begin. When Kennedy became president, there *were* sparks between Kennedy and Khrushchev. So the notion that the Americans only understand strength and you've got to put them in their place was not unreasonable, from Khrushchev's point of view. There are plenty of people here with the exact same view today, not just in 1961.

And so it all ended. And we had this enormous series. They tested the biggest bomb ever tested, but in a clean version, so it was fifty-eight megatons instead of a hundred, the Russian bomb, and it had proportionally *less* fallout. I'll just throw out a number. It produced only 5 percent as much radioactive debris as it would've had if it had been the full-scale non-clean hundred megaton. So Sakharov *was* able to sell the idea of not being quite so free and easy with fallout. And so it ended.

And then Kennedy was—by that time, the idea of a test ban was something that people had gotten used to and liked, so Kennedy *did* get *right* back to work with Khrushchev, trying to work out a test—getting it *going* again, preferably a total test ban. And when it finally became evident we couldn't have a total test ban, they decided instead to have this ban on atmospheric testing in outer space and oceans, *allowing* underground. That was the compromise that made it possible to have a test ban. It also eliminated one of the reasons for *supporting* a test ban, because once they were *underground* and out of the atmosphere, the fallout problem was a million times different.

But people continued, you know. By that time, there was enough of a constituency for test ban, so the idea never died. It continued from then on, until the present day. But the notion that the Russians—when the Russians ended the moratorium, which in the physical sense they did, after having made it clear that they were no longer bound by it, and Eisenhower the same—

it's *common* to say that it's another example of Russian perfidy. The Russians did plenty of perfidious things, but ending the moratorium of '58 to '61 was not one of them. But it's *common* to believe that they're the ones who broke the—that in doing so, they broke solemn agreements and so on. They broke no agreements. By that time, the *only* political basis was that in *each* country, there were *some* people who favored the test ban, but there was *no* international basis for the test ban.

Right. And a test ban is just that. You're not going to test. Both sides must've been developing things during that period. Or what was the approach here?

Well, yes, the Livermore was very active, the Los Alamos was very active, developing things, coming up with new ideas, and the people coming up with those ideas obviously hoped that some time they'd get a chance to check them out. By this time, Johnny Foster was the head of the Livermore lab. He [had] *always* been opposed to a test ban. And Teller was there as an ever more eminent *eminence grise*.

And what was—not to speak for him, but Foster's philosophy was—

Brown was in the Pentagon by then.

What's Foster's objection to the test ban?

Oh, it was all during the Cold War days. It was a common one: You simply can't trust the Russians. It's ridiculous to deal with *them* on something that's vital to *us*. The common view, Teller, Richard Perle, Johnny Foster, and all that group of intellectuals, *is* that the Russians wouldn't even talk to you if they didn't know in advance how they **[00:20:00]** were going to cheat and take advantage of you. The Russians are *never* serious about things like that. It's *always* a trap. That's Teller's view. That's Perle's view. It's Foster's view.

Now, was it true in the case at the end of the moratorium, because they come back with this giant bomb, is the argument that they used *it as time to catch up? I've heard that argument.*

That's what many people say. I believe they did exactly what we did. The laboratories kept on working and coming up with new ideas, but it was *not* a case of perfidy. And I think one of the best evidences of that is that the laboratory leadership, Kurchatov and Sakharov, tried to stop the resumption of testing. The people in *immediate* charge of the program were *not* engaged in some kind of special perfidy. You can't be 100 percent *sure* about what they were doing. And it's a case today where the Russian *laboratory* people think the test ban's a bum idea, same as most of *our* laboratory people do. So there's more parallels than differences, and it's been a common statement that they used it to "gain a lap on us"; that's the phrase that's used. "Gain a lap on us." And the guy who used that, or the guy who invented it—well, Johnny may use it, but there's another guy at Livermore. He was secretary of the Air Force for a while, and he was an advisor in either the Nixon or the Reagan time. That's what he always says. `It was deliberate. They did it in order to gain a lap.` Now, they *didn't* gain a lap. That whole picture of gaining a lap is not right to *start* with. Now, *if* it was perfidious and they were working, *knowing* that they were going to test soon, *maybe* they were doing more than we did.

But we were working seriously on atomic bombs. Teller and Foster were *both* of them *extremely* concerned about the harmful effects, on American nuclear weapons science, *of* this moratorium. So they did everything they could to keep the program lively and moving forward. The laboratories *never* thought it was right and *always* fought against it. So what did they do? Probably the same things the Russians did. You know, maybe a little different. The Russians knew when the testing was going to start, and it's hard to say. How long before the tests started in Russia did they say, `Let's go.` And I don't think we know. It was *long enough* so that they

could change the hundred megaton ordinary bomb into a clean bomb, however long that took. It may not have taken long, but *I* suspect it was many, many months. And so, first of all, there's not much of a time difference. It gives them some small advantage. But more than that, our laboratory people were working *just* as vigorously on *future* nuclear weapons as they were. Maybe better. Probably better. So there's no "gaining a lap." On the other hand, that's an easy-to-sell idea.

Yes. When you talk about the labs, it always brings up the question, again for someone outside the system, the easy answer is the labs were engaged in this to keep themselves in business. Now, to be critical from the other side, that the reason Foster and Teller, they want to keep doing this because—or the Los Alamos people, parallel at the time. I don't [know] who was running Los Alamos in the fifties.

[Harold] Agnew, probably, at the later time.

Later. I think Agnew comes in '70 but—

You're right. You're right. It was still Bradbury. Bradbury right up to Agnew. Twenty-five years.

And then people say that that's unfair, to just characterize the labs, complicated by the lab competition, that they're doing these things so that they can keep doing what they like to do.

Well, but you see, they would say both of those reasons are the same. Keeping the laboratories healthy and doing what's necessary for national security, this is the same thing. It's not as if, is it *really* this reason or is it *really* the other reason. It's only one reason. They believe in what they're doing, very deeply. I would say very desperately. They really have a lot of trouble with things like the test ban and *why* do people—you see, it's a fundamental trouble. It's not just some crazies. They're not even crazy. It's that the *reasons* for having a test ban have to

[00:25:00] do with its *long*-term effect on the arms race, which might someday blow up in our faces. The *immediate* reason for a test is this particular device is going into the stockpile and needs to be tested. So you've got an *immediate* reason for testing and you've got some long-term or other abstract reason for *not* testing. And it always loses, but that's just general with people. I've sometimes lectured on this with students, and I point out the more general case, Eisenhower supported nuclear weapons because they were the *short*-run solution to the problem whose name is the Soviet threat. But they were *themselves* a problem for the *long* run. Whenever you have this conflict between what's good for the short run and what's good for the long run, the long run loses. And my favorite examples were [that] there would be *no* undesired pregnancies if people *always* put the long run ahead of the short run. There'd be no *overweight* people, and then I pat my stomach when I give this speech. I don't want to lay it all on the girls. But that's true. That's human behavior, and it's serious. There wouldn't be any unwanted pregnancies if we didn't put the short run ahead of the long run. And there wouldn't be any overweight people, because every meal is good, it tastes good, it's fun to eat. Yes, in the long run, being fat is bad. So it's a perfectly normal human behavior, this business. It's one of the many reasons, I believe, we can't get a test ban. The short-term reasons for testing, which may also be uncertain, but a *reason* for testing which says, we're not sure about the safety and reliability of the stockpile. The stockpile that exists right there today. You know, that's one argument. On the other side is this argument, well, there's the proliferation and the arms race and it's a long-run danger. That argument *can't* win enough people. It's like my argument about red tape, even with security. All these security rules have created a situation in which people find them onerous, and so they cheat or they get careless. You can't persuade *anybody* that that's right. I mean it's the same with red tape generally. *Every* rule, every regulation that we

have, whether it's the labs or the university or the city parks, has a good purpose. It's just when you put them all together that they're onerous. And nobody *cares* about that. What they *care* about is the immediate rule. We want car safety so we want a law about seatbelts. I mean don't tell us—people don't obey the seatbelt law because to many people it's onerous. Like the speed limits. But they expect everybody to obey the security rules, which have exactly the same kind of origin and administration as the speed laws do. It's bureaucrats making judgments about what's safe, and telling you what you can do.

And so if you're a scientist on the ground, wanting to get something accomplished, you may find a security rule that gets in your way or—

Yes, you often do. Oh, no one even knows what the rules are. I mean there are thousands and thousands of pages of rules. So there are experts who know these rules, and they have to be in high positions so that the rules won't be violated by accident. But it's not just the rules about security. It's the whole system of red tape, the fact that society is now oriented towards perfection. You can't get it, but I mean it's oriented that way. And the nuclear weapons, you can't just be *fairly* sure that—if you think they're *serious* and that you might actually *use* them and that using them will make the difference between living and dying, you know, survival of the republic, why then, why shouldn't you test them? What's *wrong* with being extra sure? If you don't believe that foregoing tests has any value—

Right, if you don't believe that foregoing tests has any intrinsic value—

[00:30:00] Even with respect to proliferation. You see, the *role* of the test ban is still sort of not central. It's been made to look central, but it really isn't. What's *important* when country X approaches the test ban, the question's not whether the United States is testing nuclear weapons, though that's what everyone *fusses* about. The question is, `What about my neighbors, and`

do they have them or don't they? You put on a lot of diplomatic argument, the Swedes and others, about the Americans and the Russians testing and not caring and so on, but that's not what drives proliferation *anywhere*. Even the argument that it supports proliferation is a little too general for most people. Well, for people who *want* to test, it's *way* over the edge. It was in Russia, too.

So you're saying it's more regional now. It's not about the superpowers. It's about whether Pakistan has them—

It's *always* been. That is, the proliferation. The *reason* for signing the nonproliferation treaty was the *best* way to make sure your neighbors don't go nuclear. For everybody. And once the neighbor went, and in the case of Iran, they're surround by nuclear, *hostile* nuclear states, or at least potentially hostile. *None* of them like each other. Who can rely on the Soviet Union? Why are there American weapons there, or *are* there American weapons there in the Gulf? Who knows? We won't say.

Nuclear weapons, you mean.

Well, there are ships, and the United States refuses to say, generally, whether weapons are on ships. That's our problem with New Zealand. The New Zealanders say that, You've got to *tell* us there's no nuclear weapons on your ships or we won't let them in. We say, Well, there aren't any, but we're not going to tell you. We have a right to have them and you can't tell us. So even though we don't *have* them, we won't say so. Well, the Israelis do that. You know, they have this—what do they call it? Deliberate ambiguity, I think is the word. That's their nuclear policy. They simply refuse to say anything. We do have and we don't have and we're not saying. Deliberate ambiguity. And the United States does that. And Helen Clark, she's the prime minister of New Zealand, and a real

peacenik. We have a mutual friend we haven't seen in years, but it was a sociology student, an older student, here, that I was part thesis advisor. And she was always convinced that—she wouldn't argue with me but she was convinced that—she would *tell* me, that *all* the pregnancies or *nearly* all the pregnancies of Rongelap [Republic of the Marshall Islands] lead to miscarriages or deformed fetuses. She believed all of that.

This is from Bravo, now.

Yes. All from Bravo. And she's a good friend of Helen Clark, and I think Helen Clark believes all those things. No, maybe not. She was just in the papers recently. There was some big issue—oh, it was with the Israelis and the stealing—did you read about that, or were you traveling?

I don't know.

Israeli intelligence tried to *steal* some New Zealand passports *in* New Zealand.

No, I didn't see that.

And they refused to apologize. They'd come on the radio and say, `We're sorry about that`, but they wouldn't apologize in any more forms. So they've broken off relations. Well, but it would be in New Zealand where it happened. They're in jail, these two Israeli agents, and they're maybe going to be—well, the New Zealanders may let them go in a few years, but they're in jail for now. But the Israelis won't apologize. Well, it's just like us. We won't tell the New Zealanders we don't have them [nuclear weapons] on our ships. We don't have to do that, for anybody.

Right. But I want to go back to the test ban a little bit because during that era, say the moratorium era and then into the Kennedy and into your negotiations for Carter, the point of all this is to stop the arms race with the Russians, right?

That's the main point. Later comes the question of proliferation.

[00:35:00] *All right, but let's just say with the first one,* then *the Soviet Union falls.*

Well, thirty years later.

Right. So when you put in perspective this activity that's been going on, from my recollections of the Cold War, no one's envisioning what actually did happen. We're all envisioning, or trying to envision, what a possible outcome can be, and another outcome—

Well, I *was* one of the optimists because I *never* envisioned what happened. I *always* believed it would come out OK.

Did you?

And I know other people who did, too. I didn't know *how* it would come out. But, I think *many* of the Cold War liberals, you know, We're going to work our way out of this somehow. And the more I traveled there, the more I realized the Soviet system is fundamentally rotten. I mean, there is so much cynicism, so much hypocrisy in the Soviet political society. I didn't know it was going to collapse, but—they went from terror to corruption fairly fast, in less than a decade, as the main means of running the country. But other people felt that way. I know from talking with Kapitza before it was over, that's how *he* felt. And in fact, Marshal [Sergei] Akhromeyev. He was chief of the Soviet general staff. He visited our chiefs. They have a good, long, frank talk after it's all over with [Admiral William J.] Crowe, Akhromeyev and Crowe. And I happened to have a good talk with Crowe afterwards, soon after he had his talk with Akhromeyev. And he said Akhromeyev said, I was sure that it would *never* be a nuclear war. Well, I was *afraid* of it, always was *preparing* for it, but *I* was sure there'd never be a nuclear war. He said, *I* thought what would happen is, *we'd* get half and *you'd* get half. And what happened? You got it *all*, and we got nothing. So he was bitter and disillusioned by the end of the Cold War, as *many* of

them were. But he thought it would work out, too. Kapitza said, We're going to reach the time when our leadership will consist of well-educated people. We started with people with no education at all, and it worked out the way you would guess. You know, Stalin and so on. Now, he says, our leadership is made up of people educated in engineering. It's a lot better, he said. *But* next generation, they're going to be educated in the humanities and social sciences and the law, and it'll be the same here as it is anywhere else, as it is in the West. So there *was* optimism.

Well, nearly every high level Soviet official I know who knew that things had been terror, with the revolution and the camps and the *gulag* and the starvation, they *all* felt, That's bad luck. It'll work out. It's the right way to go. And by "the right way to go," they didn't mean, We're going to conquer the United States. They meant, We're going to win the political war for the hearts and minds. So there was a *lot* of optimism. It's not so surprising that Akhromeyev —you see, if you *didn't* believe it was going to work out, you would be inclined to go the way von Neumann and many other went, which was to say, Look, the longer we wait for this war, the worse the result. The only sensible thing is to go soon, and if that means starting it, that means starting it. For our own good. And, you know, I thought about that much because I knew people who said that. It was all based on their pessimistic assumption that it would *not* come out, that Stalin and his colleagues had created the perfect system that would last forever. We just had the idea of Hitler's thousand-year Reich, which *didn't* work, but no, with these Communists, you know, it works. But, in fact, it didn't work. That's what I was saying. My visits to Russia persuaded me not very clearly and in no details, but it wasn't going to work.

[00:40:00] *Because you saw the corruption.*

Well, not just corruption. I *didn't* see much corruption. I saw huge amounts of privilege, but I thought of it as hypocrisy rather than corruption. And then, Sakharov used that word. "Cynicism" was another word. He said, When I came to realize how cynical the leadership was, that's when I started thinking about, *It can't be right.* That's what Sakharov, in his memoirs, says. And what stimulated him, there's always some detail, was the fact that the construction workers at the nuclear facilities were all prisoners. Treated like prisoners. Twenty years for having said something not quite proper. Now, he didn't talk with them, but he knew—I don't know what he knew. And he used the word "cynicism," which others did. It was a word that was used in those days. I saw it everywhere. You go to an airport, and I remember one time, there was a bunch of pamphlets in English about the Soviet republics: the Armenian Soviet Socialist Republic, the Georgian Soviet Socialist Republic. And they *all* told about how it was a *voluntary* association. They can leave anytime they want. And it was just so obvious there wasn't a word of truth in it. They could leave anytime they want. Now actually, they didn't want to leave, but that's because the control of any discussion was so complete, something like that has to sort of stir up and get going. It never had a chance to get that first little vortex. So the Armenians were not in favor of separating. They just never *talked* about it.

But I remember a meeting with a group from the Latvian Supreme Soviet. And the prime minister was at this meeting. And we're a bunch of foreigners from the Dartmouth Group. I mentioned it earlier. And he starts telling us the history of Latvia and how the Russians came finally and at long last and saved them from their Fascist leaders, and how grateful they were to the Russians for doing that. Another time, I heard an Armenian say, We owe our lives and everything we have to the great Russian people. And of course, with the *Turks* on their backs, in the case of Armenia, there could be a lot of truth in it. But the Latvians, it's

utterly false. Well, I mean they did have fascistic rulers. They were common in Europe in those days. They did have authoritarian rulers. Whether they were Fascists is a different story.

So you don't foresee what actually happened, but I guess I'm trying to get an understanding of how all the energy of, say, test ban negotiations or whatever, arms control kinds of things then sort of make sense when you look back and see what actually happened. The Soviet Union falls. And we said earlier—I don't know if we have it on the CD or not—that the Joint Verification Experiment comes at the end. Things were already beginning to unravel, so it gives something there.

Well, by *that* time, Brezhnev was dead. And the next three people, it was back and forth. The guy who *succeeded* Brezhnev was Andropov. And Andropov was, in certain dimensions, liberal. I mean *because* he was head of the KGB, people often said, Boy, how could you have somebody who… That's precisely what—*he* was in a position to know how bad things were and how dishonest the whole thing was. So he was for opening—*Berea* was for opening up, too. One of the most nasty persons they had. Probably was responsible for killing many. *Was* responsible. But wanted to let East Germany go, to get rid of that problem. So, you know, there *were* these things that started moving towards a better world. And Gorbachev, among other **[00:45:00]** things, realized that the world was indeed, did indeed, feel threatened by the Soviet military. That they were behaving in a way that made it plausible for the Americans and others to believe there was a serious problem there. And you know, as well, his ideas about reforming the Communist Party and so on.

So, I guess, what would be the logic of, say, a test ban now *when the whole atmosphere is totally changed?*

Well, it's simply that the test ban, *per se*, doesn't have a lot of logic, but nonproliferation does. And we haven't *really* made—we haven't moved *near* far enough in handling proliferation. *I* think, and so do some others, and the very hard liners agree with me, it's won the case, that proliferation should be *forbidden*, not just—see, the treaty is voluntary. You *agree* not to proliferate. Well, I believe we've *got* to get to the point where it would be forbidden, and *then* you've got to be prepared to *enforce* this ban.

How do you do that?

Well, my answer—and I can't get it much more complicated—is Gulf War I. You simply get, at the United Nations level, a consensus to that effect. And you get them organized, not with their *own* troops but with the kind of coalition we had in the first Gulf War, where you just simply *threaten* action with such certainty that the threat works. You got to get to that point. That *does* imply that if the threat doesn't work, you have to do something. You have to take real military action. Well, to put it more generally, the international system needs *more* of both law and order. You've got to get to that.

So when the United States says at the beginning of the Gulf War II, sounds like that would be a rationale for what the Bush administration did—

It was, but it wasn't collective. I don't really object to what they *did*. I say the style, the vigilantism, is itself so wrong that even thought the result was good, it was a bad thing. Because vigilantism is wrong, even when it produces a good result.

The good result being—?

Getting rid of Saddam Hussein, and really being *satisfied* there are no weapons of mass destruction. You see, both sides are still playing terrible games with weapons of mass destruction. It was *entirely* reasonable to believe they had chemical weapons. My *own* beliefs at

the time were, they're *nowhere* in the nuclear field. They most likely have chemical weapons. They'd *had* them. They *are* storable. Even this fake intelligence was plausible, you know, these wagons, these mobile chemistry labs. It could be. I always regard it as iffy on biological because they're much more sophisticated, and there *are* storage problems. You can't just make them and put them away for fifteen years and then use them. You can't do that reliably with chemicals either, but it's much easier. So *I* believed, and most of the people I know believe, who know something about these things, have access, that they *did* have chemical weapons. They probably, maybe, they had biological, but they just didn't have anything nuclear. So it was a surprise that they didn't have chemical but chemical weapons, is it right to call them weapons of mass destruction? So that if they ever find a chemical weapon, maybe they will. They won't really be able to say, *See*? We were right.

Yes. But you are *saying that there needs to be multinational law and order, like you just said.*

Yes. The international system is totally anarchistic and virtually lawless. There are international laws, but really very little. You catch a guy, Milosevic or something, you know, you have laws about treaty, you have laws about trade. But it's basically lawless. And **[00:50:00]** one of the conundrums that people are raising, which I really don't know how you cope with, is to say that, Well, OK, let's the United States back off and stop intervening. Will that *really* be better? You know, with all these lawless regimes all over the world, it's hard to believe it would necessarily be better. But I'm just convinced absolutely that it *must* be collective, *and* that it's not easy. It won't be easy to get collective action. That's just too bad. You have to take what you can get. All the jawboning and stuff like that, you have to do it. And if *nobody* goes along, then you don't do anything. But if you can get—you got to get more than the British but not necessarily everybody, but you got to get an obvious majority. You got to get *some* of

China, Russia, and India, you got to get some of the Europeans other than Britain, and you got to get some Third World going with you, but not everybody. The first coalition was good enough. We had Syrians and we had Egyptians. We had French as well as British. We had *fewer* allies, but they were genuine. This time it is all coercion. All phony.

Yes. But the problem that you see, the proliferation problem, remains. Even though in the short run we've taken this action, you're saying it's something that's looming out there in nuclear—

Yes, and a test ban contributes to holding the lid on. It's not as clear as it used to be and it's not as effective as it was, but I'm in favor of a test ban but I always put a "but" after it, but the world, the situation, really is different, and you guys are arguing from the same basis. The basis of your arguments as seriously you wrote it is even *more* from the point of view of ABM. The argument about *refraining* from ABM because of the way it has stimulated an arms race spiral, that is *really* obsolete. You *hear* it because people say, `Well, if we develop an ABM, then the Chinese will increase their missiles.` I don't believe that for a minute.

You don't.

No, they're so expensive. The Chinese will decide whether or not to build more missiles on grounds that don't have anything to do. You know, *maybe* they'll have an argument ten years from now and some guys is listing a series of twenty reasons and *there's* the U.S. ABMs. But it'll *never* be the reason that they expand. So, where did they go?

I don't know.

[00:53:10] End Track 2, Disk 2.

[End of interview]