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Interview with William J. Perry,
Undersecretary of Defense for Research and Engineering,
January 9, 1981 (second session)

Goldberg: This is a continuation of the interview with William J. Perry, Undersecretary of Defense for Research and Engineering, on January 9, 1981, at 3:45 p.m. in Room 3E1006. Mr. Perry, we had completed three of the topical areas and we're now prepared to hear your views on number four.

Perry: The question is: What are my views on the military-industrial complex about which President Eisenhower warned us many years ago? I don't believe the military-industrial complex exists in the sense that President Eisenhower was referring to. Whether or not it existed in those days is something I wouldn't care to comment on, but I don't believe it exists today. What does exist, what is a fact, is that nearly all our defense equipment is developed and produced in US industry. That is, through the years we have gradually evolved away from arsenal production. There are only a few exceptions to that. We still make large caliber guns in arsenals, some of our ammunition, and chemical equipment. But the very great percentage of our military equipment is procured from US industry. Therefore, the defense acquisition community in the Pentagon and in the Services has to have a very good knowledge of US industry, particularly that portion of it which specializes in defense, although most of the companies with whom we deal have mixtures of both defense business and commercial business. The space industry is a classic example. One of our largest contractors, Boeing, has a very substantial component of commercial business. And that is fairly typical in the aerospace industry.

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So it is true that the large percentage of our procurement comes from US industry and therefore people in the Pentagon who are managing this enterprise do have and need to have an intimate familiarity with the US defense industry. In some European countries that familiarity extends to what could be called a special relation between offices in the government and particular industries. It's a case where one particular company is either the only supplier or at least the favorite supplier of a particular kind of equipment. Were that situation to exist in the United States, that situation multiplied many times, you could have a situation which I would be willing to call a "complex," with sort of conspiratorial overtones to it. That doesn't exist in the United States. What has been called the military-industrial complex is an aggregation of many different companies which compete with each other. And that is the essential difference between the United States defense industry and the industry in some European countries where you have these special relationships. Every major category of equipment which is developed and produced by the Defense Department has many potential suppliers. And the essence of our procurement practices is not only to use competition but to stimulate it, and where it does not exist, to create it. We actually create multiple sources, over time, where a situation leads us at any given time to a single source. So I do make a sharp distinction between the U.S. and European relation with their industry, and what makes the distinction is the competitive

aspect.

Goldberg: What about the other aspect of this complex, namely the collaboration between the military Services and industry to push for weapon development and weapon production on a large scale?

Perry: That industry pushes for procurement of weapon systems which they are developing and producing there can be no doubt. On occasion that pushing is in harmony with and sometimes in collaboration with a particular Service. But again it is not an overall teaming arrangement. There are many occasions when the company is pushing for something that the Service does not want to do. The B1 comes to mind, where Rockwell, the producer, wanted that airplane produced, and lobbied against the decisions of the Defense Department long after they were made. That same example can be carried over to companies lobbying against something which a particular Service wanted. Once the Service makes its decision, on a competitive basis, it wants to proceed with that decision. And in many cases the losers of a decision mount a lobbying campaign against the decision which the Service made, sometimes filing formal protests with the GAO. So I would say that in the procurement end of the defense business there is an arm's length relation between the procurement people in the Services and individual companies. And you have to look in aggregation at the entire complex of these companies before you can have the equation that this industry supplies the equipment for the Defense Department as a

whole. But a given company has to be in there competing with other companies. And what it is pushing for is not always in harmony with what the particular Service procurement office may be pushing for. I think that competition and the stresses induced by that competition are what make the real difference.

We have another aspect of what some people refer to as a complex: there are people who go from industry to the Defense Department and back to industry again. This is the so-called "revolving door." I'll give you two personal comments on that. I came from industry to the Defense Department so I can speak from a personal point of view. But I'll try to be as objective about it as I can. I believe that the Defense Department, generally, benefits enormously from having the experience of people who have spent some years in industry, particularly those who have reached the management level in industry. When you reflect that more than 90 percent of our procurement is done in industry I think it is easy to understand that having in the procurement chain some percentage of the people who understand industry by having been in it and having had management positions in it is very important. I think that's fairly obvious. What raises the question is what happens when that person in the government wants to go back to industry. Does he now go back with information which puts him in a favored position in this same competitive world I described to you before? Does he use in some

way that's ultimately detrimental to the government the information he got while he was in government? Or does he presume on the friendships and the connections he made when he was in the government? That's where the problem comes in. And if we want to achieve the advantage to the government of having people come from industry to the government, we have to somehow accommodate the problem that some of these people may want to go back some day. We cannot preclude them from earning their livelihood by telling them that they cannot go back to industry. My own career is a case in point. I spent my entire career not only in industry but in the defense industry. Now I've spent the last 4 years in government as a Presidential appointee. The option of staying on in government is not mine. So now am I to be told I cannot go back to industry on the one hand, on the other hand cannot stay in government? It obviously is not a tenable position for a person to be in. So I will now be faced with a re-entry problem.

Goldberg: Become a university president. That's a possible solution in between!

Perry: There are not enough universities to go around for that to be a universal solution. [Laughter].

So in short, for the people whom the government is bringing in to perform these jobs, it now has to consider that one day they may be going out again. There is a law which governs the conduct of government officials when they go back in industry. This law, I think, deals adequately with the issue. That is, it does not

preclude a person from taking any job with any company. It simply governs his conduct after he goes with that company. As I read the law and as I understand and interpret it, that law does not preclude me from doing anything which I would feel right about doing anyway. So I don't feel that law is a particular restriction from doing something which I feel right about doing. But it does restrict me, and in general I find that I have less marketability for an industry job now than I had 4 years ago. I find that I damaged my value to industry because of my service in the government, which is just the opposite of what most people imagine. I anticipated that when I came into this job, so it's no surprise to me. To people who come in thinking that they were going to somehow increase their market value, I'm sure this will come as a bit of a shock and disappointment. But I think that is the logical consequence of the ethics law which we have. And I think the ethics law we have is a supportable law--one I can support. It's the only way I know of to deal with this re-entry problem, and assuring at least in an institutional sense that we're not the unwarranted abusers of the information that people get when they're in government. So it's perhaps not an optimum solution to the problem, but it's a workable solution. I don't know of a better solution.

Goldberg: You take a more tolerant view of it than many present and former government employees.

Perry: Well, because many people take a less tolerant view, a long-range effect of the ethics law, even a near-term effect of it, is that we will

be getting fewer and fewer people from industry into the government. I think that will be bad. So my concern with the law is not so much how it affects me personally, as how over the long term it will affect the ability of the government to attract people for service, people that I believe provide a real value to the government.

Your next question had to do with technology. I was confronted in 1977 with what I would describe as the single most serious problem facing the US defense technological posture, and that is that in the period from roughly 1964 to 1977, from the early '60s to '77, our defense technology budget decreased in real terms by about a factor of two. To put it another way, the level of effort being applied to the defense technology budget in '77 was about one half of what it was in 1964. What had happened is that the defense technology budget had been held constant for that period of time and the erosion from inflation had amounted to something over 2 to 1. There was no objective argument that said this country needed only half of the defense technological effort in '77 that it had in the early '60s. If anything the arguments were all on the opposite side. So that seemed to me to be a very serious problem. We set out trying to achieve exceptionally high real growth in the technology base program so that over a period of perhaps 5 to 10 years we could recover from the erosion that had taken place over the previous 15 years. Particularly we set as an objective

a 10 percent real growth per year in our 6.1 (research) budget, and a 5 percent real growth per year in our 6.2 (development) budget. The first year we did not achieve that because the Congress basically rejected growth in our proposals, so we failed to persuade Congress to accept the point that I am making to you now. The next year around we did succeed in getting Congressional acceptance of that point and have every year since then. And so we have gotten substantial real growth in defense technology and we have started on the long road back to recovery. That's been a very difficult management task--trying to sustain the interest in increasing the technology base, because you cannot point to a specific mission or a specific problem that it's going to solve. It's making the investment 5 to 10 years in the future. It's making the investment for increasing efficiency and productivity, and the payoff is 5 to 10 years away.

Trask: How does the defense technology budget that you have now compare to the '64? You said the '77 was about a half.

Perry: It's perhaps at the 60 to 65 percent level right now as compared with what it was in the early '60s. It's crawling back. It had gone 15 years without any real growth, and in fact 15 years with a decrease each year.

Goldberg: That was a pretty high level, though, in the early '60s, wasn't it?

Perry: No. Not especially. In fact I deliberately fuzzed that to be in the "early '60s." It doesn't much matter which year you take--if you take anything from the late '50s to the early '60s--any of those years relative to where we are now. I picked that point

because I wanted to get pre-Viet Nam. The erosion began during the Viet Nam years. It accelerated greatly in the early '70s only because inflation was accelerated in that period. And I think for several years people didn't realize what was happening. They didn't really understand the effect of inflation. We were still thinking in the terms: if we knew what the budget was in dollars, we knew what we were getting. During that period the papers reported each year when our defense budget came out that it was at a new high. And indeed it was, but each of those years it was in fact declining in real dollars, R&D was declining in real dollars, and the technology base was declining the most of all.

Trask: Didn't people in Defense realize that? People who were here at that time?

Perry: Surely. Some people did, but they didn't succeed in making the point. The idea that inflation had such an impact was not well established in the minds of Congressmen. It certainly was not established in the public mind. Only after we lived with it for a decade did it start to become more familiar.

So that was the first and most important objective in technology. We've had a moderate success and certainly we've turned that decline around and started going back up the slope again. Within the defense technology base I would think it's worth citing two particular programs where we put special emphasis. As we were bringing in these extra dollars for real growth we had the option of either distributing them broadly across the base or concentrating

them in a few specialty areas. We chose the latter. All of the growth money by and large was concentrated in a few particular areas, one of which was a program called VHSIC, which stands for "very high speed integrated circuits." The objective of this program is to accelerate the date by which very large scale integrated circuits appear in defense systems--we can accelerate that date by perhaps 3 to 5 years. And to insure that when those chips do appear they have the special characteristics required. One is the ability to operate in a rugged environment, and the other is the ability to operate at high speeds. That's where the term "very high speed integrated circuit" comes from. We will be spending about $300 million over the 5-year term of that program and we're in the second year of it now. The third year of it is programmed in the budget. I think I can say with some confidence that the program is successfully launched and every indication is that it will be very successful in achieving its objectives. It's hard to recognize, hard to realize unless you're a specialist in electronics, the profound significance of this next stage of development of micro-electronics that's ahead of us. Because we have a hard time even digesting the significance of the micro-electronics that are available today. These little chips in your wrist watches and handheld calculating machines and video games already have thousands of circuits on a little chip a half inch on a side. The objective of the VHSIC program is to increase the density of chips ten to a hundredfold. So we're not talking about incremental improvements. It's vast improvements

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and capability.

Goldberg: That many on a single chip?

Perry: Yes, on a single chip.

Goldberg: A hundred times more than the current one.

Perry: Ten to a hundred times more than on the current chips.

Goldberg: The Japanese and Russians seem to be aware of this development, don't they?

Perry: The Japanese and Russians are aware of it. The Japanese in their commercial companies are giving us a fair amount of competition. They are very close to our technical capability in integrated circuits. The Soviet Union, as well as we can determine, is still a good many years behind both the Japanese and the US-- more than 5 years, probably less than 10 years. They recognize the importance of it. They have not mastered the process technique yet. They don't have the stimulus from the consumer industries that our electronic companies have had. That really has been the primary stimulus that has moved our industries forward, not defense. What we are trying to do is take a very substantial capability and a well funded R&D program, both of which already exist, and add incrementally to / them so that we can direct them in a way we would like to see them go. And so that we can move faster. Once we achieve those objectives, we will be able to put computers, which only 10 years ago would have filled up this entire room, on a chip or two, so that they can be an integral part of a weapon as small as an artillery shell. Which means then that we will

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be able to introduce precision-guided munitions, so-called "smart" weapons, at all levels in our weapons. It also means (and this is much less well understood) that we will be able to achieve substantial reductions in cost and substantial improvements in the reliability and maintainability of that equipment.

Rochester: Is this what's being put in the XM1 or are you talking about something even more advanced?

Perry: The XM1 is the current state of the art. This would be, as I indicated, ten to a hundredfold advanced beyond what's in the XM1 today. But the XM1 already incorporates the advantages of large scale integrated circuits, that is, the reliability, the maintainability, and ease of operation. Most of the electronics in the XM1 is either medium scale or large scale integrated circuits, so many of the advantages I'm describing to you are there. There's no particular motivation in the case of the XM1 to bring down the size of the electronics. The electronics doesn't add that substantially to the weight of the XM1. It's a small consideration compared to the weight of the armor and the weight of the gun.

Rochester: What was the second program on / which you placed special emphasis?

Perry: The second program is a whole set of technologies that we call Mantech--Manufacturing technology. This is technology that is designed not to be incorporated into our weapon systems but to be incorporated into the factories--the defense plants that build our weapon systems--the objective of which is to increase the

productivity, the efficiency of those plants so that we will be able to build equipment more quickly and more cheaply. A subsidiary objective of that program is to allow us to avert shortages. It is to use substitute materials in areas where a given material either is very expensive or is likely to be in short supply. A particular case in point are the so-called strategic metals--cobalt, vanadium, titanium; we are developing super alloys under this program which will have the durability and the resistance-to-corrosion properties of these scarce metals but will be formed by making alloys of aluminum and alloys of iron. We have doubled the expenditures of that program in the last few years and we plan to double it again in the next few years. It is investment to improve the efficiency, the productivity of our industry.

Goldberg: Where is that sort of thing done for you, in the main?

Perry: All of the contracts I've described to you are managed either by the Services or by DARPA, and more than 90 percent of the contract work is done in the defense industries. It's done by one contractor or another. Some of it is done in government laboratories but most of it is done in industry.

Goldberg: Do you have problems, with Mantech for instance, where one contractor may develop techniques. . . .Are there any proprietary rights? I suppose you try to avoid that.

Perry: Yes, that's a potential problem. The program has to be structured so that if they're to receive funds from the government to advance

this technology, they have to be willing to share the data, to share the results with other contractors. They have to give it to the government who in turn may want to share it with other contractors. That's a problem in this very high speed integrated circuit program, and it's a problem in the manufacturing technology. All of our programs are structured so that when the government puts the funds in, the data has to be available to us to dispense to other contractors if we want.

Goldberg: Presumably a lot of them are doing this sort of thing on their own in order to gain the advantages that they may from that sort of development.

Perry: That's right. To the extent they do that then they can maintain proprietary rights to the information. That's a choice they have to make. If they want to fund it themselves, they can maintain the proprietary rights. If they want the government to fund it, or to support the funding, they have to be prepared to share data. Let me go from the technology base to the weapons development programs. And instead of trying to cover all the weapon systems which entered development in the last 4 years let me just highlight a few particular categories. First, because I believe it's the most significant, is the low observable technology or what the popular press calls "Stealth" technology. I can give you only a limited amount of information about that, basically just repeating what we've already said in our press releases on it, which is that it has been a major development during the last 4 years. We have

several major systems under development. We have had very substantial success in the program, and our activities to date have included flight testing. The objective of the program is to develop airplanes and missiles that cannot be successfully engaged by air defense systems, and what we have demonstrated to date is that we can do that successfully against any existing air defense system. I consider that a fundamental breakthrough. So we're pursuing it as a very high priority. But details of that program as to specific numerical accomplishments that have been achieved and the specific systems that are being developed and the state of development and the specific funding on them, I'm not able to discuss even at the SECRET level.

Goldberg: But you are thoroughly optimistic about the probable success of this program.

Perry: I would not describe my attitude as optimism; I would describe it as confidence.

Goldberg: This echoes what Mr. Claytor was saying yesterday about this program. He was very confident also about its future.

Perry: Four years ago I was optimistic; today I'm confident.

Goldberg: What about its success against future air defense systems which one might presume would be more effective than the current ones?

Perry: Well, we've observed for openers that the Soviet Union has probably invested over $100 billion in their strategic air defense alone, not considering the tactical air defense. And a system which invalidates that entire complex would be worth having

irrespective of what happened to following systems. But to answer your question more directly, Stealth technology is an evolving technology, and we're in the very early stages of its evolution. I believe we can evolve this technology faster than the air defense systems can evolve countermeasures to it. No system is an ultimate weapon. No system is immune to countermeasures. But the fundamental advantage that we have here will persist for many, many years and through a generation or two of countermeasures.

Goldberg: This has been the logical development as between offensive and defensive weapons ever since World War II, hasn't it?

Perry: The introduction of the airplane gave the offense an enormous advantage. The first significant erosion of that advantage was the introduction of radar in 1940, and radar-controlled guns did limit the effectiveness of airplanes. Then in the '50s and '60s we added missiles to the radar. Now radar-controlled missiles limited it even more so. And during the '70s we have been perfecting radar-controlled missiles, both surface to air and air to air. The generation that we are now developing, the Patriot and the AMRAAM for example, pose a very difficult problem for airplanes. The Soviet Union has counterpart developments except they put a much greater emphasis on it. That is, they deploy them at much greater quantities than we do. So in the last decade or so I would say the advantage has shifted from the airplane, from the offense, to the defense--from the airplane

to the systems that are defending against it. That doesn't mean that radar-controlled missiles are now an absolute weapon against airplanes; it just means that they extremely limit their effectiveness. And we try to deal with that problem by flying airplanes low, by maneuvering around hills, by introducing standoff weapons for them, by putting electronic countermeasures on them. Even with all of those things considered, my judgment is the advantage is with defense today. What low observable technology, the Stealth technology, does, is to shift it back. You just have to try to imagine the existing air defense systems trying to operate without their radars in order to comprehend how fundamental their problem is going to be. You can still look at an airplane and point a gun at it and fire at it. Just as they could do in 1938. But that is a dramatically simpler defensive system than what we are confronted with today.

Goldberg: The same shift in 1970 did not occur as between offensive missiles and defensive missiles, did it?

Perry: No, because of the different dynamics of a ballistic missile. It's coming at the defensive system at a much higher speed and therefore there is less time to react. But we have long since developed the technology to deal with a single ballistic missile attack. The problem really is different. It's because in the area of nuclear weapons it only takes a few weapons, a few missiles, to destroy the target--maybe only one. Therefore the problem of defense is not only defending

against this bullet that's coming in at 4 miles a second, but potentially defending against 100 to 200 where your measure of success is that you've stopped all of them. You cannot let even one of them go through. What we have never solved in ballistic missile defense and today do not have a solution for is the leakage problem. How to provide a defense against a threat which could consist of many missiles or perhaps a few missiles with many decoys, and assure that none of them get through, not even one. That's the problem which is posed to us in ballistic missile defense, and we don't know how to solve that. But we do know how to solve the problem of building a ballistic missile system that could shoot down any given missile that's coming at it.

Rochester: With regard to Stealth, you were a party to the Stealth disclosure in August, 1980. Do you or did you privately have any reservations about the wisdom or the timing of the announcement?

Perry: I'd have to distinguish here between the judgment as to what was good security for the program and my judgment as to what was a good action politically. It's quite clear in retrospect that politically it was a bad decision to announce it at that time. From a political point of view it would have been far better to have announced it 6 months earlier or 6 months later. From a security point of view, however, which is the issue I was trying to evaluate and in which my advice had some bearing, that time was as good a time as any for announcing it. I had been considering since January of that year the fact that

we were going to have to make an announcement of the program's existence sometime in that year. We almost decided to announce it in February at the time of the fiscal '81 Congressional hearings. That was because I doubted that we could get all the way through the Congressional hearings without the existence of the program being revealed.

Trask: Why did you feel you had to announce it? Because . . . .

Perry: Because of the size of the program. We were defending the budget without letting the Congressional committees who had to approve the allocations know about it. I felt very uncomfortable about that. I did not feel uncomfortable in the earlier years, when the program was quite a bit smaller. In early 1980 when we were defending the 1981 budget, the program already had reached the size where I felt uncomfortable about covering its existence and only revealing it to a very few committee chairmen and not to the Congress as a whole. That was the problem I felt nervous about and I also felt it was unlikely we could maintain that situation very long. Not only would we have the problem of getting the program funds approved, but as the program increased in size there were many hundreds of people that had to be made aware of it simply because they were working on it. So it seemed dubious to me that we would be able to maintain its security and I considered in February recommending to the Secretary that we announce it then. In

retrospect I wish I had. Because that would have been early enough before the election; I think it would have decoupled it from what turned out to be a highly political reaction to our announcement.

Rochester: Did you anticipate the reaction? Or the degree of the reaction?

Perry : No. I probably should have, but I didn't.

Goldberg: Was the White House consulted on the announcement?

Perry: Yes. The Secretary informed the White House about what he was going to do.

Trask: Why was that particular time chosen for the announcement?

Perry: The particular time was chosen because it was clear to me and to other people in the program that it was starting to bubble out. First of all, as I said, I was surprised we got through the Congressional hearings, but we did, pretty well. What caused it to bubble out was that the debate on the B1 was starting up again. It was being represented that this airplane would be a competitor to the B1. That's a large program with large funding and with highly emotional connotations. Once this program got tied as a competitor to the B1 then it was almost impossible to keep it under wraps. Opponents and proponents of the B1 both started talking about it and at that stage my advice to the Secretary was that we should brief the existence of the program. I very carefully delineated to him what things we could say, points which in any event would have had to have been said or protected at the next Congressional hearings, in February, 1981, because of the

size of the budget. So I made three judgments. First of all, I advised him that it was bubbling out, a fact that he was already aware of. Secondly, I recommended to him that our best chance of containing it was to make a straightforward announcement of its existence. Third, I recommended which things we could say and which things we couldn't say, delineating what features of the program could be safely revealed without compromising the technical secrets we were trying to preserve. What we still had to guard was the "family jewels." He accepted by and large my recommendations and made the decision then to make this announcement. He cleared that decision with the President, but he was the one who made the decision and he initiated the action as nearly as I could tell. It was not the President, as has been suggested--the President telling him to do this. Nor was it him pushing me to make an announcement. We consulted about it together but I was certainly positively recommending to him that not only was this the time to make the announcement but that we really should have done it last February, that we had erred in waiting as long as we did.

One other point on that. There was a particular article in the Armed Forces Journal which has been referred to as a leak or as a sanctioned leak or whatever, and again it has been suggested that the President told Secretary Brown to tell me to give that briefing, and that is not correct. I don't think the President was even aware of it. The real facts of the matter are that after the

Secretary decided to declassify the existence of the program I prevailed upon him to give the Armed Forces Journal a one-day early lead on the story. That was in return for their having sat on the story for 2 years. They had uncovered it. That's another story, how they uncovered it, but they had uncovered it 2 years earlier. I felt I had that obligation to them. It was not true that the Secretary asked me to do that. Quite the opposite. Not only did I tell him I wanted to do that, I had to do it over his early objections. That is, he first of all said, "No, don't brief them," and I persisted, and he finally accepted it. So, on that score there has been a complete misrepresentation, which is unfortunate, but I don't know how to change the perceptions that came out of that. Sometimes the perceptions and the facts don't correspond.

Goldberg: It's not the first time the Armed Forces Journal has been wrong, and it won't be the last time.

Perry: The story that they actually published had far less damaging information with regard to details in it than the original story they had obtained. I have no complaint about the story they published. Their testimony about how the story came to them was what I would object to. It's partly a misperception on their part and partly just confusion on the part of the people who asked them the questions, but it does misrepresent what happened. They seemed convinced that this was some sort of an act of Secretary Brown or the President, and as I said the President was not aware of it

as far as I know and Secretary Brown had to be talked into it.

Goldberg: They've been conducting a vendetta against Brown for several years, haven't they?

Perry: I have to say I regret having talked him into it. I regret following through on what I considered to be my obligation to the editor for having held that story. That's a retrospective regret. Given the same information again that I had at that time I still probably would have made the decision the way I made it.

Rochester: Is it possible to insulate yourself from political pressures or political considerations, especially in an election year such as this?

Perry: I would have thought perhaps not, but this is a clear counter example because I didn't perceive anything I was doing in that whole context as being politically oriented or even politically related. My objective was protecting the security of that program, which in fact we have done. To this day, even with all the publicity that the program has gotten, none of the factors we were trying to protect have been revealed and in fact the various stories speculating on what we're doing or what we're not doing are just confusing guesses. The real facts have been protected to this day.

Goldberg: Did you consult with anybody on the possible political implications?

Perry: No. I have to say that was the last thought in my mind. I would imagine that the Secretary at least thought about that issue and

may very well have consulted with somebody but he didn't discuss it with me.

Goldberg: You were going to mention some other weapon systems.

Perry: The second category is the precision-guided munitions. This isn't a single weapon, it's a whole family. We've begun development of the third generation precision-guided weapons. These are weapons which have the characteristic of making a direct hit on the target the first time. The third generation have the characteristics, in contrast to earlier generations, of being all-weather or nearly all-weather, and of being autonomous once fired--what we call "fire and forget," or "launch and leave."

Goldberg: No guidance necessary.

Perry: The guidance is self-contained. No observer or operator is required once launched. We are developing systems incorporating that third generation technology for artillery shells, for antitank missiles, for bombs, for clusters of bombs (that's the program which is called assault breaker, which is intended to fire at a whole company of tanks). You might consider the AMRAAM missile in this same category. That's an air to air missile. Its big distinction from its predecessor, the Sparrow missile, is that it is a fire and forget. Technically it is a fire and soon forget. It does require, depending on the range of firing, some control for the first few seconds of flight. But because the operator can disengage from it, it is possible

then for a given airplane to fire two or three or four missiles simultaneously or nearly simultaneously and have each of them go to its independent target while the firing airplane can turn around and head off in a different direction, breaking contact. All of those systems now have a maximum priority and all are entered into development and will be entering operation in the mid '80s. I think they represent the most significant systems development programs which are underway.

I'll mention briefly two nonweapon programs. One is JTIDS, Joint Tactical Information Distribution System. That's a digital data distribution system for spreading tactical data around in the battlefield. And the other one is Global Positioning Satellite, which will allow any ship, any airplane, any combat unit right down to a single infantryman who has a GPS receiver, to be able to determine location to within accuracy of about 10 meters any time any place. That's truly a revolutionary navigation capability.

Goldberg: What's your position on the MX?

Perry: I think it's a necessary weapon system. It's a necessary change to the way we base ICBMs. Putting them in silos is no longer viable. It worked for the last 20 years; it's not going to work for the next 20 years because both we and the Soviets now know how to make ICBMs whose accuracy is within a nuclear warhead's lethal radius against a silo. So the days of the silo being able to protect the missile are almost over.

Goldberg: Do you regard it as the best of the alternatives to the silo-based missiles?

Perry: Yes. I personally worked very hard on that program, spending many, many months studying, looking at alternatives, arguing, and debating before I finally was ready to endorse that alternative to the Secretary.

Rochester: In view of the environmental issue that's been raised, are you rethinking, reconsidering, the MX?

Perry: We thought about the environmental issue to begin with. That was a profound consideration from the very beginning. It's never been a problem to figure out a way of basing the ICBM if you could exclude the environmental impact. So that's been a primary consideration of mine, and it's certainly had a dominant effect on the way we design that system. As the design actually came out, it does not have a substantially different effect on the environment than does the MINUTEMAN system. The MINUTEMAN has a thousand missiles and a thousand silos; this MX will have about 200 missiles and about 4600 silos, but we're proposing to put it in an environment which is much less densely populated, containing almost no population compared with where we put the MINUTEMAN, so I think the effects on the environment will be comparable. We considered a system where we would occupy and keep the public out of the entire area encompassed by the system and we rejected that because we considered it an unacceptable intrusion on the public use of that land. Except for fencing 2 acres around each of those 4600 silos, there will be as I see it no

undesirable intrusion on the public. The roads which we will build there I don't consider an undesirable intrusion. One part of the program which will be undesirable, I am sure from the point of view of the people in that area, is the construction phase of the program--with thousands of construction workers coming into that area, and that just has to be, there's no way of glossing over that problem. After the construction period, I think that the situation will be as it is at our MINUTEMAN sites today. Those sites have simply "disappeared" into the environment. Farmers grow wheat and graze cattle right up to the fences. They're just not bothered by the systems.

Goldberg: Like the gold mining and silver mining periods, we'll probably wind up with some ghost towns, too. Or parts of towns will become ghostlike after it's over.

Perry: In the construction area, probably.

Goldberg: Could you speak to the second part of question 5, on the main technological trends shaping the future of the arms competition between the United States and the Soviet Union?

Perry: Well, the first point I've already mentioned, the development of what we call zero CEP wepons, precision-guided weapons. That in the nuclear field translates to ICBMs that can strike a silo and destroy it on a first firing. That has driven us to mobility in our missile basing as a means of restoring ICBM survivability. In the submarine field, where

we have our missiles on submarines, the technology is leading to improved submarine detection systems and because of that future threat we are building submarine missiles of longer and longer range. The way we address the submarine detection problem is building a longer range missile so that the submarine can back farther away from the Soviet Union. It can patrol over a much wider area and therefore it makes it harder to conduct a search for it. In the case of the bomber forces, I've already mentioned the problem we have, which is the improvements of radars, particularly the so-called lookdown-shootdown radars, which are able to detect low flying airplanes; the solution to that is development of cruise missiles which both fly low and have a very low radar cross-section and therefore are very hard to detect. They are now being produced. The future solution to that problem will be missiles or airplanes which will be even more difficult to detect. The other facet of technology is taking this precision-guided munitions down to the tactical level, and there we see a problem in a 3 or 4 to 1 superiority in armored vehicles possessed by the Soviet Union. The way we're applying technology to address that problem is in the development and later the production of many thousands of anti-armor, anti-tank precision-guided weapons which will offset the numerical advantage which the Soviets have in the tanks. I've talked about technology. I've talked a little bit about weapons systems under development. I might mention just a few that have gone from development into production. I told you the

other day that taking something from development into production is one of the hardest things we do. We have had one outstanding example of that, which was the cruise missile. That began development in mid'77, began its full scale development in mid '77, entered production in early 1980, and it is now in full scale production. The first cruise missile will go on an operational B52 later this year. So that program is an outstanding success story in carrying a technology rapidly into production and deployment. In order to meet that schedule we required almost complete concurrency in the program. The same year, 1977, that we started the full scale development, we also started expending production funds. While we were just beginning a competitive flyoff to develop the missile, at that very time we were also beginning to spend production funds to build plants and build facilities, buying long lead items. That was happening already two and a half years ago.

Goldberg: Where are you on SLCMs and GLCMs?

Perry: They're also in production.

Goldberg: And all categories are in production?

Perry: Yes, the IOC of all of those missiles is either '82 or '83, and IOC in the case of the ALCM means that a whole squadron of B52s are equipped with them. The first cruise missile deployed will be '81--the first cruise missile on the first B52. It takes another year to get the first squadron ready. Now in addition to that we brought a whole series of ground programs into production. XM1 tank, fighting vehicle system, Copperhead, Stinger are the principal

examples that come to mind. These are programs whose development was well underway when we came into office and our main job was to sustain the development to the end and get them into production. On a few of those, the XM1 in particular, we had a very difficult time getting into production. There were significant development problems and at the time we were ready to begin the production decision--I mentioned this the last time we talked--we still didn't have all the development problems solved. But we maintained that schedule; we maintained a rather high degree of concurrency to do that.

Goldberg: You've answered part of question 6. I was wondering what is your view of the viability of the manned bomber as a part of the triad?

Perry: I think the manned bomber is viable. The B52 is losing its viability or will lose its viability during the late'80s as the Soviets begin to introduce in substantial quantities air defense systems that have lookdown-shootdown missiles and radars associated with them. As that happens, the B52 will no longer be able to achieve a sanctuary just by flying low.

Goldberg: Yes, but it will still have viability as a missile launcher.

Perry: It will still have viability as a standoff weapon, as a missile carrier. I expect that to be true on into the '90s. We know how to build a bomber that can defeat these modern new air defense systems and it remains to be seen whether we will decide to go with that bomber. That is, viable in a technical sense anyway.

Goldberg: That will presumably be one employing Stealth techniques.

Perry: Low observable techniques, yes. The term "Stealth" has come to be

associated in some people's mind with a particular airplane and that's incorrect.

Rochester: We covered most of question 7 in the first session.

Perry: Yes. The eighth question here deals with standardization and interoperability--joint production programs. I believe that in general the initiatives that we took on arms cooperation in NATO have been profoundly significant, and quite successful. It took us about 3 years to achieve any success. It took that long to define what we wanted to do and to try to get support for the program,not only in the United States but in Europe as well. The important components of that program are now already underway--in particular the joint production, or dual production efforts, where nearly all of the major tactical systems that are now coming into production in the United States will also be produced in Europe, and therefore will be available to our European NATO partners. This will include the AIM-9L air to air missile, the night vision devices, Copperhead, Stinger, Maverick, new cluster munitions, the M483, Patriot. The effect of this is that the most modern and effective weapon systems which we know how to design and build will not only be going into the US corps, but the German, British, and Dutch corps as well. That's going to have an enormous effect over the medium to long term on the effectiveness of NATO.

Goldberg: These I presume are produced under license?

Perry: Yes. The idea basically is to take the best weapon that has been developed on either side of the Atlantic and make it available for

production on both sides. We have offered licenses and assistance to get production going without US government royalty charges, on a reciprocal basis. That offer broke the ice and we've gotten a whole series of acceptances and new programs started just in the last year. So that program is quite successful.

Goldberg: There have been some problems, haven't there, as a result of competition for the same weapon systems between the Europeans and the Americans?

Perry: There've been nothing but problems in getting it started but it is started now.

Goldberg: I was thinking of guns for the tanks, for instance, and that sort of thing, which got a lot of publicity not long ago.

Perry: During 1978-1979 we had nothing but heartache, opposition, and problems. One of the principal problems we were wrestling with in that time frame was the gun. Subsequently we got approval for that gun program and it is well advanced and developed now. We have not had that kind of opposition with the programs that have been started in 1980. I don't mean to say we are home free on that problem. But I think we have a lot better understanding of the objectives that we are trying to accomplish.

Goldberg: It's a tough program to bring into existence with so many different countries involved.

Perry: The opposition in Europe among European industry and European parliaments was just as strong as in the US, which I suppose was some kind

of sign we were on the right track. Both European industry and US industry thought that this program was going to hurt them. They couldn't both be right. In fact neither was right.

Besides improved performance of weapons, inherent in this approach will be interoperability of expendables and spare parts, simply because the various nations will be using not just a similar or standardized weapon but in many cases an identical design.

Goldberg: How far do you think that can be carried or will be carried?

Perry: It probably will not be carried to the major programs--airplanes and tanks--that's probably expecting too much. There our objective is to get interoperability and standardization of subsystems, expendable subsystems particularly. On the tank for example, the same gun, among other reasons so that we can interchange ammunitions. We're working now to try to get a common tank tread so that we can interchange tank treads. But we're not seriously trying to get the Germans, British, French, and Americans to all agree on building the same tank for the next generation. Nor are we trying to do that with the next generation of airplanes. But weapon systems like an anti-tank missile or an air to air missile or a cluster munitions or a Stinger--on those we are going for complete standardization.

Goldberg: Do you think this can be carried forward to other systems also?

Perry: Yes. Up to but not including the very large systems. It's going to require continued pushing from the management in the Defense Department. It will not happen automatically. We've gotten the program off to a pretty good start and it perhaps can coast for 6 to 9 months but it is going to require continual pushing and pressure

from the top in this building.

Goldberg: Aside from industry in both Europe and the United States what about the military Services and their reaction to this? Have they really been enthusiastic about it?

Perry: It's been mixed. There have been some people in the military who have been enthusiastic. In general, no. In general the enthusiasm for a common air to air missile program among NATO countries was no greater than when in an earlier day there was enthusiasm for a common missile between the Air Force and the Army, or the Air Force and the Navy. In an earlier day, before my time, somebody worked out an agreement that there would be only one short-range heat seeking air to air missile called the Sidewinder and that the Navy would develop it for both the Navy and the Air Force. But before that agreement was finally reached and before that determination was made, there were arguments why there had to be independent missiles--different missiles for each Service. That was a long bitter battle. But that battle has not persisted. A common missile is now accepted. And I think we may have the same phenomenon here on this common program for NATO.

Rochester: So you would rank that as one of your major accomplishments?

Perry: Yes, definitely.

Goldberg: Do you give Bob Komer some credit on that?

Perry: You bet. Bob and I worked with common objectives and as a team on that problem. It would not have been possible if either one of us had opposed the program. In fact it probably would not have been possible if either one of us had just been lukewarm about it. It

took an enthusiastic determination to make it go on both of our parts.

Goldberg: Komer had been crusading for it for a long time.

Perry: Yes. Bob was my mentor in this area. He was the one who enthused me and inspired me to do this in the first place.

Rochester: What else would you rank as major accomplishments of the Brown-Komer-Perry tenure?

Perry: I've already touched on several but I might summarize. In technology it was getting real growth back into our technology base, starting to recover the level of the technology budget; creating the VHSIC program; and doubling the emphasis on the manufacturing technology program. Those are the principal accomplishments in technology. In starting new systems, bringing new systems into development, I would list the Stealth program, the precision-guided munitions, and MX, and continuing to sustain global position satellites and JTIDS. In bringing systems into production, here I would mention the cruise missile and the whole series of Army programs, with the XM1 probably the standout. In general management, I've mentioned this NATO cooperative initiative as being a significant achievement. A similar effort, I believe, was the beginnings of a defense cooperation with the People's Republic of China, and the beginning of a defense cooperation with Egypt. The Egypt program is actually materialized and is moving ahead. I rank it as an accomplishment. The program with the People's Republic of China is in an embryonic stage and it's not yet ready to be called an accomplishment. That was to be next year's accomplishment.

In the same context of accomplishments let me add a few fallshorts, too, to balance off the books a bit. My principal fallshort, I think, as acquisition executive, was not recognizing soon enough or coming to grips adequately with the problem of inflation in the aerospace industry and how that inflation was destroying our program planning and budgeting. I'm happy that I don't have to take responsibility for the inflation, but I do have to take responsibility for not having developed an adequate understanding of its effect on our programs soon enough. I think I have in the last year but not soon enough. Our planning was based on the assumption that we were getting 5 percent or so real growth in the procurement account, and in fact we were not. As a consequence we bought fewer airplanes and fewer tanks each year than planned. And in the face of this huge bow wave of procurement that confronted us, not having those extra funds was disastrous. So that was a major fallshort. Another fallshort was not coming to grips, recognizing soon enough and dealing soon enough, with the problem of the declining productivity in our industrial base. I mentioned that in some detail previously. I guess another major fallshort is a perception fallshort--that on the program which is probably our greatest accomplishment, the Stealth program, we've ended up with the perception of having done something wrong somehow. That's a different kind of a failure or fallshort than others. Somehow we did not adequately convey the significance of that program. Because

after it had been announced, all of the interest and concern was focused on the manner of the announcement and the security issue rather than on its technological and strategic merits. One of the reasons the program sooner or later had to be announced is that we do have to take it into account in a fairly broad way in our tactical planning and our strategic planning. To the extent we want a program like Stealth to serve as a deterrent it has to be announced at some level and in some way. But we obviously did not handle that well.

Goldberg: Did you give a great deal of thought beforehand to the deterrent value of making the announcement? Were you strongly conscious about that?

Perry: Yes. That was a thought that was on our minds from the very beginning when we decided to compartment it. The thing that was unusual about this program from a security point of view was that we tried to conceal its existence at all. That's a very unusual action. And at the time we took that action, which was back in '77, that was the principal thought on our mind. Well, two thoughts: One, could we do it, could we successfully conceal it, and for how long? And secondly, did we really want to conceal it? Wouldn't it be better to let it be known? Our thought then was yes, but not this soon. Sooner or later, to get the deterrent effect, we would have to announce it. But we don't have to announce it in the early development stage. Wait till the capability is more firmly established.

Goldberg: Haven't we been successful in keeping certain weapons secret for long periods of time? Aren't there some now which could be put in that category, which are operational?

Perry: Not of Stealth's size or scope. You see this is not just an airplane. This is a program which is going to affect the way we develop and build all of our airplanes and missiles. That's the thing that's been misunderstood about it. It is the technology which influences everything we do in this field and all of the defensive systems that we are building to deal with what the other side is doing. It's the extent and the scope of the technology which is misunderstood, and because of that extent and scope there was never a possibility of keeping the existence of the program concealed for more than a few years. It was just a question of whether it would come out in early '80 or '81 or when. If there had been no pressure from the dribbling out and from the problems of how do you brief congressional committees--if we'd have been looking for the optimum time to do that, in terms of when we were ready to unveil it-- I would have picked the time about mid '81.

Goldberg: Could you speak to the military-technological balance between the U.S. and the Soviet Union?

Perry: If we freeze this date in history our military technology is substantially superior to that of the Soviet Union. That's a net statement which aggregates a lot of pluses and minuses. In the technologies which are most significant--microelectronic technology, computer technology, jet engine technology--we are substantially ahead of the Soviet Union. If you measure it in years it's 5 to 10 years, somewhere in that area. Now when we go to the application of this technology to weapons systems that's a different story,

because our modernization program is still largely in the factories instead of in the fields. So in deployed systems there it's more like a 60-40 advantage. Maybe 60 percent of our deployed systems are superior to theirs, and maybe only 50 percent. It's not a significant edge. That's because most of our deployed systems, at least in the ground forces, are not using the technology that we developed in the '70s. These are systems which were developed in the'50s and built in the'60s, whereas the Soviets have been building new generations every 10 years. So we may be 10 years ahead of them in technology but we may be having a 20-or 25-year-old technology in the field so that in deployed systems they are about equal.
Also, the slope of the curve is worrisome. They are really pouring on the steam in military technology. While they have, I think, an awkward and inefficient system, and therefore they have to run twice as fast just to keep up with us, they are running twice as fast. That is, they're probably spending twice what we're spending on defense technology. Not just 20 percent more or 40 percent more but probably two to one. That's not only my estimate on what I see them doing, but that's fairly close to the CIA estimate for dollar versus ruble expenditure. That's a worrisome problem and we see that manifested in a good many new systems that are being developed, that we're just now beginning to see deployed. Their new submarines, their new battle cruisers, their new lookdown-shootdown interceptors, their new surface to air missiles--these are impressive, not spectacular, but impressive systems with good solid technology. Of course they've always had

quantity, but now they're adding to that quantity a very respectable quality. It's going to be very, very tough in the next decade to maintain a qualitative edge over them. We not only have to keep pushing on our technology but we have to shorten the acquisition schedule in order to get the practical benefits of our technology.