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Interview with Leonard Sullivan
May 4, 1999

Trask: This is an interview with Mr. Leonard Sullivan, taking place in Arlington, Virginia, on May 4, 1999. Participating as interviewers for the OSD Historical Office are Alfred Goldberg and Roger Trask.

Mr. Sullivan, we want to talk to you about your experiences in various Defense Department positions between 1964 and 1976. First, could you tell us briefly about your educational background and your professional career before you came to the Pentagon in 1964?

Sullivan: I attended MIT. My education was interrupted in 1944 by service in the Marine Corps. I returned to MIT in 1946 and stayed there until 1950, by which time I had accumulated three degrees. I went to work immediately at Grumman Aircraft on Long Island, where my home was, and where my compatriot, Russell Murray, also found work.

Trask: May I ask you about the degrees?

Sullivan: I received the BS, the masters, and then the AE, aeronautical engineer. I was the first one to receive one of those. It's the equivalent of a doctorate but additional hours of practical subjects replaced a thesis. I worked at Grumman starting in their missile endeavors for the U.S. Navy. They were eventually cancelled and I moved into Grumman's preliminary design department, where all the new designs emerged in competitions for the military. I worked my way up to being manager of advanced systems, the new name for preliminary design in 1960, and then left in 1964. We had a remarkably successful time at Grumman during that time, with the team that we put together. We won contracts for the A-6 Intruder, the E-2 Hawkeye, the OV-1 Mohawk, and finally the lunar

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excursion module that went to the moon. We felt very good about our technical and analytical capabilities at that time. During that period McNamara came into the Pentagon and hired Alain Enthoven to be his systems analyst. Enthoven drew Russell Murray, who had been working with me on designs, away from Grumman. So our two lives stayed connected.

Trask: Was that professional experience useful for you once you got into the Pentagon in your various positions?

Sullivan: It was the reason I was hired, because Murray, in his position in Enthoven's office, recognized that Harold Brown in DR&E did not have anyone on board who had ever designed an airplane. Since I had designed several that had won competitions and had become operational, Murray convinced Harold Brown to offer me a job, which I accepted. Strangely enough, I had helped start the operations analysis group at Grumman to match what the Pentagon was doing in Enthoven's shop. Some of the designs we won were partially on the merits of the analysis, and that's what brought Murray to Enthoven's attention. So I was aware of the strengths and weaknesses of analysis. It was only later that I became aware of the weaknesses of research and development promises.

Goldberg: What motivated you to leave Grumman and go to DDR&E?

Sullivan: My wife was not content living in the outer regions of Long Island, and Grumman had gotten so much federal government business that the chances of getting more were very slim. I had been reduced to bidding on new designs such as emergency vehicles for Kennedy Airport, air cushion vehicles. I had submitted designs for new subway cars for the New Jersey subway that runs into New York. Because we had gotten Grumman so much business, the military doubted our ability to handle more. I think you would find that

senior Navy people at that time had essentially told Grumman there was nothing else they could go after. Grumman did win the F-14 after I left, but it was based on designs that we had worked on as a derivative of the TFX. I worked on the whole TFX family, both from the industry side and later from the Defense side.

Trask: This was not that you wouldn't be able to come forward with new designs and products, but that you had had so many contracts previously, is that what you mean?

Sullivan: They had given us so much work to do all at once that it meant tripling the staff of the place, and when you do that the quality tends to go down. Also we had almost gotten the corner on the new business given out at that time. The development cycles for new machinery for the DoD seem to go in periodic surges. The invention of practical electronics and the ability to fly supersonic back in the late '50s and early '60s resulted in a surge of new airplane designs being ordered. Then things dropped off. The war in Vietnam came along and procurements of new things were put off to buy things for the war. There was another surge in the early '70s to do a second generation of higher technology things. I experienced that one from inside the Pentagon as a member of the DSARC.

Goldberg: You came in '64 to DDR&E, tactical warfare?

Sullivan: Yes. I had several missile programs under my oversight at that time, the Lance, the Pershing, and one shortly killed, the MRBM, where we left the British high and dry.

Trask: There was the Skybolt.

Sullivan: This was another one that came along at the same time that we had decided to do, and subsequently changed our minds.

Goldberg: We didn't get as far as Skybolt.

Sullivan: No. Early on in 1966 the war had been joined in Vietnam. Johnny Foster asked me if I would take over the conduct of emergency research and development to support the war in Southeast Asia. I spent a full six years doing that, back and forth to Vietnam every three months. There are still classified records of my trip reports. That was a remarkable technological opportunity to see if we could reequip our forces to fight a war that we had no idea how to win. We took on a great many unusual products, some of which have become absolute standards. We did the first precision-guided munitions, the first night-vision devices, the first foliage penetration radars, the first armed helicopters, all the things that showed off so well in Desert Storm when bought in production versions through the DSARC process after the Vietnam War. The cycle of these developments is much longer than the management cycle or the threat cycle, so you have these impossible mismatches in controlling defense developments, investments, and operations. It's a very puzzling thing.

Goldberg: The context in which all that is happening keeps changing.

Sullivan: That's right. Things keep changing from what was expected.

Goldberg: It's a major factor, you get the stronger urge and push in time of emergency, in time of difficulty and trouble, such as Vietnam, when people are trying to put up the money and whatever else is necessary in order to try to get what they want.

Sullivan: That is the purely technical side. The other side is that the development cycle is far longer than the tenure of any of the senior officials. You need a time line to show how long, for instance, it takes to develop some of these things, and how many different people were in DDR&E—as well as the secretary, deputy secretary, and service secretaries—during the development of a single system. Then a system stays in the inventory for

another 30 years and gets used by a wide variety of people and for wars that nobody had any idea were going to come along.

Goldberg: I did a study of all of the major Air Force aircraft as of 1960 for the secretary and the chief of staff of the Air Force, beginning with the B-17, with a view to finding out how long development from the original specifications took, how much they cost, and how close to specifications they turned out. The manufacturers came pretty close to achieving desired performance, but the cost was two to three times as high and the time to do it was two to three times as high as originally projected.

Sullivan: The acquisition process became my specialty. I was in it for years and I stayed in it as a consultant afterwards, and as a member of the Defense Science Board. I lived and breathed it for longer than I care to remember and wrote articles about it that have been published in various places and have long since gone by the board.

Goldberg: Did you have anything to do with the electronic fence, the barrier?

Sullivan: I certainly did.

Goldberg: Starbird was running that at the time, wasn't he?

Sullivan: He was once McNamara decided to go ahead with it. You must have done a history of the electronic barriers. There have been books written on them and very long articles, some of them right and some of them wrong.

My job for Foster was to go to a theater and find out what they said they didn't have or that didn't work, and come back and try to do something about it. My first trip out there was with Johnny Foster in one of the old Lockheed propeller-driven Constellations that the government still had for VIP travel. We knew there was infiltration coming down from the north, and we knew it was coming down under the leaves of the trees. We couldn't see

them from the air. I'll make this a personal story. My own background at Grumman had included work on antisubmarine devices. Just before I left we had submitted a big proposal for the S-3, which eventually replaced the S-2. Grumman didn't win it because we had too much business, and the job went to Lockheed. The heart of the ASW problem was to see through the surface of the water and the solution to seeing through the surface was to drop something that would float and to put a sensor down into the water below. I asked why we couldn't do that by hanging things in trees and letting a sensor drop down and listen to what was going on below. Three years later I went to our infiltration control headquarters in Thailand, where they had a gigantic map of all these sensors that were on all these trails, and they said they had one that might interest me. They went through their electronics and picked up the recording from sensor "9283-76." The North Vietnamese were talking about how to repair a truck that had been damaged on the way South. So in a relatively short time we took these things from wild ideas into specific suggestions for Dodd Starbird, who was given a job and found a building and started working and fielding stuff within the next two or three years, improving them ever thereafter. They are now standard devices, and different versions are on the Israeli border with the Arabs and on the Mexican border. The whole sensor business came out of nothing. A lot of sensors were, incidentally, based on the work of the nuclear laboratories, instruments they developed to sense underground nuclear explosions. We found we could take some of the same sensors that picked up vibrations of people walking, shoot them with artillery shells into the ground, and then listen to the sensor that survived the impact both at launch and penetrating into the ground. So there were a lot of things over which the technologists were very excited and the military men likely amused.

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Goldberg: How did we benefit from having those sensors, knowing they were moving there anyhow?

Sullivan: We could identify when they passed a position and if it was inside the country we had artillery focused on it. If they were coming down the Ho Chi Minh Trail, the whole Laotian air operation by the Air Force was pegged to sensor indications that they received in the big ground center I mentioned. They were passed up to our first airborne command and control center. Later models of these "ABCCC's" are now being used in Kosovo and were used in Bosnia and in Desert Storm. Air strikes were directed toward the sensors that had gone off or some reasonable projection of where the target would be minutes later. It was a combination of ASW work and advanced sensor work and a bunch of other things. I was very taken by doing these technological tours de force and shattered when so many of them failed to have any significant impact on the course of the war.

Goldberg: That wasn't necessarily because of any technical failure, but because of other factors.

Sullivan: Of course. We couldn't get a good handle on the other factors. The higher the technology and the higher the level of warfare for which the new materiel was designed, the more the military liked it; the more we got down to doing relatively simple things to protect a village from being overwhelmed, something they could have used in Kosovo, the less interested they were. But we cobbled together such things as a short piece of bamboo stuffed with something you can't see, but if you turn it over or hang it up so the other end is up, it sends a continuous signal until the battery runs down. We could have distributed this kind of thing to the villages by the hundreds of thousands to get reports on the VC who were coming in at night. The Pentagon had zero interest. So my life was a

series of increasing embitterments. I was very frustrated that we were not willing to fight the war at the level that Vietnamization would require. I coined that word (Vietnamization) for Mel Laird at a breakfast meeting shortly after he came to the Pentagon.

Goldberg: That was the reason for our failure, wasn't it? They didn't fight it at the right level.

Sullivan: Yes.

Goldberg: We had mostly former European war people in command and that made a big difference.

Sullivan: We also did some strange things there. For instance, we rotated our people every 13 months. They legislated against professionalism in that war.

Goldberg: Who really wants to fight a small-scale jungle war?

Sullivan: Not the American military. I later wrote about it a lot, and the people who do this every day are the police departments across the United States. Most of these current operations are law and order operations, not counter-aggression operations. Again, that requires an enormous change in the thinking of the military and they won't go through that.

Goldberg: They are very strongly institutionalized. It is very hard to change direction.

Sullivan: The more I got involved in NATO after the Vietnamese experience, the more I realized that NATO was becoming an outdated organization. Somewhere are all my classified Vietnam trip reports, which are quite an interesting record of what the technological community was trying to do, from burning jungles to sensors. Some of them are permanently classified.

Goldberg: We can get those.

Sullivan: Do you want to keep this unclassified?

Goldberg: It's up to you.

Sullivan: Let's keep the following out of the transcript. We did tinker with the weather over there. We got more rain in the monsoon season than normally. And again at some considerable technical risk and no meaningful change in their activities.

Goldberg: Were you seeding clouds?

Sullivan: Yes, with high-speed airplanes. We did all kinds of things like that.

Goldberg: What about chemicals?

Sullivan: We did a lot of C/S work. We also did agent orange work, which was a different story. I'd get into that one carefully, if I were you. We got into some problems about whether there were sufficient carcinogens in sufficient quantities to harm human beings, and I think the answer is yes, there were. Did we look at it closely enough to make sure there were not at the time, no. We also did another chemical thing. We found that soap powder destabilizes mud.

Goldberg: What do you mean?

Sullivan: It slides easier, the slop angle is different when it has been penetrated by soap. Where a California cliff over a swimming pool won't fall in normal rain, if you spread soap powder on the ground before it rains it will come down for sure. `It lowers the binding between the various materials in the dirt grains. We put a week's American supply of detergents into the Laotian mountainsides to try to slide their roads.

Goldberg: How about slippery water?

Sullivan: That came up later for antiterrorism stuff.

Trask: Did that work in Laos?

Sullivan: We got a couple of slides, and a lot of slaloms. Again, the Vietnamese just figured out the way around it and made another road. They were making roads out of the gravel we made through our B-52 raids.

Goldberg: It shows that low tech can be pretty effective.

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Sullivan: I became very convinced that we should be looking much harder for the low tech and commercial solutions to military problems, and I still feel that way. For instance, we also found that helicopter pilots wanted to make instant landing zones in the forest so they could get on the ground. So we asked around in the Pentagon to find out what were the biggest bombs we had. The biggest turned out to be a 10,000 pound blunt thing that we used to simulate nuclear weapon drops. There were fifty to a hundred out at one of the nuclear research centers. We filled them with explosives and sent them over and dropped them from the Army's helicopters--the big flying cranes that had no body underneath so they could lug one or two of these gigantic things up, take them many miles to a drop zone. When the bombs exploded all the trees would be defoliated and laid down in a radial direction for a half-mile around and there would be a perfect helicopter landing pad. Instead of calling it the CH-54 we began to call it the B-54. The Air Force became incensed and said if anything that size was to be dropped from the air the Air Force must do it. So they took the rest of these old bombs and put them on sleds and tried to slide them out the rear end of C-130s. Of course, their bombing accuracy went to hell, so we were opening up landing zones on the sides of mountains and the middle of rivers and such because they weren't dropping them in the right place. Eventually the commanders said to hell with it. This was the kind of thing we did day in and day out to try to change the balance.

Goldberg: Was there anything else?

Sullivan: I never returned to Vietnam after it was over. My last dealings with Vietnam were trying to get the people out there to find the remains of a friend of mine who was killed in a commercial transport flying from Hanoi south on the day the embassy fell. That

effort failed. Then in 1972 I became principal deputy for DDR&E under Foster and handled some of the transition from Foster to Malcolm Currie.

Goldberg: Foster had about eight years here.

Sullivan: Yes; to miss Johnny is to miss a whole part of the Cold War that he should probably tell you about. His war was the nuclear arms race of the '70s. I will be convinced to the day I die that the arms race with the Soviets was driven out of the R&D corner of the Pentagon. We also interpreted all the intelligence coming from the Soviet side and decided what to do about what we thought we saw. Someday somebody is going to acknowledge that the whole arms race was not about production and inventories, but about R&D, and that it was run by the American R&D community. The whole nuclear side was run by people other than myself, so I had very little to do with that. In a different area, one of my intriguing side memories was when a fellow named Eberhardt Rechtin went to Johnny Foster one day and said he thought we could link computers across the U.S. and interchange technical information between all the laboratories together. He called it "ARPANET." That was the beginning of the Internet.

Goldberg: He was still active for years after that.

Trask: What duties did you have during the year you were Foster's deputy?

Sullivan: I became close to the acquisition process and represented him at DSARC meetings that he couldn't attend. Because of my background in industry and my background of doing things in a hurry in the Pentagon--and we did show them we could do things in a weekend that people would normally spend eight years doing--I got involved in the clumsiness of the acquisition system. At someone's instigation we put together the principal deputies of the four DSARC offices at that time: DDR&E, Comptroller, I&L, and

Systems Analysis. The principal deputies of those four shops sat together almost that entire year and turned out a very large report called the "Little Four Report." As principal deputies to the DSARC principals, we came up with an almost endless series of recommendations on how to change the acquisition process. The only reason that has any significance is that it provided many of the recommendations for changes in the acquisition system that I subsequently took to PA&E and that I spent years, largely unsuccessfully, trying to get applied.

After Laird arrived at the Pentagon, he had very strong feelings about what Nixon was doing wrong and was not willing to go through Nixon's henchmen in his office. He made most of his decisions in open meetings. My life revolved around the secretary's dining room and I thought at one time that I should write a book about it. All the decisions in the world were made in that room and I was in there weekly for almost ten years. In 1973 when Richardson came in Ken Rush told him should listen to the Little Four report and learn all about how the Pentagon works. We spent seven hours briefing him on all the details of that report.

Goldberg: Rush was on his way out by that time. Clements was already there when Schlesinger replaced Richardson.

Sullivan: Then maybe it was Clements who said that. I had a fascinating love-hate relationship with Clements. I liked him very much as a person, but not as the deputy secretary.

Richardson listened to all the Little Four material with his feet against the conference table doodling perfect circles. It was a most extraordinary characteristic. He filled up the paper with perfect circles of all sizes. After we went over the Little Four report

he said he wanted me to be head of PA&E. I knew we could work together, because I liked the cut of his jib. I said I would do it, but I told him I'd rather be DDR&E. He said that wasn't possible, but he did appoint me to take over PA&E. He left before I had really moved down there, but when Schlesinger came in, he decided would keep me on, apparently because I hadn't read his book about two and a half cheers for analysis. That was about as strong as I was for analysis. That last year in DDR&E set me up to again jump from one administration to another but gave me a job that I didn't really want.

Trask: Before we go into the PA&E period let's talk about relationships during your earlier years, starting with Harold Brown, who was DDR&E when you came in.

Sullivan: He was clearly a very scientifically oriented sort of person. Although he could be personable, it didn't strike me as his preferred mode. He was quite consistent, I found, with the McNamara approach. Not that there wasn't sensitivity there, it just didn't show. Neither man would consider putting his arm on your shoulder. Mel Laird could hardly stop himself from doing that.

Goldberg: He was a politician. Lyndon Johnson did it all the time.

Sullivan: He was a politician, but that made him a human being. So if you ask me which of the secretaries of defense I preferred, of the six I worked for, it would be Mel Laird. Sometime within the last five years I met him waiting in line to get into a restaurant for dinner. He greeted me and asked, "How are Jason and Diane?" After 15 years he remembered the names of my children.

Goldberg: That's what politicians can do.

Sullivan: I find that term denigrating. In Laird's case it wasn't.

Goldberg: I don't find it denigrating; it's a tough job for anybody to have.

Trask: There are differences in personality between Brown and McNamara and Laird.

Sullivan: McNamara came in at a time when a horse's ass was necessary. He played that role very well and brought in people who enjoyed watching him play it and would do the same. Johnny Foster when he replaced Harold Brown believed in developing personal relationships with people in order to get good work out of them. That is the right way to do it.

Goldberg: He had more of a sense of humor than they did, didn't he? That's important.

Sullivan: Yes. I worked very well with Johnny, we respected each other completely.

Goldberg: How do you evaluate the accomplishments of these people?

Sullivan: They were in for different reasons. McNamara was brought in to rein in the military services. He did that in a fashion that left residual animosities, as between the Serbs and Muslims. He left the services hating the very sound of the word systems analyst.

Goldberg: The services went out and did likewise, created systems analysis offices.

Sullivan: For different reasons.

Goldberg: They went out and got their systems analysts, trained their people to do it.

Sullivan: When I had PA&E I was determined to work with the services. I had biweekly meetings with my equivalent in each of the services plus JCS. I met the Navy rep's wife at a dance one night and said I was really enjoying working with AI. She looked at me and said, "yes, but he's getting sick of being the Navy's official liar." He was a great guy, and was jeopardizing his career with the Navy by being open with PA&E. I believe that I had a good relationship with the services. If you ask my counterparts at that time I think they will say that I worked better with the services than either my predecessors or my successors.

Goldberg: It wouldn't have been difficult to work better with them than Enthoven did, would it?

Sullivan: Really, Ivan Selin did better, but a lot of Selin's people were still Enthoven's people. Then came Gardiner Tucker who was just out of sight most of the time he was there doing different things.

Going back to the secretaries of defense, I don't think Clifford ever found out what was going on in the Pentagon. I had several sessions with him on Vietnam, and had the feeling that he misinterpreted everything I said to him. When Laird came in after that he was a breath of fresh air. We got along very well. Two things came up. Early in Laird's career I went to him and said we had to Vietnamize the war and we needed people who worked full time on that war. The real reason that Americans could take out a class action suit against the Pentagon for the conduct of the Vietnam War is that with the exception of DDR&E and me nobody else in the Pentagon had a full time job worrying about that war.

Goldberg: That's one of McNamara's complaints, that people did not spend enough time on Vietnam, including him.

Sullivan: That's in retrospect. And another thing I agree with 100 percent is that he never stopped to figure out that what was going through Vietnamese minds bore no relation to what was going through either white or black American minds about that part of the world. It was a completely different language. Incidentally, this is one reason why Soviet-American relationships never improved after the Cold War. We never spoke the same language or understood how differently we used the same words.

Laird came in and I said we needed a working group doing nothing but Vietnamization. He asked why there wasn't one. The next thing I knew I was dragged into

a lunch he was having with the chiefs of the services. I was asked to sit at one corner of Laird's table and tell the four-star generals what Vietnamization involved. As a result of that, he started the Vietnamization Task Force. It was very instrumental. I never ran it, but they had people who were responsible for getting different equipment out there for the Vietnamese, transferring forces, and bringing Americans home. For the first time there was a series of people whose jobs depended on their role in doing something about Vietnam. Sometime thereafter, prior to the '73 Middle East war, I also convinced Laird that he needed a Middle East task force. So we spent some six or eight months working very intensely with the Israelis to reequip them after the 1967 war, so that unbeknownst to us they could really sock it to the Egyptians in '73. I never saw a group of people that could eat so much technology so fast. I got involved in that while I was principal deputy DDR&E. We did in essence reequip the Israeli forces until we had no more technology to give them, in the very short period of time in '72 and '73 before, during, and after that war.

Trask: Did you have much personal contact with McNamara?

Sullivan: No. Johnny Foster did.

Trask: To go back to something you said earlier, that McNamara was brought in to bridle the military, do you think that was in Kennedy's mind when he selected McNamara?

Sullivan: I really don't know. That's somewhere in McNamara's book, which is extraordinary. There was nobody in the world below the level of God, practically, and he doesn't recognize some of the people who helped him the most. Not me, but others.

Goldberg: Are you talking about the first book on Vietnam?

Sullivan: No, the one published recently, containing the series of memos. He has a chapter, I think, for each time he thought about the Vietnam War during his time as

secretary of defense. It's about eight chapters, and each meeting resulted in a directive to build forces up or build forces down. I would claim that in between those he never thought about it at all; and that in fact it is a complete record of the secretary's involvement in the war.

Goldberg: I don't think he would accept that.

Sullivan: He may have talked off-line with PA&E about it.

Goldberg: As it advanced, he worried about it a great deal more, of course.

Sullivan: Toward the end, yes, it got to him. I was there at his farewell ceremony, and it really got to him. That's a much better statement.

Goldberg: How about Brown, you had a good bit to do with him for a while?

Sullivan: Not so much, because I was a couple of rungs down the ladder and the programs I was working on were not particularly important.

Goldberg: Not only that, but he usually dealt more with paper than people, didn't he?

Sullivan: And tiny writing, as everyone must have told you. It was worth your life to unscramble what he wrote with a perfectly sharpened No. 5 pencil on the edge of papers in perfect script too small for the human eye. Harold had sort of an arrogant air about him, which may be his professorial background or whatever, but I got sensitive to people who I thought were arrogant beyond what was deserved. He was not my favorite.

We went through more deputy secretaries than secretaries. I once calculated the average stay of each and the number was way short of a term. Packard was good but never understood the military machine and left before he found out that most of his memos had been stuffed in people's drawers to be dealt with later. He had no closed loop to find out what wasn't being done about his directives. But he had a big heart.

Sullivan: Schlesinger and Clements didn't like each other. They were antithetical to one another politically and professionally and everything else, so you were either in Schlesinger's or Clements's office all the time and rarely in between. It was a strange situation.

Goldberg: At that time you had PA&E.

Sullivan: It was a much more sensitive position than DDR&E, but not higher up the ladder than principal deputy DDR&E. Schlesinger seemed to be doing more of the force level things and Clements was doing more of the personnel things. Clements could never stop saying that he never finished college. I didn't care. But he felt obliged to tell people that.

Goldberg: He was proud at having succeeded without having done that. We got that impression from him.

Sullivan: I won't ask you what he said about me. I'll bet he said, "A good old boy, but he had the wrong job," or something like that.

Goldberg: A lot of people had the same kind of relationship with him during that time. So most of your career in PA&E was spent under Schlesinger.

Sullivan: About 98 percent. I had Richardson for two weeks before he left. I had Rumsfeld at the end for about five months. I guess it's amazing I lasted that long under him. I never could figure out how to work with Rumsfeld.

I was involved as much as anyone in the Pentagon at that time in the long-range decision-making process: How many Army divisions to have, how many bases to keep open, whether to keep building family housing, buying enough spares, fighting a long-versus short war, this type of thing. Schlesinger thrived on that. The secretary's conference room or dining room was a thrilling place at that time, because I could pick the

subject. Every month I would go to him and give him a list of three items and get him to pick what he wanted to delve into next, family housing, munitions, supplies, or whatever. He would pick one and I would have 30 days to present a case from PA&E's position. All the people with opposing views were around the conference table with their working-level people behind them. Schlesinger loved to talk directly with the people who knew what they were talking about. We had some very illuminating discussions over a period of a couple years about things as dull as family housing. At the end of the session I would have a chart prepared for doing A, B, C or D, and he would say, "I think we should do halfway between C and D." The decisions that were made there would not be put into effect until the guidance came out for the following year's budget preparation. So we turned the budget preparation decisionmaking process into a year-round thing. If Schlesinger told you he didn't enjoy those sessions I would be crushed, because he sat in them for hours. The service secretaries learned very fast that if they wanted to get the secretary's attention they had better bring someone who understood the subject firsthand. I remember when we did our family housing thing, I was saying we should put these guys out on the economy and stop building government quarters for them. The Army had brought in some young captain for their back row. Schlesinger finally made some offhand remark about family housing and the captain jumped to his feet and told the secretary how important it was to have family housing and for him to be able to live in it. That made a bigger impression on Schlesinger than all the JCS and service secretaries and admirals had done. It was a fascinating process. He got very close to the truth in a very short period of time. This was in a big room with 60 or 70 people in it.

Goldberg: That was typical of his approach. He's a talker.

Sullivan: Yes, and that's how he learned. I found that experience exhilarating and because nobody was left out of the loop I didn't feel we ever screwed anybody. That's why I changed the name of the outfit, I didn't want even the name to be the same as it was when people were doing things in secret and sliding papers to McNamara or getting little notes back.

Goldberg: We did a special study initiated by Schlesinger on the strategic arms competition. It took a long time and wasn't finished when he left. But he was personally interested in it and would sit down and talk with us about what he thought we ought to be looking at, etc. I never had that kind of discussion with any other secretary over the years.

Sullivan: I remember walking down the corridors with him one day, going from point A to point B for some reason. He said he thought we had too much emphasis on the strategic side around there. I said I thought so, too; we were shortchanging the real world for a make believe world. He agreed. That was as about as much as we ever said.

Goldberg: His interest did lie on the strategic side, of course.

Sullivan: But not necessarily in a programmatic way.

Goldberg: When it came to something like the Army he could look at it, and even though it didn't have the same kind of strategic impetus the Air Force had he could pay attention to it. Did you have any dealings with Andy Marshall during this period?

Sullivan: He was still in the White House, wasn't he?

Goldberg: He came over immediately after Schlesinger took over in 1973.

Sullivan: I had limited contact with him.

Goldberg: He was close to Schlesinger.

Sullivan: Yes, he was, but my feeling was that he was doing limited things. I may be very wrong. Our paths didn't cross too often. I never felt that Andy had undone what I tried to do and I don't think I had undone what he tried to do. He seemed to be trying to get into the Soviet mind but I never saw much of what came out of it. I actually did contract work for him when I became a consultant and I still didn't know what he did with the information.

Goldberg: He was a great study director and still is.

Sullivan: He's still there? Like Doc Cooke?

Goldberg: They are not so old. Doc's 78 and Andy is 77. You should be working there, too.

Trask: What did you consider to be the status of PA&E when you took over? Some suggest that PA&E was less important under Laird, not as important as it had been at the peak of the McNamara period.

Sullivan: I think Laird's political sensitivities resulted in his submerging Systems Analysis at that time and finding non-controversial things for them to do. Have you seen Gardiner Tucker? You ought to talk to him, he was perfect for that milieu. Again, a very quiet, insular, non-back-slapping person who studied things very deeply. At Laird's request he got into things like what was driving inflation in the American economy, and then took on the analytical backup for the SALT negotiations. PA&E seemed to be known more for that during those years than it was for trying to kill every program that anybody ever thought of and trying to skin back the military. Remember, I had been in PA and DDR&E most of Systems Analysis's career. We wore the white hats and Systems Analysis wore the black hats. When I was asked to take off my white hat and put on a black hat I knew I was going

to be considered a traitor by an enormous number of people, including the Defense Science Board people, who didn't speak to me for six years.

Goldberg: Why did you take the PA&E job?

Sullivan: It was the only job offered me to stay in the Pentagon.

Goldberg: You wanted to stay.

Sullivan: Yes. I am lacking some genes. I don't invest well and have no particular interest in making a lot of money. I found what I honestly believed was serving my country to be an honorable profession. Despite the fact that my family didn't think much of my salary—when I left it hadn't even reached \$40,000 per year—I found it very rewarding. I'm sucker enough that I would probably still be there if they had given me a job of any significance. I was fired by Senator McClellan. There were hearings on that. He wrote my job out of existence because I consorted with the new budget committees, which I thought were very important, and because I killed a favorite program of the Rockwell Corporation. There were Proxmire hearings, which got hold of all the Rockwell charts about how they were going to neutralize me and get around me to keep programs going that I didn't want.

Goldberg: What was your relationship with Rumsfeld then?

Sullivan: I couldn't understand Rumsfeld. He wanted to whisper to one or two people and then in the quiet of his own office come out with a decision from God knows where. I tried on him one of the big decisionmaking sessions. He went from his office with me in tow into the secretary's conference room and there were 65 people waiting to talk about the future of airlift or something. He just looked at me and said, "let's go back to my office." When we got there he asked me who were all those people. I said they were the people involved in strategic airlift. He said, "Tell them I don't want to meet with them." So I went back and

said I was sorry, but the secretary of defense preferred not to work in that mode and that was that. And what I thought was the most profitable decisionmaking system ever conceived by man just went down the drain. So it didn't surprise me when McClellan wrote my job out of existence. Schlesinger was gone, having gotten into an argument with Jerry Ford. Rumsfeld said he wouldn't use up any congressional good will fighting for me and to please be gone by the next Monday. I was thrown out of the place, which was disturbing to me. My wife was delighted when I began to make money. Pete Aldridge must have told you how Rumsfeld made decisions. Pete was probably a good guy to work with. I have never talked to Pete that much about it.

Goldberg: He is a non-threatening person.

Sullivan: A nice, genial man.

Trask: He was your deputy for strategic systems?

Sullivan: Yes, and eventually my principal deputy. John Christie, who had been my principal deputy, finally moved on, much to my relief.

Goldberg: He was there for a long time. A lot of interesting people passed through Systems Analysis and PA&E over the years.

Sullivan: Very successful ones. Did you talk to Phil Odeen? A marvelous man. He made a fortune.

Goldberg: Aspin? Selin?

Sullivan: Yes. And service people, too. We had several service chiefs go through there.

Goldberg: Pursley went through Systems Analysis.

Sullivan: Yes. It's not a bad position to be in for a few years as a junior military officer if you want to find out about the inner workings of OSD. And if you really want to learn about your service, the chances are you will learn about it from a very different perspective.

Trask: What about major issues during your term? What did PA&E do in terms of the development of the budget?

Sullivan: In my time and earlier the Defense program was put together by PA&E. How many divisions, tanks, etc., all of that was determined during the program development part of the budget cycle. After those decisions had been made, the services would go back and prepare a budget, down to dollars and cents, and submit that to the Defense comptroller. The comptroller would pick at small issues, but all the major program decisions were made in the program guidance side of the process.

Goldberg: Did they write the DPMs?

Sullivan: Yes, the Defense Guidance became the most important. We would tell the services at the beginning of the next year's budget cycle what the ground rules were. I worked very hard at that, it was part of the whole Little Four exercise. How could the services know what they would be spending three years hence unless someone told them what they should be buying and what their income was going to be? We went very strongly in favor of a five-year program plan with a slight growth in the amount of spending every year. Schlesinger turned around the budget decline from the end of the Vietnam War and got it going positively. When Carter came in it dropped off again and then went up again when Reagan came in. By then, I was working with the Committee on the Present Danger and put together a Reagan budget that was subsequently bought when he entered office and we started the military buildup. It does really have to have a time line.

You not only have to know how many forces you want, but you have to know what programs are under development and being started, what the budget top line was doing, and who was doing what in Congress. They were all going along at the same time. Schlesinger did turn the budget from a decline to a momentary increase. We took the budget over \$100 billion dollars for the first time. The thing that I prided myself on was getting a stable out-year projection for the services at a level lower than we expected to get from Congress. OSD kept the difference, as you can imagine. We told the services they could have so much this year and every year thereafter it would go up one percent. We told Congress our top line had to go up three percent. Every year we would let the services argue over who got the unallocated two percent. It seemed to me this was a nice friendly game that everybody could play and everybody could understand. Because weapon systems took so long to develop, I was also able to instigate for the duration of my time there a thing called an extended planning annex. That required people to dummy up a budget for 15 years, 10 years beyond the 5-year plan. If you start a development that will take 6 to 8 years to develop, followed by 10 years of procurement, you still don't know whether you can afford it unless you are working out 15 years. This began to put some of the tax on affordability. The Army began to realize they couldn't buy so many things.

Goldberg: Did you try to write scenarios out 15 years?

Sullivan: No, nobody in my time ever thought the Cold War would come to an end. As a matter of fact, the Cold War had resulted in the Soviets still concentrating on building up forces and the improvement of their armor. So in this period when I was with DSARC, and from the PA&E point of view, we were developing conventional machines mainly to blunt a sudden aggressive attack across the Fulda Gap. That's how we did armed helicopters,

antitank munitions, groundfire TOW, the A-10--a special low-cost fixed wing tank busting machine that the Air Force didn't want to buy--the nuclear Lance, and then a non-nuclear Lance.

Goldberg: How about nuclear land mines?

Sullivan: No on my watch, I think they were already in the inventory. We saw no particular use for them.

Goldberg: Maybe as a deterrent.

Sullivan: I was never at ease with notions of deterrence. They seemed very hollow. It had occurred to me that we were threatening a nuclear war but there were no bomb shelters in the U.S. The threats were not credible. But this was not our focus. PA&E's major issues had to do with the reformulation of the program and guidance and looking out into the future and trying to get a balance between R&D and procurement and between investment and operating costs. My farewell appearance before Congress recommended that they start a readiness subcommittee because nobody was watching the readiness of the services. The services were buying things other than ammunition and training. Always the little issues became the big ones.

Trask: What was your personal view of the Soviet threat during this period?

Sullivan: I took it as an article of faith. It wasn't until some time after I left the Pentagon, working with the Atlantic Council of the United States, that I got to visit the NATO nations and compare what the Council was recommending about this potential NATO war and the Soviet threat and what the Europeans thought. I suddenly realized that the Europeans thought that threat was worth only worth three percent of their GNP. How could we decide it was worth seven percent of ours? It was years before I understood that the Europeans

decided on the basis of the CSCE treaty that the Soviets would never attack the West, but if they ever did the Americans would take care of it anyway. They could just nod and let us build up our military as we saw fit; it was not bothering them. I concluded that we had a view of the Soviet threat that was very different than that of our allies. We were creating our own bogeyman.

Goldberg: It had been that way for quite a while.

Sullivan: Yes, really since the CSCE, which was the mid-70s.

Goldberg: Before that.

Trask: The CSCE was signed in '76, I think.

Goldberg: The European attitude was different from ours for 15 or 20 years before that. They never did really want to face up. They didn't really believe that the Soviets would attack.

Sullivan: Yes, but what they did believe was that the Soviets were trying to undermine their governments. The central change brought about by CSCE was that in return for the West certifying and legitimizing the Soviet position in Eastern Europe, the Soviets essentially agreed not to undermine the governments of Western countries. So you would find things like the Italian Communist party beginning to pull off. There was a tacit understanding that the Soviets would no longer tinker around in other countries as a political weapon. The French I found particularly certain about this. It wasn't until the late '80s when the Soviets began to reach out to American academics and the Atlantic Council got a big exchange program with the Soviets that I found out that their capability was very low and we had terribly overestimated it. Since we were so far ahead of them technologically it would never enter my mind that they were really driving the technological

arms race. It had to be us continuously coming up with something new and frightening the hell out of them.

Goldberg: They had to use a far larger percentage of their resources in order to try to compete with us. Their best technology went into the military.

Sullivan: Yes, the Soviets exaggerated the NATO threat and made it the threat, the bogeyman. The idea that we wouldn't change NATO's name when the wall came down was crazy. We insisted on keeping their bogeyman.

Trask: Given the military buildup, the increase in defense spending and all that during the Reagan period, there must have been more people who realized what you realized about the Soviet threat and how we reacted to it over the whole Cold War period. By the '80s there must have been more people like yourself who had an understanding of what the threat really was but went along with the faith during that period in terms of what was done in the defense buildup. I am not saying that anyone anticipated then the end of the Cold War.

Sullivan: The question was how much was enough. That is what Ford was struggling for. I thought he had probably as reasonable a view of that as anybody. He also realized that a lot of things in the defense budget, including funding for his brother to be in the Naval Reserves, were a total waste of money. I was told that if I wanted to bring up Naval Reserves strength to the president, to do it. Then when I said to the president that we were trying to cut back on the reserves, he said, "Fine, cut my brother." Remember Carter then came in and appeared to be too much of a pacifist, sort of like a preacher. I think the Reagan thing was sort of a Republican backlash against that. The Committee on the Present Danger was formed and strengthened during the Carter years and influenced the

Reagan position. They hired me to do a recovery budget and tell them what things we were behind in buying, new technologies, and what we should do. Reagan ordered that top line into being. It included John Lehman's 600-ship Navy. It was sealed and delivered with Reagan before he took office. I had done a lot of work on what would be in the 600-ship Navy. At that time I was still on the spending spree. It wasn't until after that that I began to see that NATO was bollixing the thing up, and even later than that I found out that the Russians couldn't have done it. All you had to do was drive a tour bus through East Germany and go by a Soviet installation to find out how terribly run down they were. It was a mess.

Goldberg: Do you think that the big rearmament during the Reagan administration was the major factor in bringing the Soviets down, because they couldn't match it? A lot of people maintain this, including Weinberger.

Sullivan: It certainly helped bring in Gorbachev. He was totally interested in reenergizing the Socialist world by changing some of the dogma but continued to believe that Socialism was better than a market economy and a democratic approach.

Goldberg: He had to change more than the dogma in order to have an effect.

Sullivan: He wanted to change the effectiveness of the bureaucracy, which had grown to be a dead ringer for Marion Barry's Washington, D.C., bureaucracy. I think his military had no idea how they would have enough money to do the Star Wars thing, but if I were writing the history of the world I would attribute the fall of Communism to West German television. The East Germans listened to West German television, and the increasing disparity between the East German and West German economies became undeniably clear to them. Another exodus from East Germany began and they exited by going to their

embassy in Hungary, trying to go across the border. The Hungarian president called Gorbachev and told him the people were going to knock the fence down, could he cut the wire? Gorbachev said yes, and I believe that was the end of Communism right there. German TV had its impact on the East's vision of the Western economy, and that was ten times as important as whether the Soviets would continue to suffer fighting off NATO.

Goldberg: The Hungarians gave a special exhibit to the Pentagon accepted by Cheney, which showed the barriers, and eventually we put a part of the wall there, too. The theme was the flight from East Germany.

Sullivan: Yes, I have a piece of the wall too. I think Gorbachev realized too late that he couldn't keep the whole thing together. It ran ahead of him. I don't think he had any intention of letting Communism collapse.

Goldberg: Nixon's view was that the Soviet Union self-destructed, that it would have happened even without our buildup in the '80s.

Sullivan: I thought Reagan went too far. I did more analysis of the Soviet threat as a consultant than I did when I was in the Pentagon. Under Reagan a program began in the Pentagon to think up things that would frighten the Soviets. There were certainly efforts on Reagan's part to try and break their back economically. I didn't think that was a way to take on another major power. We got to know some of the intellectuals very well in Moscow. ISCAN was with the USA-Canada Institute under Arbatov. Arbatov was wonderful. He could sure make a point. IMEMO was their major international economics institute. Primakov came from there, and we had interchanges with both of those two Soviet organizations. What came out of that most clearly to me was that the Soviets had no understanding at all of how this country really works. I had my worst fights with Arbatov

when in one of our sessions he said, "This is the United States," and read headlines from the Washington Post over a six-month period about all the bad things that had happened. He said that was the Soviet view of the U.S. It was a long time before I realized that he was right. I went over there eight times, once by myself. Another anecdote: Once in 1992 or 1993, Gorbachev had asked the people from IMEMO who really ran the American economy. My Russian friend wanted me to read his draft response, which started out, "The American economy is run by the War Production Board." As far as they were concerned, we were still working with the organizations that had existed in the 1940s at the height of the World War II. I told him that if anybody ran the country, it was the regulatory agencies, the fourth branch of the government. They had no understanding of how things are regulated. Another anecdote: In 1990 or so, Arbatov took me aside once and said they were going to have a problem if they didn't get housing for their officers when they got out of the military. He asked me what they could do about it. I went home and looked into our prefabricated housing and mobile home industries and wrote him that we could provide them with 200,000 or 300,000 homes every winter (slack time in U.S.) if they would send ships over to pick them up. I found that five towns built for U.S. construction crews in the Saudi Arabian desert were now empty, and that the Russians could go dismantle them. I listed a lot of other things. He told me he couldn't believe or imagine such things and never showed my report to anyone. He had no conception of the American capacity to do different things.

My new life after tiring of consulting back to the Pentagon was going to be to reeducate 300 million Soviets. The heart of it would be to teach Russian teachers by bringing them over here and giving them educational materials to take back about how

Americans do business. My first step was to bring over 12 people from Moscow TV and radio, who were respected reporters on their stations. I brought them here by paying for their stay here. The whole thing cost about \$3,000. I asked Arlington County, and they provided meals, houses, and transportation and got small businesses to help. Don't ever underestimate Americans if they think they can help. One of the twelve was from their spy shop. We had interviews with local businesses and I could tell they were getting uneasy and could not believe what they were seeing. They ended up furious about what they saw about the way this country worked. They thought it was terrible. For instance, my wife arranged a mall day—a morning visit to Ballston Commons and then to Pentagon City. Both those malls completely turned over their management to help us. We had a roundtable discussion with the managers at Ballston. The Russians didn't believe the employees' honesty and simplicity. They saw stores selling the same things for different prices. They thought it was terrible to have so many choices. They could not understand the terminology. Their word for small business is our word for black market. Their word for investment is speculation. They don't understand the uses of money. I thought I could teach them, but that went down the drain. They had no means to follow up on the first trial excursion. But I have kept learning lessons about how if you don't understand the world through the other guy's eyes you will get nowhere. This is the thing that McNamara has gotten on to more and more.

Goldberg: His second book does have a lot from the Vietnamese side. That's the chief virtue of the book. He had discussions with the Vietnamese.

Trask: Did PA&E work on the question of the conventional force, since both Schlesinger and Rumsfeld wanted to reverse the downward trend?

Sullivan: Almost all of our efforts went to that. I let Aldridge do the nuclear side and never interfered with what he was doing, because he was not going to do much. He was suspect of the huge new systems, they seemed to be going in the wrong direction. The major thrust of our organization all that time was conventional force buildup. The materiel coming out of the DSARC program at that time, the F-16s, F-18s, UH-60, AH-64, M-1, 2, 3--in every area we had started in DDR&E new post-Vietnam weapon systems, which seemed to have a much higher rate of success than their predecessors. It was the second generation electronics that made the biggest differences.

Trask: What about the size of the military services?

Sullivan: To some extent that was preempted. I think Schlesinger should be remembered for this. Abrams went to him one day and said he didn't mind the PA&E people diddling with his programs but could not stand not knowing how many people would be in uniform from year to year. He wanted to bargain for so many people in uniform and we could work together to make them perform well. Schlesinger understood that and called me and said he told Abrams he could 575,000 people as long as Schlesinger was there. The other services also came along and wanted a deal. The Air Force wanted 21 wings (I think it was 21). We stabilized those and tried to fill them up with equipment they could afford. I thought that was an important thing and Schlesinger takes credit for that.

Trask: What about arms control? Did PA&E do anything in that area?

Sullivan: Very little. I don't think the MBFR was going on at that time. I did a lot of work on that when I got out of the Pentagon. When I went into PA&E they took the SALT negotiating team out of it. They took some people out and put them under some other control. I think most of those negotiations were no longer in the U.S. I think they moved to

Geneva. I had nothing whatsoever to do with SALT when I was in PA&E, and didn't miss it at all.

Trask: There were some crises during this period, the Yom Kippur War in October 1973 and the problems in Cyprus in July 1974. Did PA&E deal with them?

Sullivan: Cyprus didn't touch me at all. The Israeli thing I had worked on from DDR&E with the Middle East Task Group. We didn't do very much in foreign sales and foreign gadgets. It sort of got tacked on to the budget at the very end.

Goldberg: How about the actual airlift during the Yom Kippur War itself? Were you involved in any way in any of the operational aspects, the planning? Kissinger and Schlesinger had different versions of what happened.

Sullivan: I will tell you a couple of sea stories. We couldn't figure out how the Israelis could silence the SAM missile batteries deployed on the other side of the Suez Canal in Egypt. They kept coming back and wanting more airplanes, Shrike missiles, and all kinds of things, to get rid of them from the air. I suggested they do it from the ground, because they were within artillery range. They could get from us some of our self-propelled 175s. The Army said they didn't have very many and didn't want to give them away. The Israelis began to like the idea and went to the president, who ordered for them 36 self-propelled 175s. I was delighted. But the Israelis took them over and set them up on the Syrian border and shelled the capital of Syria. They didn't use them to go after the SAM sites along the Nile at all.

Goldberg: They could fire forty miles?

Sullivan: From the Golan Heights, they could. They took them north and shot at Damascus, they were not shooting at the Egyptians. We went through JCS to get

permission to do this and they used them differently. I don't remember if I was in DDR&E at the time.

Goldberg: Probably in DDR&E, because they had all the fighting over that Sinai-Canal Zone area before the '73 war. They had the air war with the Egyptians and were bombing the area in 1971.

Sullivan: The other thing I remember was that my airlift person came to me and said if we flew C-5s into Israel and refueled them there to come home, we would run Israel out of aviation fuel. I took it to the secretary's attention and the Air Force said they would fly to Turkey and refuel there for the flight home. The idea that we were delivering tanks by C-5 was purely a political gambit. Flying tanks in one at a time in an airplane was an expensive waste of effort.

Trask: Did you have to pay much attention to Vietnam and Southeast Asia? The United States pulled out in the spring of '73 but things were going on there for two more years before the final collapse. Was there anything that PA&E had to deal with?

Sullivan: I would say no, PA&E was way down the Vietnamization ladder at that time. I was shattered when the place collapsed. I loved that country, it is a marvelous place.

Goldberg: Is there anything else of significance you think we should include here?

Sullivan: I thought we had developed a way to do decisionmaking on complicated subjects involving all the players in a very intelligent way—the joint sessions and open approach with the services. I also thought we had developed a 5-year and 15-year budget plan that would survive for the rest of time. I was very proud of that. I was amazed at how fast these things can change in a relatively short period of time. For the umpteenth time I became aware of the fact that people are so transient in the Pentagon that we couldn't get

one vision and keep going in any one direction. In acquisition, I think we have built in some of these long-duration investment cycles way beyond where they now need to be. And too much complexity. The idea that we tank an F-17 18 times on the way from Missouri to Kosovo and back, is hard to believe. We also did some very creative things in getting the reserves tied to the active forces. The notion of having the third brigade of several divisions in the Reserves and having the active division commander responsible for the condition of that Reserve unit is a clever way of being able to do something. We also succeeded in getting some capabilities put in the Reserves that the military didn't want to do. For instance, we knew that the manned bomber complement of the strategic forces was the one eating all the nuclear force money. We also knew that there were three times as many tankers as there were bombers. In fact the most expensive single element of our strategic forces were aerial tankers. We proposed that the Air Force put the B-52s in the Reserves. The Air Force said they would get back to us in two weeks. They came back and said they wouldn't put the B-52s in, but they could put most of the tankers in the Reserves.

Goldberg: The C-5s?

Sullivan: Like the B52s, the C-5s were counted in the active forces but their support was mostly in the Reserves. You could only get 2 flying hours per day out of the active forces but 12 flying hours a day if you brought up the Reserves to bring up the maintenance capabilities and the refueling capabilities. The wings were ostensibly on active service so they could be brought up and used whenever necessary. That was another clever way to put more than the normal amount of maintenance in the Reserves. We rewinged the C-5s, we stretched the C-141s, we did a lot for airlift repair at that same time. We resisted the C-

17. That was another game we played. It looked to us as though the Air Force could not meet their desired wings, using all the high end of the mix, the F-15. So we put in our guidance one year that we would only let them buy about eight wings of F-15s but would let them buy eight more wings of the smaller, cheaper, F-5s. The Air Force wanted nothing to do with the F-5E. They came back and said they wouldn't do that, but if we would take advantage of the lightweight fighter competition that was then going on and let them buy the F-16, they would do that. Schlesinger was very much involved in that bargain, getting the Air Force to accept a high-low mix. Then to our amazement the Air Force came in and insisted on making a Sparrow small enough to be carried on the F-16. That got into a whole new air-to-air missile program whose costs escalated because they had to squeeze all the technology down to the small size. We got tricked into a low mix aircraft with a high mix missile! But we were big on the high-low mix. The services could have some of their top performing things as long as they fleshed out the rest of their forces with something more affordable. That's how Zumwalt's FFG-7 frigates got in with the destroyers, because he needed some low end of the destroyer mix to build numbers of ships. All the services did something in that regard.

Goldberg: We want to thank you for this interview. We will send you a copy of the final transcript for your files.

Have you seen any of our published histories?

Sullivan: No. I have turned away from this business. I spent a dozen years being a consultant to the Pentagon and was even less successful from the outside than trying to effect change from the inside. I am not completely comfortable reliving that even now. It was such hard work at the time and there was so little permanent effect from it. I have

found new windmills to joust with. First I tried the Soviet reeducation thing, which was a total failure. Now I am deeply involved in restructuring the District of Columbia to try to make it a nation's capital that we can be proud of. Stay tuned