



Alan Schriesheim, Director of Argonne National Laboratory, demonstrates superconductivity to the President, Chief of Staff Howard Baker, Secretary of Defense Caspar Weinberger, Secretary of State George Shultz and Secretary Herrington.

Remarks at the Federal Conference on Commercial Applications of Superconductivity

July 28, 1987

Thank you, John, and thank you all very much. It's a great pleasure to welcome you to Washington and an honor to address this assembly of some of the foremost members of our scientific and business community.

I'm pleased to announce, though -- I'm going to take a liberty here before getting on with the subject that brought us together, to pause for a moment for an announcement of something that I think is of interest to all of us -- that today our delegation to the Geneva discussions on intermediate-range nuclear missiles is putting forward a formal U.S. proposal that embodies two earlier suggestions made by the United States. In November of 1981 we promised elimination -- or eliminating the entire class of long-range intermediate missiles. On June 15th we then formally offered to eliminate the shorter range INF weapons, as well.

As perhaps some of you know, until last week the Soviet Union had insisted on what could have been a major stumbling block to our double-zero suggestion: the right to retain some of its missiles currently deployed in Asia. But last Wednesday General Secretary Gorbachev announced that he was preparing to drop this demand. As I say, the proposal put forward today would reduce to zero the number of both longer range and shorter range INF missiles, and we are pleased the Soviets have now expressed support for both concepts. It would make provisions for strict and effective verification and reject transfer of existing U.S. and Soviet INF missiles and launchers to any third party. Two vital new elements are also included: the destruction of missiles and launchers covered by the treaty and no conversion of these systems and launchers to other types of weapons.

There's still much to do in Geneva, but I'm heartened that the climate is now receptive to an historic proposal of this type. The United States is proud to be in a position to make this proposal. I can only add that there are other arms reduction negotiations going on, as well, and these concern strategic or longer range nuclear forces. We have tabled our proposal in the form of a proposed START treaty, and we hope the Soviet Union will do likewise and formalize their views in this area. Our goal, as you can see, is not arms control but arms reduction. And despite the skepticism when we first announced these plans, we are moving in this direction.

Now, before I begin our discussion of the vital subject that's brought us here today, there is one person I must mention, a moving force in getting this conference underway. He was a patriot, a fine Cabinet officer, and a champion of American enterprise, and we will truly miss Mac Baldrige. [Applause]

But we're privileged to have here today with us many of those scientists whose pioneering work made this conference on superconductivity a possibility, and congratulations to you all. And it's a safe bet that this conference room also contains many of the minds and spirits who will carry this revolution forward, who will open up a whole new realm of heretofore unimagined possibilities and practical applications.

I've had a lot of experience in my own career of how technology can change things. I remember back in the twenties, when somebody first told Harry Warner about talking pictures, and he said, "Who the heck wants to hear actors talk?" [Laughter] Actually, I don't think he said, "heck," -- [laughter] -- but Presidents aren't allowed the same license as studio executives. Of course, when it comes to high-tech, Presidents often have trouble, too, keeping up with the times. A favorite story of mine is about one of

the first times the White House hosted a science and technology event. A demonstration of a recently invented device was put on for President Rutherford B. Hayes. "That's an amazing invention," he said, "but who would ever want to use one of them?" He was talking about the telephone. [Laughter]

It's hard to believe that it's been less than 1 year since we first heard news of the startling breakthrough in superconductivity by two scientists in the IBM labs in Zurich. And since then, it's seemed as if the papers have had to struggle to keep up with the rapid advance up the Kelvin scale. You know, it's been said that there are three stages of reaction to any new idea. One: It won't work. Two: Even if it works, it's not useful. And three: I said it was a great idea all along. [Laughter] <p>

Well, to most of us laymen, superconductivity was a completely new term. But it wasn't long before we learned of the great promise it held out to alter our world for the better, a quantum leap in energy efficiency that would bring with it a host of benefits, not least among them a reduced dependence on foreign oil, a cleaner environment, and a stronger national economy. I've been accused of being an incurable optimist, but lately I've been playing catch-up ball with the usually more staid science profession.

And the other day, I met with Dr. Graham and the members of the White House Science Council for a briefing on superconductivity. Edward Teller told me that we have seen discoveries in the laboratory these last 8 months that the optimists thought we wouldn't make for 200 years. One theorist was quoted as saying: "It shows all the dreams that we've had can come true. The sky is the limit." There are predictions of high-speed trains levitated above their tracks, supercomputers on a single silicon chip, cheaper and more effective medical imaging devices, but I suspect that we haven't even begun to dream the possibilities or imagine the potential. Just as no one imagined 747's making transatlantic commercial flights when the Wright brothers first flew at Kitty Hawk, and no one dreamt of the computer or the communications satellite when Ben Franklin first captured electricity from a lightning bolt.

It was Ben Franklin who wrote: "I have sometimes almost wished it had been my destiny to be born two or three centuries hence. For invention and improvement are prolific and beget more of their kind. The present progress is rapid. Many of great importance, now unthought of, will before that period be produced; and then I might not only enjoy their advantages but have my curiosity gratified in knowing what they are to be." Well, the present process is rapid and, it seems, constantly accelerating. One can imagine how gratified Ben Franklin would be if he were alive today. But you know, I bet he would join me, and I'm sure most others in this room, in wishing that we had a window to the future -- 10, 20, and 100 years hence -- so that we, too, could see the marvels of the coming age. There's something universal in that sentiment, I'm sure, but I can't help but feel that there's something especially American in the optimism, the certainty of hope and faith with which we look to the future.

Two hundred years ago, Thomas Jefferson said: "I like the dreams of the future better than the history of the past." Well, since that time, we've built here something entirely new, a history in which Thomas Jefferson would have felt more at home. It is a history that is constructed of dreams dreamt in freedom and realized in a land of opportunity. Science tells us that the breakthroughs in superconductivity bring us to the threshold of a new age. It's our task at this conference to herald in that new age with a rush. If you will, it's our business to discover ways to turn our dreams into history as quickly as possible.

The laboratory breakthroughs into high-temperature superconductivity are a historic achievement. But for the promise of superconductivity to become real, it must bridge the gap from the laboratory to the marketplace; it must make the transition from a scientific phenomenon to an everyday reality, from a specialty item to a commodity. And that's why we're here in this conference, so that business and science can cross-fertilize, can begin at these early stages to dream and plan together, because this new age of superconductivity is a new arena for the spirit of enterprise, one that we can't even guess the limits of.

We also want to see how we in government can do our part in helping this process along. Now, I have to confess that I'm one of those people who, when the Government offers to help, gets very nervous. We've learned from experience that the helping hand of government too often has a crushing weight. I'm reminded of what Wernher von Braun once said about America's space program. He said, "We can lick gravity, but sometimes the paperwork is overwhelming." [Laughter] Well, this is not to say that government doesn't have an important role, especially at the basic research level. We must continue to support our outstanding researchers in all disciplines, giving them the freedom of resources and flexibility they need to dream their dreams and make their experiments. One key for doing this is the National Science Foundation, and we have proposed, as you've been told, to double its budget over the next 5 years. As you may know, the National Science Foundation and NASA provided funding for Dr. Paul Chu's landmark experiments at the University of Houston.

Increasingly, in this last part of the 20th century, information is becoming the most valuable commodity. We have begun major initiatives at our national laboratories to improve communication, and last April I signed an Executive order ensuring that all Federal agencies and laboratories become partners with the private sector in moving research from the laboratories to the marketplace. The message of government is simple: We have an open door policy to the private sector; cooperation, wherever and whenever possible, is the order of the day. We must also move to protect intellectual property and write protections into the Freedom of Information Act for scientific and technical information generated by government laboratories. We need to strengthen patent laws to increase protection for manufacturing processes and speed up the patent process so that it can keep pace with the fast-paced world of high technology. And of critical importance, we must modernize our antiquated antitrust laws, laws designed for a previous century that only held America -- or hold America back and give our foreign competition an unfair advantage.

If we're serious about improving American competitiveness, the way to do it isn't through protectionist trade legislation that closes markets and throws people out of work. One good place to start is bringing antitrust laws up to speed with the modern world. This is no longer the era of the so-called robber barons; it's the age of high-tech and global competition. Let's stop penalizing American business and treating it like an enemy. Let's give ourselves a fair shake in the world marketplace. I will soon send a legislative initiative to Congress addressing these three issues -- antitrust, patents, and the Freedom of Information Act -- as they relate to the commercial application of superconductor technology. I hope you will lend your support to this legislation. Your opinions matter to your Senators and Representatives. Let them know how you feel, individually and through your various trade organizations. This package of reforms will go a long way toward preserving the competitive advantage of U.S. industries in this field.

These and other actions are part of an 11-point superconductivity initiative that will also include a "wise men's" advisory group on Federal policies and regulations that effect superconductivity research and commercialization, the "quick start" grants for good ideas on processing superconducting materials into useful forms, the establishment of a number of superconductivity research centers, and a nearly \$150 million research and development effort by the Department of Defense over 3 years. Funding basic research, sharing information, removing the impediments to commercialization -- in this way government can be a catalyst to the future. But we have an even more important role that we must be sure to accomplish. It's a fundamental role that not only looks forward to the 21st century but harks back to the first principles enunciated in our Constitution 200 years ago.

First, we must recognize that just as recent breakthroughs in superconductivity have outrun existing theories and brought us to the threshold of a new world of opportunities, so too, the world around us is in the process of a radical transformation, a revolution of shattered paradigms and long-held certainties.

This transformation, too, is opening for us new horizons of possibility. In a recent article, "The New American Challenge," the economist George Gilder describes this new reality and how we must respond to it. The information age has only just begun, he says. Increasingly, we are moving from the economy of the Industrial Revolution, an economy tied to the Earth's natural resources, to an economy based on information, where that old cliché, "Knowledge is Power," is truer than ever.

It's estimated that raw materials account for 80 percent of the cost of pots and pans, 40 percent of automobiles, and less than 2 percent for an integrated circuit. The value of a silicon chip doesn't lie in the sand from which it comes, but in the microscopic architecture engraved upon it by ingenious human minds. The most promising superconductors are made from ceramics. Their value doesn't come from their material, but from the brilliant inspiration of a few scientists. It is the human imagination that is building the 21st century out of sand and clay.

We're increasingly moving from an age of things to an age of thoughts, an age of mind over matter. In this new age, it's the mind of man, free to invent, free to experiment, that is our most precious resource. Gold, steel, oil -- these were the treasures of the past that made people rich and nations strong. Today the premium is on the human heart and mind. They can't be locked in a vault, nationalized, or expropriated. They can only be let free, and then, really, the sky is the only limit. That is the American challenge: Will we continue the policies of economic freedom, of noninflationary growth, of low and flatter tax rates, and deregulation? Will we strengthen them with an Economic Bill of Rights so that they will never again be lost?

When I signed our tax reform legislation into law, I noted that the last 20 years had witnessed an expansion of many of our civil liberties, but that our economic liberties had been too often neglected, even abused. We protect the freedom of expression of the author, as we should, but what of the freedom of expression of the entrepreneur, whose pen and paper are capital and profits, whose book may be a new invention or small business? What of the creators of our economic life, whose contributions may not only delight the mind but improve the condition of man by feeding the poor with new grains, bringing hope to the sick with new cures, vanquishing ignorance with wondrous new information technologies?

When our forefathers wrote guarantees of life, liberty, and property into our Constitution, they tapped a wellspring of hope and creativity that has transformed history. That basic blueprint they laid down -- the Constitution, whose 200th birthday we celebrate this year -- is, if anything, more vital than ever. That secular trinity of life, liberty, and property is the key to the future, the key to meeting and winning the new American challenge. Archibald MacLeish once said, "There are those, I know, who will reply that the liberation of humanity, the freedom of man and mind, is nothing but a dream." And then he said, "They are right. It is the American dream."

You here today will be among the pioneers carrying on that American dream into the future, a day when this 20th century of ours may seem no more than a rough prototype of the 21st. I wish you well with the rest of your conference. You have captured the imagination of the American people, and I'm sure I can speak for them all when I say our hearts and hopes and best wishes go with you. Thank you all very much, and God bless you all.

Note: The President spoke at 11:47 a.m. in the International Ballroom at the Washington Hilton Hotel. In his remarks, he referred to Secretary of Commerce Malcolm Baldrige, who was killed in a rodeo accident on July 25; William R. Graham, Science Advisor to the President and Director of the Office of Science and Technology Policy; and Edward Teller, director emeritus of the Lawrence Livermore Laboratory.