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A Consultant's View

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The C^3I question really hasn't changed much since I first spoke here; the objectives are still the same. The most important feature of C^3I is that it is one piece of the President's strategic program that has never taken any flack; that's the real reason for the survival of C^3 strategic forces. Congress has supported it fully, and by the end of next year we will have spent as much on strategic C^3 as we will have spent on the B-1, about \$20 billion. We are getting close to having fully survivable C^3 for strategic systems to both the National Command Authorities (NCA) and the Strategic Air Command (SAC). After the authority is given, the SAC link can be used to command the strategic forces. C^3 has been one part of the President's programs that we've done correctly and on schedule. In another year or two, C^3 will be complete.

The Worldwide Military Command and Control System (WWMCCS) is the military command system upgrade, and the improvement is coming along very well. Normally, the Defense Communications Agency (DCA) would improve the C^3 system, but just as I got to the building* the Joint Chiefs of Staff

(JCS) voted against having DCA do the upgrading because DCA reported to me, and the JCS felt that upgrading was something the military should do.

So they decided to give it to the Air Force, and no sooner had the Air Force gotten it than the Chief of Staff was retired, along with a few other people. All of a sudden this became a job the Air Force had to do, and the JCS staffer and the program manager, both being Air Force, got into a terrific argument. Bob Herres* was Director of C^3 Systems in the Office of the Joint Chiefs of Staff (OJCS), and Donald Evans was the Program Manager in the Air Force for the WWMCCS Information System (WIS). Those two couldn't agree on the time of day. So instead of having what might have been a cooperative C^3 improvement program — or at least a less acrimonious one — between the Office of the Secretary of Defense (OSD) and the OJCS, we had internecine warfare in the Air Force. And I ended up as peacemaker after all. It was just as contentious as if DCA had run the project. Even so, it's under way, and it will come along pretty soon.

How things will change now that Donald Latham, the Assistant Secretary of Defense (C^3I), is semiautonomous awaits to to be seen. The reorganization wasn't very efficient, and I wish they hadn't done it. One of the real advantages of having the warfare sections of OSD — strategic, tactical and Navy systems — as well as C^3I all under research and engineering (R&E) was the fact that people could be assigned from the C^3I areas to support warfare groups that needed an integrated weapon platform and command and control system, yet the quality control on their professional performance could be handled by whoever was responsible for C^3I. It worked out fine. Today we're again going to have the same thing, only there's to be a mail slot between the C^3I people in the Under Secretary's office, and the C^3I people in Latham's shop.

I think it's going to cause a lot of problems, but we'll survive them. It's amazing how tenacious the system is. I leaned very hard on that building for four years, and I'm happy to report it didn't move one single millimeter. So, it will be there long after the present crowd is gone, and probably longer.

What do I see ahead for it? The big challenge, of course, is going to be the Strategic Defense Initiative (SDI). Before the President made his speech on March 23, 1983, the department had SDI in their planning documents and in their first year budget. We had monies for most of the programs in the Strategic Defense Initiative, and planned to spend about $1.2 billion in 1985. We're in 1985 now, and that $1.2 billion was for excimer lasers, for some kinetic energy effort, and not much for the third generation (X-ray) laser research, because the Department of Energy (DOE) was doing that at both the Los Alamos National Laboratory (LANL) and the Lawrence Livermore National Laboratory (LLNL), primarily at Livermore.

When the President stated the United States' initiative was to have a bit more structured SDI program, most of the money was down in research, both applied and development — that is, pure development research, not any applied development, or even preliminary development. The President wanted a little more structure in the program, and that's when we put the Fletcher group together to take a good look at the whole program (James Fletcher at LLNL headed the Defense Technology Study).

The Fletcher group recommended some changes. The biggest was in C^3, or, as they characterized it, battle management. What we hadn't been paying attention to, either by oversight or lack of capability, was what would happen if this research were successful, figuring that there's always plenty of time to do all that. As always, we were tacking on the battle management aspects of the problem after the system's development. This was impossible with SDI, because of the character of the problem and its possible solutions.

These solutions required the management of tremendous amounts of information and data in a very short time. And while we had planned to do that differently in the strategic computing program at the Defense Advanced Research Projects Agency (DARPA), it was not designed to handle the kinds of information required to manage a satellite defense system, or any kind of defense system other than perhaps airbreathers. That was a contribution made by Fletcher's group. They recommended the Army make changes in the Ballistic Missile Defense program (BMD). Given the fact that the program's content should be determined by the level of technology available, they proposed what the program of the next couple of years ought to entail and the amount of resources that should be spent. For '85 we had allotted $1.2 billion, and they said if we wanted to capture the technology as quickly as possible, $2.4 billion ought to be spent. After some negotiations with the White House on the '85 budget, the President proposed $1.8 billion to Congress, which they cut to $1.44 billion. So the money allotted for SDI in '85 was $1.44 billion compared to $1.2 billion. There wasn't a big change.

The big changes will come in the '86 budget. We requested about $3.2 billion, which I don't think we'll get. If we get better than $2 billion, they'll be able to get Congress to approve it. To be honest, that's a reasonable amount of money. The minute you focus a program instead of letting it be managed and balanced with everything else, the price of the program goes up. Under Jim Abrahamson,* the SDI program is being focused. But I think the SDI allotment will be around $2 billion.

*Lt. General James A. Abrahamson, Director, Strategic Defense Initiative Organization (SDIO).

No one knows the total estimates of that program. The press is floating a number, $26 billion, which is very authentic, and I'll tell you how it came about.

I presented the SDI program to the Senate, the Armed Services Committee (ASC), and of course I was browbeaten by a few people. That day Senator Barry M. Goldwater (R-AZ) was chairing the committee, and Senator Sam Nunn (D-GA), who likes to beat on me a little bit anyway, kept asking just how much it would cost. I said I didn't know. He said I had to provide them with a number. I asked, "For how many years?" Nunn responded, "Well, I don't know. How about the next five or six years, when you get through this round?" I said, "How do you like $26 billion?" He said that didn't sound too bad. And that is how it came about. So, if you think it had any substance, forget it.

The result also was one of the world's biggest misunderstandings. With my immediately mentioning $26 billion, Senator Goldwater jumped all over me. He said, "Mr. Secretary, $26 billion? Do you know that would be the most expensive five-year program that we've ever had?"

What I didn't want to do was remind him that his favorite fighter program, building four fighters, will spend $200 billion before it's finished. About $100 billion is spent, and another $100 billion will go just toward fighters — F-15s, F-16s, F-18s and F-14s. But I didn't tell him that. He could read it in the Congressional Record if he wanted to.

In terms of the relative resources being devoted to some of these things, people do not really try to put them into perspective. For example, that's an awful lot of money to pay for fighters, but that's what they cost. And both the Army and the Navy want another one. One wants an attack airplane and the other wants a fighter. So, $26 billion was as good a guess as I could have made on the spot while I was being badgered by a very personable and persistent Senator.

To put the SDI program in another perspective, this month, March, 1985, is the 30th anniversary of another research program, the Sherwood Program. I was at Los Alamos when they embarked on it. The Sherwood Program had such great ambitions that it caused one of the biggest intramural fights ever at Los Alamos. They argued over who was going to head up the physics division, because whoever ran it would get a Nobel Prize. They were sure of it. They claimed they would be able to demonstrate a thermo-nuclear device that would burn hydrogen and provide electric lights, within three years after the program began. It would be a great step in converting thermonuclear power to peaceful use.

Well, the guy who won the argument was named Jim Tuck; he died about 15 years ago. Tuck never got his Nobel Prize. They never lit an electric light with thermonuclear power. They are still a long way from it. The closest they've come is with a hybrid system that is used as a laser to help burn the deuterium, which in turn provides 14-MeV neutrons, which in turn breed thorium, which provides fissionable material to run four reactors. One of those reactors will be used to run the laser. Other than some experiments with Tokamaks, one at Princeton University, a couple in the Soviet Union, and one in Japan, the hybrid system is the closest they've come. And, that program is now 30 years old. If there's a good auditor to find out how much it has cost, the answer is anywhere from $100 to $200 billion, probably closer to the lower end than the upper end, because they never got around to engineering the devices. Yet I don't hear any screams from academia about undertaking programs that have very little chance of seeing tangible results in a lifetime, and 30 years is almost a professional lifetime.

A tremendous amount has come out of the Sherwood Program, especially on how to pinch plasmas. It's good physics. But again, plasma physics is an idea that people have embraced as something that's against nuclear fission, and they don't understand the problem that we will have just as much radiation out of a thermonuclear device as we will out of any fission device, because high energy neutrons are extremely active, and they create an awful lot of secondary radiation.

So there are parallels between SDI's uncertainty of results and what we've undertaken in the past. I think the research effort in battle management will probably be most important. It'll probably be the first application at all of very high speed computations — billions of flops per second. The ability to be able to do target discrimination, long-wave infrared (IR), which is needed for many of the systems, is going to indicate whether we really can point and track to the accuracies required.

For an excimer laser, pointing accuracy is very stringent; it's like subtending a basketball on the moon from the earth. That is about the accuracy you

have to have. It is possible, but not a dead cinch.

Oettinger: The Sherwood or Safeguard precedents were the science and military communities' somewhat quieter activities, and I don't recollect a President of the United States going quite so far as Reagan has with SDI. Was it so public?

DeLauer: Sure it was. There were two things happening at that time. One, the National Labs were going to get into peaceful applications. Both Livermore and Los Alamos were going to be out of the bomb business. They would run a peaceful applications program . They were going to go in two directions. One was Sherwood, and the other was developing this exotic Tokamak reactor, the high temperature fusion reactor, to replace the low temperature boiling reactor. The other thing happening was the Rover Program which was still militarily oriented. I worked on that. That was the nuclear rocket, now dead. It went the way of every fission device.

Student: Was that under the Atoms for Peace Program?

DeLauer: No. The Atoms for Peace Program was Plowshare. That was during the Eisenhower Administration, around 1958. We were going to build canals, and as a matter of fact, the Soviets did a lot of that. There is a considerable amount of radioactivity fallout even when you build a canal, but there are ways to contain a lot of the radiation by burying things, or containment, and the Soviets did it quite a bit. We didn't do too much.

We also built the *Savannah*, which was the first nuclear-powered merchant ship. Pretty soon you couldn't get into any port. The Japanese were blocking it with their fishing boats on the first visit to Japan. The New Zealand affair is nothing new; we've gone through that at least ten times. Politicians get themselves elected on a non-nuclear platform and then get thrown out of office, and the next guy welcomes us back.

The Atoms for Peace program, which included the Sherwood Program, was the "in thing." Our most prestigious universities worked and continue to work on it. Princeton has been the focus of all thermonuclear peaceful use; the only Tokamak of any size that was built in this country is at Princeton. They've still got a big program, and the payoff is that this hybrid really works. We may still have trouble with "pure" fusion reactors — they're expensive and not very efficient yet — but using fusion to generate the fission of thorium, for example, is a great system. You don't have to worry as much about the efficiency of the fusion process itself. But then people worry about all the disposal and proliferation problems they fear in fission reactors.

You know, it's nonsense that we shouldn't go ahead with hybrid reactors, because the one great thing about thorium is it is nonproliferating. You can't make weapons out of thorium that you breed. The product won't provide weapons that will work, no matter how much it is refined. It's a nonproliferating nuclear material. It can only be used to build another reactor. So, thorium has great hope. But the problem is, the system is a hybrid, and the world is monolithic, especially the world of bureaucracy. The Department of Energy has got a fission section and a fusion section, and never the twain shall meet. They won't talk to each other. Edward Teller, who's a big proponent of the hybrid — also the X-ray laser — can't get anybody to listen to him. And that is just crazy, because a hybrid system would be great.

It's silly, you know, to burn fossil fuel for electric lights. For example, people received more radiation leaving their houses during the Three Mile Island incident than they would have if they'd stayed inside. It's a situation in which there is just more information available but no understanding of the problem. A house would have been a great shield if anything had happened; nothing happened as it turned out. They had a worse meltdown than that in Canada. The Chalk River plant actually melted right down. The Canadian Army took a year to clean it up, but they got it done. They didn't have to deal with all the notoriety that Three Mile Island received.

If you go back and look at some of the *Nucleonics*, the trade magazine, from the years '61, '62, or '63, there will be reports of the Canadian meltdown. The water spilled and everything went out on the building floor, and they had to clean it up. We've been through it. Every generation seems to have to discover all these problems and solve them all over again, but we make progress every time.

What does the SDI program represent? Well, working on battle management is the right thing to do. My own personal belief is that some benefit will come out of the research. We're making progress on switching systems with kinetic energy systems, magnetic hydrodynamic (MHD) kinetic energy devices.

We're making some progress on power supplies for them. One of the really big problems for the excimer lasers, too, is the power supply. We have to do a lot of engineering because their large size demands a significant power supply.

I think where we are also going to get a little bit more effort in nuclear spaceborne power supplies is in a hundred kilowatt program, a joint program between DARPA, DOE, and NASA on developing a spaceborne nuclear power plant. We haven't flown one of those projects since the early satellite days with one of the Navy's navigation satellites. In that one we had a small decayed-isotope power supply. I think that's going to be the most interesting area, spaceborne power supplies. I think we will learn an awful lot about whether or not these multiple sensors are manageable.

Since the Soviets are also doing a tremendous amount of laser work, I don't think we should press for treaties on elimination of research; I think the Soviets will just try for a treaty to limit laser work to research, because they don't have any qualms about deploying their research. They just do it. They deployed an upgrade to their launched antiballistic missile (ABM) system — mostly for low-velocity ballistic missiles, not the MX type — and they've proceeded with defensive systems all along.

The Soviets have recognized the nature of deterrence in a very positive way, and they know what it takes to have survivable capability. And they're implementing it. Their two directions are primarily hardness and mobility. They achieve hardness both by structural hardness and by depth; they have everything way, way, way down. So they don't have a problem, but we do.

You can see that emphasis on hardness in the way the Soviets are building subways around Moscow. They're doing it, by the way, with U.S. equipment; they actually got their equipment from the Chicago aqueduct program. When they finished running out to wherever they were running the subway, they still had the equipment, so they turned it this way and went 60 kilometers in one direction, and 60 kilometers in another direction, close to 3000 feet deep. And now they have a very hard command control system, at least at the command posts (CPs). The big cities contain tremendous numbers of people, and the subways have been built to accommodate them. So the Soviets can run their whole govern-ment from the subways, since they only have an executive branch — they don't have any Congressional problems. Those CPs are fixed, and they're hard. It's fate.

The second Soviet emphasis is mobility. Of course they went mobile with the SS-20, but the SS-20 was only the SS-16 with the top stage removed, and they put it back on and called it the SS-25. Now there's more evidence mobility is not much problem for them. They have something like 275 to 325 SS-20s which are a formidable threat and are mobile. They also have reload capability. They have quite a bit of range — much more than the Pershings. As a matter of fact, what's not mentioned in any discussion of theater nuclear forces is that the Soviets have three other nuclear-capable systems already deployed called the SS-21, SS-22, and SS-23. The SS-22 is the one that appears, from intelligence, as most likely to carry nuclear warheads out of all of them. The SS-21s and the SS-23s are not only nuclear-capable, but also CW*-capable as well as conventional. The SS-23 can reach the Channel from garrison, and now that they've increased their accuracy to 50 meters, it's like moving out the door and through the hall, which is a tough thing to handle.

The SS-23 exists. They don't ask anybody's permission to deploy it, they just deploy. Its range encompasses every single air field in Western Europe except the ones in the United Kingdom; it can't quite reach that far. It can cover all of France's airfields, all of Germany's, all of the Netherlands', most of Norway's, and all of Sweden's. The SS-23 has been upgraded, too. I don't know what the deployment numbers are, but I saw them in *Time* or *Newsweek*.

It's a threat; it's every bit as big a threat as are the Pershings, and yet the last thing the Europeans would like is for us to mention it to them. Their view is, "If we don't know about it, we don't have to worry about it." They know about it, but they only know a "NATO approved threat." If one looks at the NATO approved threat, the NATO approved threat isn't what's there, it's what they decide is there — what they agree is there. And they've agreed that the SS-21s and SS-23s are not there yet. So the NATO approved threat, which in many cases is the basis for the Europeans' five-year plans, does not include the threat of the SS-21s and SS-23s. And yet they indeed exist. So, that's the kind of thing that will have to be worked on in the next few years.

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*Chemical warfare.

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Student: Is there any development going on with chemical weapons for the United States as there is for the Soviets?

DeLauer: No, no, no. We've got the Big Eye (binary chemical bomb), our chemical weapon. It isn't that we don't have chemical weapons, that's the catch-22 about the chemical thing. What we have are chemical weapons that are only dangerous to us because they leak. They're unitary weapons; the stuff is toxic sitting on the shelf, and most of the weapons in the United States are old and leaky. We must move them to utilize them, but it's dangerous to do so.

For four straight years we've asked for approval of a binary system where two different chemicals are in the bomb or projectile. After it's launched, the chemicals come together and form the toxic material. They can be moved around safely; you'd think everybody would support that.

We had a terrible time when we wanted to move a train from someplace in Colorado to Dugway Proving Ground in Utah. The Under Secretary of the Army, who always got the dirty jobs, and the Secretary of the Army, who always took the trip, were nearly real-time watching that job. Getting it loaded on the trucks, getting it loaded on the train, going across the Great Salt Lake, and finally getting it off the train was something else. The Under Secretary took a three-day leave when it was over just to catch his breath. We made the most miserable crisis out of that.

You know, we could get rid of it all. We're not putting enough money in the budget to demilitarize all of the possible toxic waste. We could turn it into nothing, chemically, and then dispose of it. But we're not doing that. And we can't get Senator Pryor (D-AR) and a few other obstructionists to agree to do it. It's been a labor of absolute love for Ted Gold,* who has left the building, and Richard Wagner.**

Student: So it's just sitting around?

DeLauer: The solution is sitting around. One program under way that I mentioned earlier is the Big Eye, which the Navy is engineering, and which the Air

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*Theodore S. Gold, former Deputy Assistant, Chemical Matters, to the Secretary of Defense.

**Richard Wagner, Assistant to the Secretary of Defense for Atomic Energy.

Force would use. But the Army hasn't got anything. The Iraqis use it. And the Soviets, let me tell you, they've got it, and so have the Israelis. You talk to the Israelis, and the Israelis look at you out of the tops of their heads and say, "Nobody uses it against us." So, they have it. It's a great deterrent, and nobody's messing around with it.

Student: How optimistic are you about the long-term survivability of our higher altitude deterrence systems?

DeLauer: They're nonsurvivable, but so what? Their lack of survivability is only relative to some overt action. Passively, there's certainly no problem with them. And if somebody takes overt action against them, that in itself is going to mean something serious. It won't just be someone taking a potshot at one of them and saying he didn't do it; it won't be a KAL-007 thing.

As a matter of fact, I had a study done by Ralph Zirkon, a retired Navy civil scientist I knew when I was a young Naval officer. He came to the conclusion that the survivability of intelligence satellites is a trivial problem. The Soviets don't care about them. Zirkon said that if they're worried about an intelligence satellite, they know when it's coming over. They just hide things like we do. So he said there would be no reason in the world why they'd want to go after the intelligence satellites.

Now, as far as the early warning satellites are concerned, such as the ESP system, they're pretty redundant. Moreover, everybody knows the ESP essentially is an early warning sensor. Knocking it down would indicate that the enemy wants to do something, and the last thing that guy wants, if he wants to do something, is to tell you all about it. So, I don't think that the consequences are as significant as people suggest. That's the part that bothers me about the critics of SDI.

I think Henry Kissinger was right when he said on the MacNeil-Lehrer Report that no one can argue that SDI is both an ineffective system and destabilizing. He said that's nonsense, an inconsistent set of statements. I also was talking to an Englishman who is writing something on strategic C^3 and he asked, "Well, what if they knock those things down?" I replied, "Don't you think that's just what we'd like to have in some respects? It sure would provide a lot of strategic warning."

You can't destroy a warning system without giving warning. You can't do everything at once — destroy

the system and carry out the attack — in a bolt out of the blue. Nobody's a magician. There are launch coordination problems, and there is a battle management problem, too. There would be nothing like losing a few satellites to alert a country that they'd better be prepared. So in response, that country would launch everything. Not necessarily the ballistic missiles, but they would launch all their aircraft, and all airborne command posts, and they would put all their SSBNs to sea.

People don't recognize the fact that the sea-based deterrent is a lousy return on investment. The best we can do under certain conditions is keep 60 percent of our SSBNs at sea on a continuing basis. Our own rule of thumb is that one's out and one's in; in fact, the crews are that way too, there is a blue and gold crew. They have to come back in for replenishment. The new submarines will stay out longer, but their crews will run out, so to a certain extent, they're only 50 percent survivable. Minuteman may have a lower percentage, being a soft system, but you sure can make an MX system that is 50 percent survivable. Do it right; that's the whole idea. The point is what the definition of survivability is, and what is in the other guy's mind.

I discussed the survivability problem with Senator Carl Levin (D-MI). He's a prosecuting attorney, and he treats you that way. So he tried to beat me on the basis of *reductio ad absurdum*. He said, "O.K., I'll go along with you. You say that surviving capability is what counts. Do you think deterrence will help when you've got 50 percent?" I said, "You bet your life." "How about 10 percent?" I said, "Maybe." He asked, "How about 1 percent?" I said, "It beats me." It depends on what he's got left and what that 1 percent contains.

And, you know, it's when logic extends to as ridiculous a conclusion as that, that it becomes meaningless. To be worth discussing, the surviving capability has to be significant, and a lot of the significance has to do with the other guy's perception, what is in his head. Levin had a terrible argument with me. I just listened, not trying to argue him back. It's difficult to argue back with a Senator.

I have listened to some pretty heated arguments from and between Senators. The greatest arguments were between your Senator from Massachusetts and the Secretary. They both talked at the same time, and neither listened to each other. Senator Kennedy

was arguing with me over the Soviet growth rate — that was two years ago. The Agency puts out a projection of how much the Soviet military budget has grown during the year. Since they don't know what a budget is, they have to worry about their output. There was a big discussion about whether the Soviet military budget grew 3 percent or 4 percent. I kept saying, "Look, Senator, the base is so big, what difference does it make?" He maintained, "Oh, very important."

When the hearing was over, the Senators went out the back, as they always do — they never come down to the people. I had to go out the other way. So I went out in the corridor, and I ran right into Senator Kennedy. "Oh," he said, "I don't understand why they pay you what they do, they don't pay you enough for what you guys have to go through." And I said, "Yes, thank you."

He's an honest but misguided man, and he's actually convinced that the Soviets fear us more than we fear them. He's convinced of that. So, you know, it absolutely drives his arguments on all these things. Now whether that perception is formed by reanalyzing the information (which he could do if he wanted, being a member of the Armed Services Committee), or whether it's just a feeling he has, I don't know. But he and I have an absolute opposite view regarding the Soviets. He believes the Soviets' arms race is a consequence of their concern over us. And I disagree. There was a good Op Ed about a week ago in the *Washington Post*, written by an emigré, pointing to the fact that the Soviet concern over us is a lot of nonsense. The Soviets build weaponry because that's what they do. They have nothing else to do right now. They build all their submarines because there is nothing else for their staff building submarines to do. They live there, they work there, and if they stopped building submarines, they'd stop working. They're not trained to go into other areas of the economy. The guys building a subway can build a tunnel for their command post or build a subway, it doesn't make any difference. The same situation exists for those who build ships and airplanes. There are no newspapers, there are no forums to change priorities. There's no process to change priorities except the process of the top leadership, and it doesn't look as though they're doing it.

Yuri Andropov looked as if he was changing something; at least the intelligence report indicated he was moving some people around. Then, out of the

clear blue sky, KAL-007 got shot down. Now, was that a consequence of their changing priorities so much that the tough military decided to create an incident? It happened once before during Nikita Krushchev's tenure. Krushchev was about to loosen things up, and had actually started to do so, then bingo! They assassinated a Bulgarian diplomat in London. It was over as quickly as it had begun, and they were back to being strong. But until there's a way for them to change the way they allocate their resources, the Soviets are going to continue to turn out equipment.

Now, the problem with the estimates on the military budget is that the Central Intelligence Agency (CIA) will prepare an estimate based only on what they see. So, with overhead resources, they take pictures, they count what they see and they say that's what the Soviets are producing this year. That approach ignores the fact that producing a thing like a Blackjack takes a lot more investment inside a building and through the infrastructure than does building a Backfire — it's a bigger airplane, it has more jigs, and everything else to go with it, bigger forgings, and more equipment. Similarly, to build all the space equipment they're now turning out takes significant internal expenditures.

Now, they're working on a Dyna-soar-like* system, the shuttle, and a large space station booster, all at the same time. Until something shows up on the pad, it's not counted. So work in process or basic investment, which we in this country count, doesn't show up. For instance, I'll give you an example of our system. Rockwell built a new building at Palmdale, California for the B-1. We didn't count the total price as part of the defense budget, but we did count the depreciation for the first year. That was part of the overhead, and showed up in the defense budget. Yet, the CIA does not count anything being done in the Soviet Union on plant modernization as an investment and therefore security-oriented. And the Soviets are upgrading every single one of their ammunition plants.

Or take propellants, for example. The most advanced propellant we own in some of our air-to-air missiles — in the MX and the D-5 — is essentially a nitroglycerin-based propellant called HMX. We make it in limited supply. We couldn't have a

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*The Dyna-soar was an X-20A delta-wing manned space glider developed by Boeing in the early 1960s as part of a USAF/NASA effort to send an earth-launched manned vehicle into space and return it safely to earth.

big expansion without making an investment. But the Soviets have five plants they've modernized in order to make HMX. We can take pictures and see the changes. We can compare the plans with ours, recognize the assembly line that will produce the propellant, see how they've handled it and modified it. The analysis is there, but the assessment of the investment is not included.

The same problem affects our intelligence on the makeup of the army. Some other people feel strongly that the Soviets use the armed forces to homogenize the nation, not just for defense purposes. If you look at the trends of the Soviet armed forces, they're faced with some of the same demographic problems we are. The Slavic Russian population is getting to be a very small minority of their overall population. In 15 years or so they'll be almost overwhelmed with Moslems, and they appear to use the army in order to get the non-Slavic population when they're young, for indoctrination. If you take a look at the distribution of jobs within the Soviet armed forces, you will find that all the tough jobs — navy, rocket forces, air force, or artillery — are mostly filled by Slavs and Lithuanians and Latvians, all the Russian groups, while most of the poor old cannon fodder are the southern and eastern Moslem groups. On the other hand, even the Latvians are relatively suspect. They were once the Royal guard. They had their revolution, but they were the guards, and they really didn't support Lenin. So, the Soviets have a tough problem, but they're working at it.

Student: I was wondering if you'd care to comment on the structure of the SDIO, and why it's been separated from the services.

DeLauer: For one thing, the Secretary of Defense wanted to run it. In a way it was a defensive move because the President was getting a lot of advice saying he ought to take it directly to the White House — which is the last place you want a project office if you're in the DOD. I think it was a mechanism of control at the Secretary's level. For another thing, since it was a Presidential initiative, they wanted to be sure it would survive the budgetary process. General Abrahamson attends the Defense Resources Board (DRB) meetings, where we trade things off, so he gets his two bits into that. Then he defends it on the Hill.

SDI is mostly being carried out in the services, right where it belongs. Now, that doesn't mean that

the trend isn't for General Abrahamson to get his hands on the implementation to a greater degree. When I say implementation I mean the selection of contractors, the writing of the requests for proposals (RFPs) and those things normally left to the services to do, in some cases under DARPA's direction. Now General Abrahamson is doing all that. He's got some problems, such as his inability to obtain a larger staff, but he's done pretty well. And the work still gets channeled back out to where it's supposed to be done. One can't do any laser testing other than at San Juan Capistrano, California, or White Sands Missile Range, New Mexico. I don't care who runs the program, that's the way it has to be done. And the Jet Propulsion Lab (JPL) seems to be watching over the Talon Gold experiments. The reason for putting SDIO up under OSD was focus — a short answer, focus.

Student: You talked about improvements in strategic C^3 capabilities but not theater C^3.

DeLauer: Well, theater C^3 is mostly being focused on two areas. One is the fusion that I talked about, the Joint Surveillance Target Attack Radar System (JSTARS), which is the joint tactical side-moving target-indicating radar that will be the basis for the whole battlefield management aspect of theater C^3I. The Army and the Air Force both are buying it. The Army's radar probably will be carried in an OB-1, with the data stream coming down to Army command posts (which, by the way, are soft and we must do something about making those survivable). The Air Force's data stream will come out of their radar which will be at least in a 707 — C-18, we call it — and it will fly behind the forward area portion. And those will be the two tactical sensor integration systems.

The communications themselves primarily depend on to whom you talk. They're not really integrated yet. The Tri-Service Tactical Digital Communications System (TRI-TAC), which is the Army tactical system, has been the world's greatest WPA job for a long time, building all these switches. There's a secure voice communications system that the Air Force will use for its fighters. It should be tied into the Joint Tactical Information Distribution System (JTIDS) which is really a Navy system, a tactical information system for voice and data.

After quite an argument, the Air Force joined with the JTIDS team — that's where service parochialism

comes in — and we're getting the son of JTIDS, or the enhanced JTIDS (EJS), which is the newest improvement of SEEK TALK, the Air Force's secure, jam-proof airplane-to-airplane system. The only Air Force system that might be tied into JTIDS would probably be the Airborne Warning and Control System (AWACS) because they have to talk to everybody. Now we're looking at putting a JTIDS terminal in an F-15, but the F-16s won't have any in my lifetime.

The Army itself has embarked on a big procurement that will end up costing about $5 billion when it's all said and done. It's called the MSE (Mobile Subscriber Equipment). In a sense it's putting telephone equipment in a jeep. It's the lowest end of the communication link with the foot soldier. That system is compatible with most of the TRI-TAC switches, so for all practical purposes, somebody could call from the White House all the way down to get that guy in that particular jeep just by dialing the right number.

The President actually did it once. His call was quite funny. He went out to visit James J. Kirkpatrick, the conservative columnist who lives out in western Virginia, for Thanksgiving Day. He had this new equipment in the car along with Kirkpatrick. The President said, "This is a great piece of equipment, I can call anyplace." And Kirkpatrick got interested, and mentioned one of his sons was on a ship in the middle of the Mediterranean. The President got on the phone and asked for this kid on this destroyer in the middle of the Mediterranean. Faster than you can get downtown Boston, they answered. And the President said he wanted to talk to so-and-so Kirkpatrick. And this kid told his dad later, never to let that happen to him again. His life was never the same aboard that ship. The President called him right down and said hello to him, then said, "I've got your Dad and your Mom here, would you like to talk to them?" We're getting to that level of sophistication, so now we can do that.

Student: How about the integration with NATO forces?

DeLauer: Integration with NATO forces? We're not doing too badly. The biggest integration would be through the German digital system. For a long time that was a tough problem, because the German Bundespost never wanted to go digital. And once an analog man, always an analog man. Finally they

decided to change leadership, and now they're pretty much in the digital system, which means they can be reasonably integrated. If we get the PTARMIGAN system, the British MSE, it'll be even more integrated with the British forces. But there is a problem, there is always a problem.

Oettinger: You mentioned that since this new Administration took office, you came to a successful conclusion over the strategic C^3I problems and programs. That's also the period during which AT&T was divested. Before that period, a lot of folks at the DOD testified that AT&T's break-up would be the end of the world.

DeLauer: Maybe; I still think it is.

Oettinger: Well, were strategic C^3I programs affected or not?

Delauer: Well, you have to lease all the lines, get everything done, and get your own system and everything else. The redundancy part is really still the AT&T trunk system. But now that I'm in the international consulting business, I love the fact that long distance calls are cheaper.

Oettinger: So where you stand depends on where you sit.

DeLauer: Well, from the DOD standpoint, the divestiture was a disaster. The way it was set up before was very efficient; the Defense Communications Agency (DCA) had a detachment in Washington that handled all requests, and they only had one point of contact, AT&T. So, if the President was going to Palm Springs to go to a New Year's Eve party, they'd just tell AT&T. Now they would have to check in, go to a GTE system (that's what's in that valley). Back then it didn't make any difference to the DOD, they just said, "You're going to do it." AT&T then became a project engineer, and made a very easy program to implement. Now they're still trying to get one person to be the boss, but the competition's so great, they have to do more program management. But it's primarily things like that that are the problems. It wasn't as generally problematic as people had feared. Caspar Weinberger himself thought the divestiture was a terrible thing. It wasn't, but he thought it was. I thought so, too. But, by the same token, we're now going to get Bell Labs and Western Electric into other parts of our business over the years, and that'll be for the best.

Student: I want you to touch on something about

which you were absolutely vehement when you spoke last time: leaks and national security implications of documents that leave the five-sided building.

DeLauer: Well, as a matter of fact, a good friend of mine, Bill Wyatt, who worked for me at TRW, was kind of an amateur inventor. His company is Wyatt Technology, or Wyatt something-or-other in Santa Barbara. He wrote me a note the other day saying he had "something terrific" — a device that for $50 can be put on any copy machine and will protect unauthorized documents from being copied. So, I called up the Agency and asked, "Would you like to see it?" They said, "You bet your life." I wrote to Bill and the first thing he sent me was a nondisclosure document that I signed yesterday and mailed back to him.

Student: Has anything regarding security leaks changed in the last few years, even with the implementation of all these procedures?

DeLauer: Things have changed, yes. But there are guys who snitch. There is no way to keep people from doing that. What we wanted to do, although we never got very far, was to use the polygraph as a screening device, but that's now a big civil liberties issue in Congress. The fact is that we use it in the Department of Defense in sensitive positions. Almost all our contractors in very sensitive positions use polygraphs as a screening process. And it's not to find out whether somebody is telling a falsehood, but to provide just another check on the person being put into a sensitive position. If that had been done with Christopher Boyce, there never would have been the Falcon and the Snowman. There was no question that, as the judge said (not us), the kid was lying. His lawyer was pleading for mitigation of the sentence, but the judge looked at the kid, looked him right in the eye and said, "Son, the truth is not in you." That kid was arrogant. The other guy was just out for all he could get. If we had screened him, we would have probably found that out, but we never did. After that, we threw a lot of people out.

In fact, they changed the whole way custodians are designated now. The first thing done is to look at a person's track record. Right away, anybody without a track record is eliminated. The biggest group of candidates are the 40- to 50-year-old retired enlisted people who have come out of the services security program. They're the best candidates because they have a good track record. That doesn't mean some

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of them can't turn out badly — but it serves as one ounce of prevention. A deterrent is the best means of dealing with the problem. But this experience hasn't helped with Congress when we ask for polygraphs.

It's a war story. Senator Charles Grassley (R-Iowa) has been giving us a hard time. He was a Congressman for awhile, then became a Senator. He's on the Budget Committee, but not on the Armed Services Committee. He had a name recognition of something like 18 percent in Iowa. He decided to fix that, so he took on the systems analysis issue, and got Franklin Spinney, who is a junior analyst in the PA&E Office of the DOD, on the cover of *Time* magazine. Then he got into the spare parts picture. We weren't getting anywhere with him, but then a friend who was close to some of his people suggested we bury the hatchet. He said we'd work better together than apart. I decided to give it a go, since matters could hardly have gotten worse than they already were. So, I went over and had breakfast in the Senate dining room with Grassley. He was very proud of what he was doing.

At the time, the issue was whether the Defense Department would take retribution against two people from Robbins AFB who came up and testified before the committee. We said, "No, we're not going to do anything; it's just one of those things. They're not our favorite people but we're not going to do anything." Grassley said, "Good thing; boy, I'd really be after you."

But just the night before, one of the news programs had reported that Senator Mathias (R-MD) was complaining about Congressional abuse, or at least overuse, of franking privileges — over $110,000,000 for postage stamps last year alone. Well, Grassley was telling me how great his campaign was going. "But," he said, "my administrative assistant came up and told me that I was spending too much money on postage." Every time Grassley got a release, he mailed it to everybody in the world, everybody in Iowa anyway. So I said, "Senator, let me ask you something. What would you do if your administrative assistant sent that to the *Des Moines Register* before telling you?" "Oh," he said, "I would have fired the guy. I've got to have absolute loyalty on my staff." I asked, "Don't you think the Secretary of Defense has to?" "Oh, no, that's different," he replied. I said, "They're both being paid by the taxpayers' money — your staff assistant, and the people in the DOD. Now don't you think you ought to have the

same set of standards?" "No, no, no, it should be different," he insisted. I couldn't reason with him. And that's the attitude — it's crazy. A snitch is a snitch as far as I'm concerned.

Student: In your judgment how difficult will it be to meet the two criteria, cost effectiveness and offense/defense survivability, that Paul Nitze (Presidential adviser on arms control) has set out for SDI?

DeLauer: At this stage of the game I think it would be difficult, since neither side wants to reveal performance capability. The Soviets have just as much capability, more in some of the areas, as we do — much more in kinetic energy systems. They're not going to reveal any of that.

I think they will talk in generalities, research versus deployment, just as we did before in the ABM Treaty: no testing, or certain testing has to be done in a particular environment. I think if I were a Russian negotiator, or at least a planner for the negotiators, I would argue to let research go on, but without any systems test whatsoever. They might be able to sneak something like that by, and then they just wouldn't pay any attention to it.

Student: But I mean programmatically, how optimistic are you that we could meet these two criteria?

DeLauer: I think reasonably well, because we're early in the program. We can rig the program to do that.

We did it in the ABM system. But what happened was, the Soviets outfoxed us, and the ABM became essentially comatose in North Dakota, because we got rid of the missiles that went with the system. A completely different system was introduced in the next generation; that great big radar sitting up there is a white elephant.

Student: How do you feel about the survivability of C^3 on the SSBNs?

DeLauer: Oh, fine, I think. Of course right now, it's very survivable because they're not yet connected, although almost. But seriously, there are only two nodes to worry about — the submarine on one end and the sender on the other. That's the problem with terrestrial C^3: There are a lot of nodes all over the place, and the nodes are the tricky part to make survivable; everything else is handled redundantly. But the only really nonredundant node in the SSBN C^3 is the SSBN itself. So survivability of C^3 on SSBNs seems pretty good.

Now, if you're really talking about blue-green lasers instead of extremely low frequency (ELF), and blue-green lasers are what we're looking for in real survivability, then how to deploy the laser system becomes an issue. It's possible to have a TACAMO* aircraft deliver it, such as the E6 — they're pretty survivable.

The big issue is to ensure communication with the submarine when it's submerged. That is not quite possible with the TACAMO now. To talk with it, a submarine has to pop up near the surface. Submarines are very good in regard to knowing what's around them, and they're not going to pop up to the surface with a Backfire or something sitting over their shoulder, or three or four destroyers sitting out there, or even another submarine nearby. So, I think the survivability is adequate, but it's a question of effectiveness right now. If we are going to take all these precautions we must advise them so that they really can be timely; I think it's getting better, because with the D-5, submarines can cover much more of the broad ocean area that's much rougher to cover, so they can keep a safer distance.

Survivability should be the least of our worries. First of all, trying to retarget everything will take some time. Then, in terms of surviving capabilities, if at that time the SSBNs have to cover targets that were not covered by the Minuteman or the bombers or the cruise missiles, then it's best just to save surviving capability. The deterrents have gone down the drain, so it is a completely different situation.

Oettinger: You commented earlier that in the Fletcher report, the question of battle management or command and control of the SDI somehow had been overlooked. Under real conditions, with maybe some electromagnetic pulse (EMP) here and there, and power being more or less available or unavailable, and decoys flying around, etc., etc., why does it seem reasonable that that problem is addressable?

DeLauer: It is from the point of view of deterrence, but in what you just said you have essentially configured an environment and implied that something has already happened. If all that is going on, there's no need for a defensive system at all. Once the deterrent is broken down, you must use all the assets available:

bombers that have been alerted, and SSBNs that are on station. You may have lost some Minuteman missiles and MXs, because you might have fired some by that time. You're not going to fill the sky with EMP and knock your satellites down along with everything else.

I think the biggest thing we need to work on in the area of battle management is non-nuclear combat equipment that the Soviets can handle by just jamming. Also, I think the second criterion of the deterrent, the effectiveness, has to be demonstrated. If we come up with a command and control system like the one we have in the shuttle, where whenever something goes wrong we sit down for two weeks, they are not going to consider that much of a deterrent; they wouldn't even bother to attack it. Then they'd really be dangerous, because they'd just ignore it. So you wouldn't even have the benefit of warning that an attack on the system would provide.

Oettinger: This goes back to the distinction you made between deterrence and battle-fighting capability. What good is a system as a deterrent if it is not capable of fighting a battle?

DeLauer: It makes a significant difference. I can have a deterrent that can't even move, like a huge battlement or wall. One deterrent is a survivable command post. It doesn't move at all!

Oettinger: That is not the same thing as not fighting battles. A wall or something that does not move has a battle function. If a soldier comes on riding against it with his horse, he and the horse will bang into the wall and fall dead. The wall will be fine.

DeLauer: Yes, but if it takes him a reasonable amount of time to breach that capability, then your other forces come into being. Therefore, you have survivable capability in the other forces. Don't think of every single piece of the force-structure as necessary to the same degree of survivability as every other piece of the force-structure.

Oettinger: That was not the question. The examples you give are ones where what you describe as the deterrent also has some degree of battle-fighting effectiveness. I'm losing the distinction between deterrence and survivability.

DeLauer: First, I do not think SDI is a deterrent; I want to make that clear. I think SDI contributes to deterrence by contributing to survivability. I didn't say it was survivable; it simply contributes to the

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survivability of the things that one must really fight with if one is to fight. In my definition, the higher degree of survivability I can have with my investment, the better deterrent it is.

Now, how is SDI going to contribute to the survivability of your existing forces? It has to knock down some of theirs. It must have some degree of effectiveness. Even on first shot, it cannot have any effectiveness if one can't battle manage with it — to say, for example, go, do it, look at it, fire the thing, point this, or do that — it's got to have that capacity built in. Now, its effectiveness is another question. But if you can demonstrate a certain amount of capability, then the enemy must take the upper bound and the system is effective in a positive sense.

Those of you who have been through the Strategic Air Command know how we target. We're belt and suspenders, and two pairs of underwear. We never leave it to chance that a target will go uncovered. In the war games, the big problem is to figure out, when we're successful on the first attempt, how to get all those other assets targeted onto something else. The Soviets are the same way. They cross-target with everything. If you can keep some of them down, pretty soon their assets will run out. At any rate, in the way they are thinking, they say now is not the time; we'll be peaceful for awhile. Peace lasted for 40 years, so it will last another 40 years.

Oettinger: All right, so these arguments surfacing in public discussions concerning 100 percent effectiveness are nonsense.

DeLauer: That's right. Kissinger tells you that; everybody tells you that. I don't know why the Secretary talks about it that way. But people want to take our deterrent forces and fight with them. Once war has broken out, that's when the troops would be mobilized, the draft would be reinstated, everything would be done, because World War III has just started. So what difference does it make what you fight it with?

But what you want to do is keep it from starting, and that's where the nuclear forces really make a difference. Because conventional capability sitting in the United States is not much of a deterrent to the Soviets in Europe. What you've also got to do is make the European forces sufficiently strong so that they provide a certain amount of deterrence without crossing the nuclear threshold. The worst thing the Soviets could do would be to embark on something where we had enough time to mobilize the strength

in the western world. That's what we should be pushing: the capability to mobilize that much, that quickly.

Student: What happens if SDI is successful enough for us to want to deploy it in some sort of initial operational way?

DeLauer: Well, that'll be quite an argument. That'll be a another big debate. That'll make the MX debate seem like child's play.

Student: Well, but anticipating it in a very long-range sense....

DeLauer: Then I think we ought to be very smart to lay the foundation in any of the treaty talks we have. There could be expiration dates, things like that, just like what we have in the present treaty. Everybody is thinking a great deal about this thing. You know, the ABM Treaty expires very shortly. Now, the problem is nobody wants it to expire, and they're acting as if it doesn't.

Student: SALT II was never ratified, and they're acting as though it was.

DeLauer: Absolutely. They try to dig up papers where everybody says we're going to abide by SALT even though it's not ratified. It's in our best interest to abide by SALT II right now. Why not say it? We've got a lot of assets that are not survivable. There are other things, too. Arms-control advocates often say we have better places to put the money. On the other hand, I can make the argument that there's such a thing as deterrent research and development that we are doing. Do you realize the initiatives we have under way? We have SDI, we have Stealth, we have quieting. All of these things are in the development stage; we haven't deployed any of them. Yet that presents a real problem to the opposition.

Let's just talk about the Triad. One of the strengths of the Triad — survivable or not — is that it is tough on the enemy's resources. The airbreather means they have to put assets into air defense and air-to-air fire control. That's how they're going after it. They don't have the luxury we do. We can go after their bases with conventional systems and standoff in Europe. That whole thing is radar-oriented — electromagnetic — it's Maxwell's equations. And we've made most of it obsolete with Stealth. That doesn't mean they couldn't do it back to us.

Now, take our ICBMs. They are a real problem to

the Soviets. They're why the Soviets have to go mobile, and why they have to go hard, because the Minuteman and the MX are tough against fixed targets; they are highly accurate. That's what makes it tough for them, and why they may be going into ballistic missile defense now.

Now, consider the submarine, which is another leg of the Triad. That's a completely different situation. The only real way to handle that problem is to go get the submarine. All the missiles are onboard, and that's terrific. The crews, the assets, everything, even the base — all in one shot. But that requires signal processing. That's an Antisubmarine Warfare (ASW) situation, and that involves totally different science and technology.

Now, here we are with the Triad, forcing them to go three different ways in the allocation of their technical resources. This is probably tougher for them to do than to allocate their material resources. Their intellectual resources are thin.

I've lobbied for years on demonstrating a capability for launch-under-attack with recall. For example, when we launch a Minuteman from Vandenberg AFB we could separate it, put a lifting-body front end on it, put it into orbit, circle the earth once and then land the lifting body at Edwards AFB just for demonstration. That means you can have a launch-under-attack capability with recall, which is what a bomber is. But you could do it with a missile: It has recall, it lands back at Edwards. You have about three or four hundred miles of cross-range. And we've done lifting-body work. I couldn't get people to go do it. But if you think of it and they don't, it's tough to get it into the system.

But that's an R&D deterrent. It's something to start thinking about, because that would mean that a certain amount of our force could be survivable; you wouldn't have to bring it back to Edwards, it could keep orbiting. Right now, we have a treaty that prohibits putting bombs in orbit but the Soviets don't bother with it; they put the technology into their ASAT program anyway. But you wouldn't have a bomb in orbit on this demonstration; it's a lifting body, a spacecraft. If I were the Soviet planner, I'd sit down and say, "Chief, we've got something else to worry about." That's the way they react. They're belt and suspenders types.

So this whole question of deterrence is an intellectual effort; it's propaganda, blowing your horn for the capability you have, when you haven't got it. It's ignoring them in certain cases, while proceeding with doing things. It's a tough political, economic, and technical scenario; not a game — I hate to use the word game — but an enterprise. And it's very broadly based. You know, I think I even mentioned this to this crowd before, the biggest thing the Soviets were against is the NATO alliance. They don't do anything, but the fact that we've got an alliance is a thorn in their side.

I don't know whether I mentioned the story about General Frederick von Paulus, who just retired. General Paulus was a tough bird; with one arm, one eye, he'd been a Panzer general, and he'd been through it. After the war he'd gone into the German foreign service. He was ambassador to Moscow, but more important he was the first ambassador to Israel from Germany. That's a dangerous assignment. He was a tough guy, really. Very well-educated, and very articulate. I went to see him, and I was trying to be a doer; I asked, "Why can't we get C^3 better in NATO?"

He listened to this and said, "Dick, there are only two things you ought to worry about. One, be sure that Western Europe gets all the energy they need. Don't let them get hung up on the petard of the Middle East." (This was 1978, and things were tough.) "And the other, don't let the alliance fall apart. Those Soviets are most bothered by the alliance. If they could break that apart, that would be the biggest victory they've had in the last 50 years."

You can see what their priorities are. They focus in on every single issue. They sent their next Premier to see Margaret Thatcher, Prime Minister of Great Britain.

Student: I was wondering how much of our defense posture you thought was technologically pushed and how much of it was policy pulled and what the trade-offs are between the two.

DeLauer: I wish it were either one. I'll give you a third one. I think it's service parochialism driven. Now, I don't support Dave Stockman's view that the services would give up force-structure for retirement — that's nonsense. But I'll tell you, the services will give up force-structure for modernization, for R&D. They'll give up force-structure for operations and maintenance (O&M) — no question. The number one thing in all the services is force-structure, and that should be the first thing we cut because it saves

money now; every bit of force-structure has people with it, and they're immediate cost, O&M.

If we could focus in on survivability and not force-structure — in other words, make the existing assets more survivable — there wouldn't be a need for as many of them. Now that's where I always have an argument with the services because they're force-structure driven. The Air Force is driving for 44 wings, and they don't care for anything else. The 600-ship Navy — I said it before and I'll say it again — is going to create a target-rich environment. But they're driving toward force-structure.

Now the Army, I think, is starting to think more about what their real problem is. For instance, their LSX program, the modernization of their helicopter fleet, has pushed for greater pilot productivity. They should put two guys in that attack helicopter as they do now, but they are going to do it with one. They want to make it that if you can fly one helicopter you can fly them all out of the same family. Maybe there is a little different lifting capacity, but basically they are the same, simply with different missions. There are more weapons on one, making it an attack helicopter, and there is a utility helicopter for another purpose, but they are almost all the same. There is a lot of automation in the implementation of a control system so that the pilot can fight and not just have to worry about flying. So, they're moving in the right direction. If we could do that with the other systems....

My one happy note in four years was with General Wilbur L. Creech, just retired as Commander of the Tactical Air Command (TAC). You really had to be proud to be an American when you visited Langley AFB. We had a group called the Four Powers, which was each of the armament directors of U.K., Germany, France, and the United States, and we all took turns hosting them. Every fourth time we were the host, so I did it twice. We got to go to Newport once, and then we took them to Langley. And boy, Bill Creech put on a show. Every piece of equipment TAC uses showed up on the field — AWACS, the F-111s that they use for their defense suppression, and Wild Weasels used for countermeasures. Langley put on a big flying show with the A-10s and with the F-15s. The place was spic and span: The base was beautiful, and everybody had an American flag on the front porch.

He and I had one big argument however, and it continued for four years. That was, I wouldn't sup-port LANTIRN* unless he would reduce the number of airplanes required, because we were going to spend $4 million to put a piece of equipment on an F-16 that would let it fly at night. It can't really fly and fight at night now. LANTIRN permits target designation, therefore providing higher effectiveness and kill rate, and permits flying in all weather, therefore bringing the attrition rate down. That means if $3½ to $4 million are spent for installation, and the airplanes only cost $16 million, we're spending almost 25 percent of a new airplane. Fewer airplanes should be necessary.

Creech and I went back and forth, and finally just before he retired, he came in, and we had a hand-shake. He said, "I will make a recommendation we have less airplanes, if you'll support LANTIRN." And to me that was, finally, a major break, because that's the kind of trade-off you have to have. Though we're not doing that often, we can, we really can.

Student: In the improvement of C^3I potential for NATO, is there any particular consideration of the role that these new systems might play in readjusting the technological balance between the U.S. and Europe?

DeLauer: Sure. The MSE program is going to be a European system, either the French RITA system or the British PTARMIGAN system. The French or the British system will be the one procured. It'll have an American supplier, and it'll take some time to do it. The big problem with the European situation is the following: The Europeans are not going to spend for security if it doesn't provide jobs. And buying U.S. equipment will not give them jobs.

That's the argument I had with Richard Perle** on technology transfer. The Europeans are not going to invest in new systems unless we transfer the technol-ogy to them. They're not going to invent that tech-nology all over again; they can't afford it. They can't afford the time, and they can't afford waiting around. They've got to get on and keep their people busy. We're having a running battle on the next gen-eration European fighter, and so are they. The Ger-mans and the British want 26 thousand pounds, and the French want 16 thousand pounds. They're 10 thousand pounds apart and nobody's ever getting closer. The French want something they can sell.

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*Low Altitude Navigation and Targeting Infrared System for Night.

**Richard Perle, Assistant Secretary of Defense for International Security Policy.

The Germans can't sell anything, so they just want it for their own use; they're prohibited from selling anything by their laws. And the presidents are sitting there staring at each other. I'm convinced if something isn't done we'll end up with just another Tornado airplane for the future, just so the jobs will be there, and that would be terrible. That has no survivability at all in Germany.

The survivability issue in Europe is nonsense. We can shelter an airplane for a million dollars. Here's another force-structure issue: Our F-15s cost $30 million and we finally got the Air Force to agree to buy only 29 airplanes and spend the extra $30 million to shelter them all. We can save almost all of them. Now it turns out we shelter about half of our airplanes anyway. The Germans don't shelter anything, so our planes are sitting ducks out there. When we deploy to the field, one of the survivability options is never to come back to the main operating base or to the collocated operating base, but to go instead to some outlying field — there are a jillion of them around Germany. But they don't have any shelters there, so there's no way to service the airplane without being out in the open. Yet you can't get them to spend the money on a trade-off like that, nothing whatsoever. So I think the real problem is with technology transfer.