THE BOOKINGS INSTITUTION

THE BERNARD L. SCHWARTZ FORUM FOR COMPETITIVENESS

THE FUTURE OF U.S. COMPETITIVENESS:

IS AMERICA INVESTING ENOUGH IN SCIENCE AND

TECHNOLOGY TO COMPETE?

Washington, D.C.

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Opening Remarks:

STROBE TALBOTT, President
The Brookings Institution

Introduction:

BERNARD L. SCHWARTZ, Retired Chairman and CEO
Loral Space & Communications, Inc.

Panel Discussion:

LAEL BRAINARD, Moderator
Vice President and Director, Global Economy and Development;
Bernard L. Schwartz Chair in International Economics, The Brookings Institution

NORMAN AUGUSTINE, Retired Chairman and CEO
Lockheed Martin

DONALD EVANS, Former Secretary of Commerce and CEO, Financial Services Forum

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P R O C E E D I N G S

MR. TALBOTT: (In progress) — we are conducting on how the United States is going to continue to engage and compete in the 21st century economy. This forum has been made possible because of the vision, the generosity and the leadership of Bernard Schwartz who is sitting down here on the front row. As I think all of you know, he is the retired chairman and CEO of Loral Space & Communications. We are delighted that he could be here with us today, and you will be hearing from him in just a moment.

We are also very honored by the participation of Norm Augustine, the former Chairman of Lockheed Martin, who also has a distinguished service in the public sphere, particularly at the Department of Defense where he and I have intersected from time to time over the years. And we are also delighted that Don Evans, the former Secretary of Commerce, could be with us today.

Both of these two gentlemen have been on the cutting edge of the issue before us. Mr. Augustine chaired the committee that produced a very influential report under the auspices of the National Academies with the rather stirring title of “Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future.” Secretary Evans have been one of the administration's leading business and economic advisers, and he currently heads the Financial Services Forum, an organization made up of top business leaders and devoted to promoting a competitive global marketplace and the free flow of capital.

The moderator for this morning's discussion is Lael Brainard, who is a Vice President of the Brookings Institution, and the director of our newest research program here at

Brookings called Global Economy and Development. And very appropriately, Lael is also the first holder of the Bernard L. Schwartz Chair in International Economics.

The focus of our discussion this morning is going to be on the role of investment in science and technology. Before that panel discussion begins, let me ask Bernard Schwartz to say a few words. Bernard?

MR. SCHWARTZ: Thank you, Strobe. I am very happy to be here today, and I am honored to be working with Brookings on this whole economic arena and with globalization, and the changing economic and global patterns in the world. And I am happy that the Bernard L. Schwartz Chair in International Economics serves this important area in terms of competitiveness and globalization in trying to understand what those dynamics are.

These forums are a great way for the public to be involved and for the media to get involved, and I applaud Brookings for its leadership in attempting to place the right kind of focus on these very complex issues.

This subject is more important and more relevant than ever before because today's global landscape is more competitive than ever before. Rising economies like China and India represent new challenges to our position on the playing field as they introduce millions of new workers into the labor market, millions of dollars of investment into scientific programs which prior to this have been an area where the Western nations had a more important role to play. They are accumulating large savings because of their entrance into the economic scene which has placed a certain imbalance in the conventional relationships between international countries.

But simultaneously in America we see while they are growing fast, the emerging countries are emerging extremely strongly, we see a low savings rate, we see

decreasing investments in technology and research and development, soaring fiscal deficits, rising health costs and pension liabilities, concern about the weakening dollar, insufficient Ph.Ds in academic producing important players in the hard sciences, a faltering K through 12 school system, and, finally, a credit system that is reliant on the kindness of foreign countries. All of these factors seem to point to a most formidable challenge for the United States.

Our critics foresee a hard landing and losing the race in our competition with China and India. Nevertheless, I remain optimistic about America's economic prospects even while admitting that some of these criticisms are valid. America still enjoys a wide range of incredible advantages including cutting-edge scientific innovation, labor mobility, free and large capital markets, leading technological performance, world-renowned higher-education programs, a high rate of job creation, low unemployment, abundant liquidity for investments, robust corporate profits, and strong balance sheets. These are not unimportant. And as an optimist, I see a winning scenario, not a zero-sum gain.

So where is the disconnect between these two scenarios? Is one correct and the other wrong? Can both be right? In fact, is there a new paradigm at work today that we have not yet been able to calibrate? And is there indeed from this paradigm an appropriate challenge to the current economic orthodoxies? I think that today's panel will be adding some insight and giving some answers to these very tough questions.

We are all honored to have Secretary Donald Evans, former Secretary of the U.S. Department of Commerce, and my good friend Norm Augustine who as Chairman and CEO of Lockheed Martin led the defense industry to new heights and new significance in helping the United States as well as its representation around the world. We have worked

together on a lot of tough issues. With the help of Lael Brainard, we will be able to shed some light on these difficult questions on technology.

Now I turn the podium over so that we can get this started. Thank you.

(Applause)

MS. BRAINARD: It is my pleasure simply to introduce Norm Augustine. You have already heard that I do not think there are two better people to address this issue than our two speakers today, and so without further ado, Mr. Augustine?

MR. AUGUSTINE: Thank you, Bernard, for your kind remarks. That was a good introduction for an unemployed aerospace worker.

(Laughter)

MR. AUGUSTINE: I am particularly honored to be invited to participate in this forum, not only because of the topic, but also because it bears the name of my friend Bernard. We have been business associates, fierce competitors, partners, and friends for a long time. And to appear on the platform with Secretary Evans who has been the driver behind so much of what has been accomplished this year in terms of addressing America's competitiveness, that too is an honor for me.

Bernard in his career really epitomized the importance of getting out and competing. Some of the things he did with his company I viewed with awe, amazement, and sometimes surprise. That lesson that he taught of getting out and competing is a lesson that it is time for all of America to learn that we are going to have to redouble our efforts. Global leadership has come to be accepted by many Americans as a birthright, and if one thinks back to the 16th century, Spain was a leading power, and in the 17th century it was France, in the 19th century it was England, and in the 20th century it is America. The book is yet to be

written on the 21st century, but if there is anything we should have learned, it is that no nation has an innate right to greatness. And in fact, to lose your lead in science and technology today is probably one of the quickest ways to lose one's position on the globe.

My friend Dan Goldin when he was the Administrator of NASA told me a story about a time he was appearing before a town forum and he was being criticized for NASA's spending on earth satellites. One of the people criticizing him stood up and said, Why do we need meteorological satellites? We have the Weather Channel.

(Laughter)

MR. AUGUSTINE: Unfortunately, that message is a little more widely held in America than one might like. But the real possibility does exist today in the opinion of my colleagues on the National Academy's committee that our children and grandchildren could for the first time in many, many generations enjoy a lesser quality of life than we have enjoyed. That would be a tragedy, and one of the objectives of the National Academy's study was to take some steps to help prevent that from happening.

No longer do Americans compete for jobs just from their neighbors. They compete with people from around the globe, and that is true for jobs at the lower levels of the job spectrum, all the way to the most demanding jobs. Tom Friedman has said that competition for jobs is just a mouse click away. He went on to say in "The World is Flat" that globalization has accidentally made Beijing, Bangalore, and Bethesda next-door neighbors. That raises the question, Will we all work at McDonald's? The answer is, no, because we will not be able to get those jobs. Just today while we are here, McDonald's has an experiment underway at some of its drive-ins where when you drive in and order your hamburger, your voice goes by synchronous satellite 23,000 miles up, back to a central call station where they

have real experts in writing down orders for hamburgers. They key in your order digitally, it goes back up to the satellite, and back to the person who places the order. They have cut their error rate in half and increased their throughput by 30 percent. Today that center happens to be in Colorado Springs, but it could just as easily be in Alice Springs or anywhere else. The challenge is going to be immense.

The thrust of the findings of our commission were really fairly straightforward. First, that individual prosperity depends on having a quality job, and so does our collective prosperity. Secondly, that many of those quality jobs are going to be created through science and technology. In fact, we looked at eight different studies that showed that regarding the increase in GDP during the last half-century, about 50 to 85 percent, depending on the study, is attributable to science and technology.

How are we doing? Our committee's view is that we are not doing well. Let me offer a few examples.

By the end of 2007, China and India will account for 31 percent of the world's R&D staff. That is up from 19 percent as recently as 2004. Two years ago, chemical companies in America closed 70 plants. This year they closed 40. Right now there are 120 new chemical plants at a cost of a billion dollars each or more that are being built in the world. Fifty are in China, and one is in the United States. In the last 6 years, America's share of leading-edge semiconductors has dropped from 36 percent to 14 percent. There are 15 larger energy companies in the world than ExxonMobil. Ford and General Motors have junk bond ratings now. Toyota has five times the market cap of Ford and General Motors combined. Of the 25 largest initial public offerings made last year in the world, one was in America. Booz Allen Hamilton has said that 77 percent of the new R&D sites planned for construction in the

world in the next 3 years will be either in China or India. The bottom line was that in a decade we saw our advantage in trade of high-tech goods and services go from a plus $50 billion to a minus $50 billion.

The question that of course arises is isn't it a good thing that other nations prosper, and the answer is a resounding yes. It will make the world safer, it creates new products for our consumers, and it creates consumers for our products. But the National Academy's group believes that with tectonic changes like this there will be winners and there will be losers, and we would like to see America be among the winners.

Of course, the enigma as Bernard cited is that America is prospering today. We have added 2 million jobs each year. Household net worth just passed the $50 trillion mark. With one-twentieth of the world's population we produce a fifth of the world's goods and services. So what is the concern? The concern is the trends. The trends are almost all in the wrong direction. We are living off of the benefits we had at the end of World War II and the investments we have made since then. Worse yet, this is a problem that probably will not have a sudden wake-up call. There will not be a 9/11, there will not be a Pearl Harbor, there will not be a Sputnik, and we are much more in a situation akin to the proverbial frog slowly being boiled.

Consider the situation in our public school systems. U.S. fourth-graders rank in the eightieth percentile in science. By twelfth grade they are down to the fifth percentile in world competition in science and standardized testing. Bill Gates has said, "When I compare our high schools to what I see when I am traveling abroad, I am terrified for the work force of tomorrow." And as Alan Greenspan has said, "If you do not solve the K through 12 education problem, nothing else is going to matter all that much."

Let me quote what Erskine Bowles said when he was sworn in recently as the President of the University of North Carolina, "Think about this. In the past 4 years, our fifteen schools of education at the University of North Carolina turned out a grand total of three physics teachers. Three. And we are going to compete with those guys in Asia? Come on. Not that way." That is the end of his quote.

Today the U.S. ranks seventeenth place among developed nations in the fraction of its college students majoring in either science or in engineering. The number of engineers, physical scientists and mathematicians each have dropped by about 20 percent during the last 20 years when we have had this explosion in science and technology and the knowledge associated therewith.

During the last 20 years, 56 percent of the engineering doctorates awarded by American universities were awarded to foreign-born students. We are now in twenty-second place in the fraction of the GDP that we devote to research, and our research budget in the physical sciences of math and engineering has been basically steady for the last 20 years. Chad Holliday, the CEO of DuPont, has said that if the U.S. does not get its act together, DuPont is going to go to countries that do. He does not say that out of bitterness, he says it out of the very pragmatic standpoint that a company has to compete. Howard High of Intel has said, "We go where the smart people are. Now our business operations are two-thirds in the U.S. and one-third overseas, but that ratio will flip over in 10 years. Already 125 of the Fortune 500 Companies have built in India alone."

There is some good news, and the good news is that you could do something about this. Others have, notably Finland, Singapore, and particularly Ireland. What did they

do? They got out and competed. They addressed their education system, they addressed their investment in research, they addressed their tax and visa policies, and so forth.

Today many have been working very hard to try to help America put together a program of this type under the leadership of our President. Perhaps there is no finer example today and particularly in this election year of a bipartisan effort on the part of the members of the House and the Senate led by our President to try to address these challenges. An example of the nature of this bipartisan effort in putting our children's interest and our nation's interest above politics is the fact that the bill to implement the National Academy study had 70 co-sponsors in the Senate, 35 Republicans and 35 Democrats.

We have made a great deal of progress this year. This is a marathon, not a sprint. The next 3 months will be particularly important, and I think we know what needs to be done, we now need to do it, but it is getting very late. Thank you very much.

(Applause)

MS. BRAINARD: Secretary Don Evans as many of you know has had leadership positions across the private sector, in government as the thirty-fourth Secretary of Commerce where he dealt with some of the thorniest issues I think on the competitive landscape, in particular, our very fast-evolving relations with China. And he is now at the helm of the Financial Services Forum, one of the industries where many believe that U.S. competitive advantage has got to continue to be extremely strong to continue to command the heights.

So I can think of a no better person to address this topic and fill out our panel than Secretary Evans. Thank you very much.

MR. EVANS: Good morning, everybody. Lael, thank you so much. I am delighted to be back at Brookings to talk about this most important topic and subject. I was here not too long ago talking about China, and we are talking about China again in an indirect way in that China represents one of the more than 100 countries in the world since 1946 that have decided they want to be part of a free-market economy and they want to compete, which I think is a staggering kind of number when you think in the last 60 years we have gone from about 25 countries in the world that wanted to be part of a free-market economy now to about 135 free-market economies in the world. So think of the number of workers and competitors that you now have in the world that you did not have some 60 years ago and it is pretty remarkable.

Strobe, thank you again for hosting this event and, Bernard, thank you for your terrific leadership in this field of technology, space and engineering, and inspiring young people to pursue that as a career. I have watched your career and applaud you for the contributions you have made, along with your friend to your right who has also made incredible contributions in this area. We need more like them that the young people of America look to as heroes and people that they want to be like as they grow and lead in this country and raise a family, and they want science, engineering and technology innovation to be a big part of their lives. That is one of the big challenges that we have is to get the young people, yes, maybe Michael Jordan ought to be one of their heroes, but also these gentlemen ought to be thought of as their heroes as well as we can get more into that world.

I really am honored to share the stage with both of them to talk about rising above the gathering storm and Norm's leadership in driving that most important document that

is really the centerpiece and is central to this whole discussion that we are having about America's future and where it is going.

Let me start with the past and know that 49 years ago today, 49 years ago today, is when Americans woke up and looked at the newspaper, and the Soviet Union had taken lead in the space race. On the front page of the paper was an article about Sputnik that had been launched the day before. They had this 183-pound object that was up in the air circling the world and it was making whatever kind of noises it was making, but it made a resounding noise here in America that maybe we are getting behind in the space race.

Just days after the news, Dr. Elmer Hutchisson, Director of the American Institute of Physics, sounded the alarm to everybody when he said, "The last few days have given ample evidence that America cannot just sit back and assume that we alone have the world's know-how at our fingertips." What happened as a result of that is that the country did respond. President Dwight David Eisenhower signed into law the creation of NASA and he signed into law the creation of DARPA. That was followed by President John F. Kennedy saying that it is time to challenge this country even more as we probe the solar system and we need to land a man on the moon and, indeed, that is what we did in a few short years after that. When we did that, we may have won the space race, but at that moment we won the more important science race that was taking place in the world. It put us out in the lead once again and there was no doubt who was the leader in the science race.

Globalization, as we have seen following that Sputnik movement as I would call it, has brought other nations into the innovation game. As I mentioned already, many, many countries around the world started seeing the free-market economies and competition and said we want to be a part of that, with China and India certainly in large part. In fact, I think it is

very interesting to note when you look at the leadership of China, the leaders of China are engineers, and they are scientists and geologists, and so they have had training in this kind of problem-solving atmosphere. How do you solve big problems of advances in information technology and expensive global communication networks, or enabling all these workers around the world to compete more competitively? I never will forget a Russian engineer who told me, our borders used to be connected with airport terminals in the 20th century. In the 21st century, that has changed. High technology has changed that, in that our borders now are connected by computer terminals just sitting on everybody's desks all around the world. So the borders of the world continue to be eroded. What does that mean? That means that there are challenges that we are going to feel from additional competition around the world.

To meet these challenges, we must give Americans the opportunity to access the education and training in the sciences, mathematics and engineering, the need for knowledge-based jobs in the future, as well as those people who will be providing leadership for our country in the years ahead. Competition is certainly a very positive force and it has proven positive in America. Competition leads to innovation that leads to higher productivity that leads to economic growth, and a higher standard of living and more jobs for the economy. Certainly, competition with the Soviet Union and the space race provided an abundance of technological breakthroughs that have formed the bases of hundreds of industries in our country and around the world, millions of jobs and decades of economic growth.

Today the United States is the world's largest economy and Americans enjoy one of the world's highest standards of living. Our investments in technology and science over the years have been certainly great contributors to our economic prosperity. Continuing our leadership in technology innovation is certainly critical. The 21st century is bringing new

scientific challenges that are different from those of the 20th century. Americans prospered for much of the last century in large part because of cheap available energy. With the global oil supply being challenged to keep pace with this incredibly powerful growing global economy, the great question for today's innovators, scientists and engineers is how to make sure that we continue to provide affordable, available, and a sustainable supply of clean-burning energy. It should not escape anybody that this great economy of ours has been built on relatively cheap energy, and for the global economy to be able to continue to grow or to grow at its full potential, we continue to work on the number-one problem we have in the world which is poverty and make sure that we have a sustainable, affordable supply of clean-burning energy. Solving the energy puzzle will be one of the 21st century's single most important scientific frontiers and America must lead that. If we want to look for an area that we are going to lead the world, that should be it. We are the leaders in that world, and we ought to continue to be the leader in that space of our economy.

To keep America competitive we need additional investments in federally funded basic research, investments to encourage better science and math education, and incentives for the private sector to continue to grow its research which has grown rather dramatically over the last 40 or 50 years. Federally funded research in the basic sciences yields discoveries that while they may have no immediate commercial applications, in a matter of years, sometimes decades, form the basis for successful commercial products, spur economic growth and create jobs. Take the iPod, for example. Almost every aspect of the iPod has its roots in technology made possible by government-funded research. Research funded by the Department of Energy yielded discoveries that make the iPod's hard drive and lithium-ion batteries possible. U.S. Army funded research in the 1960s pioneered the compression

technology that allows thousands of songs to fit onto one iPod. And research into liquid crystal displays funded by the National Institute of Health, the National Science Foundation and Department of Defense, made the iPod's tiny screen possible. Because commercial ventures like this may never have the resources to do this kind of basic research on their own, government-funded research helps form the foundation for blockbuster type products like the iPod in the future.

Thanks to the attention of people like Norm and Bernard who have brought this issue of American competitiveness in science and technology, we are beginning to take steps to address these challenges. The American Competitiveness Initiative announced by the President in this year's State of the Union address has received a warm reception in Congress and across America. As I have said, one of the great stories is, all America now is talking about this important subject.

Much of the funding required to meet the President's goal of doubling research is already on track for congressional approval, as is additional funding for programs to enhance math and science education. However, there are still other aspects that need to be addressed such as making tax incentives for private-sector research and development permanent. A robust private sector that transforms scientific discoveries into marketable products is an essential ingredient to a competitive American economy that continues to grow and create jobs, and a strong private sector depends on a good environment in which to do business. We have some challenges there, too, from frivolous lawsuits, high health care costs, to complex regulations. American businesses cope with many hurdles that their foreign competitors do not have to face. The Sarbanes-Oxley law in particular is placing a heavy burden on smaller companies, many of them technology firms, which are often at the vanguard of innovation.

Because of the expense associated with Sarbanes-Oxley, many firms have to forego or delay going public which is a path to equity capital which allows them to take risks and innovate. While Sarbanes-Oxley has had immeasurable value in restoring trust and confidence to our capital markets in the wake of the corporate scandals of 2002, some modifications certainly to the way it is implemented could help reduce serious barriers to America's competitiveness. The best response to competition is to go out and meet it head on.

Some will call for barriers to trade intended to protect American workers from competition. That would be a big mistake. In the global economy, competition is not a zero-sum gain with one country winning and others losing or at another's expense. Rather, it should be a drive of innovation that ultimately improves the standard of living for everyone and plays a central role in tackling the number-one problem in the world, which is poverty. For competition to work, we must have an open global trading system. An open global trading system brings out the best in every country. Sadly, the world may have lost an opportunity to expand free trade and alleviate poverty when the Doha Round talks were suspended in July after negotiators failed to reach an agreement. A new Financial Services Forum poll conducted just last weekend found that the majority who are familiar with the issue saw the Doha Round's failure as negative news for the American economy and jobs.

Americans, yes, they all understand that a globalized economy is really not a cause for alarm. Instead, it is an opportunity to focus on what America has always done best, and that is to compete, innovate, and create new wealth. I have every confidence that just as we rose to the challenge of Sputnik, Americans will rise to this challenge as well. Thank you very much.

(Applause)

MS. BRAINARD: We are going to now turn to questions and answers. I am going to take the prerogative as chair and lob the first few questions. Then I will open it up to the audience. When we do open it up to the audience, please identify yourselves.

I wanted to start with Norm Augustine and reflect a little bit on some numbers. If you think about what has happened over the last 10 to 15 years, we have taken an economy that had about 1.7 billion workers and we have added 1.2 billion workers if you think about China and India's decision to integrate, and those workers are starting with a base of wages that can be one-tenth those in many of the higher-wage economies. The question that naturally arises is that most people would think that the squeeze is going to come at the middle. In fact, if we start looking at some of the income statistics, we are already seeing that squeeze here in the middle.

Is the answer science and technology for everybody in the U.S., or are there going to be certain types of workers for whom a different type of answer is needed? And what is the answer for those workers who traditionally have not gone on to get a master's degree?

The second question that is related to that is, can we win at the numbers game? If you look at the number of science and engineering graduates in India versus the U.S., the numbers vary, seven times, five times as many per year already. If you look at China at the numbers, again, there is a lot of dispute, but the low end of the estimate is five times as many, the high end of the estimate is almost ten times as many. As we are pursuing the science and technology agenda, how do we deal with that basic numbers challenge that is inevitable?

MR. AUGUSTINE: Those are profound questions, obviously. With regard to the cost of labor that you alluded to at the outset, America starts out with some major advantages, our higher-education system and our free-enterprise system that imposes great

discipline on companies. We have some major disadvantages, and probably the foremost of those is in fact today the cost of labor here. I recently visited the factory in Vietnam where the assembly laborers were paid one-twentieth of what an assembly laborer in America is paid, and somehow we have to offset that disadvantage. That disadvantage will close with time, but it is going to take a lot of time before it really closes, and we could lose the race in the meantime. So we need to seek other advantages.

I do not think this affects any one group. Certainly the people at the bottom are going to be badly squeezed, and they already have been when you can see that with companies putting their assembly work overseas, but it moves on up through the job chain. At the software call centers in India they are now having courses to teach people to speak with a Midwestern accent so they can do a better job in call centers. There is a good chance that if you have a CAT scan in this country that it will be read by a radiologist in Australia or Bangalore, so I think it is going to squeeze everyone.

With regard to the second question and the numbers issue, clearly America will not enjoy the preeminence of predominance that we enjoyed following World War II. The numbers just do not permit that, and it is probably just as well perhaps that they do not. It may make for a more stable world.

At the same time, proportionally we do want to excel. I think the issue here is that we have to be very selective. We have to pick those areas for our investments that a big difference is going to be made, and being an engineer myself, I am sure I have my biases, but I am convinced that science and technology is terribly important. But as your question suggests, the goal is not more jobs for scientists and engineers. If you double the number of scientists and engineers in America, you only create 4 percent more jobs. The issue is that scientists and

engineers I say modestly tend to create jobs for other people and there is great leverage to investing in science and engineering, and I think the economic studies would show that.

My bottom line to the second part of your question is that I think we have a two-tier problem. One is that we need to skim off the cream particularly of scientists who produce the breakthroughs, and then we have to be selective of where we look for breakthroughs, and we have to be first to market with those breakthroughs. We have to be great innovators, and that is going to be the key. A few months in getting to market is terribly important. That is the way I think we overcome the numbers issue.

The second half of the problem is that we have to have a society as a whole who is technologically literate in America if we are to survive. In the years ahead, if we are going to have any jobs, we will have to be able to use a computer, and I will confess that we engineers do not make it any easier. I have never figured out why when I want to turn my computer off I have to push on "Start", but you do, so it is not going to be easy.

(Laughter)

MS. BRAINARD: Bernard Schwartz, yesterday the Dow Jones hit an all-time record high. A week ago the U.S. shifted from position one in the World Economic Forum competitive ratings, to position six. The first question is, is this the best of times or is this the worst of times? It is hard to tell what is going on.

The second question is related to the competitiveness report. One of the big reasons that we fell in the report had to do with our fiscal situation. A lot of times the agenda that Norm Augustine is describing here today hits up against the pushback, we cannot afford it. Two questions, how would you assess it in terms of optimism versus pessimism, and can we afford this?

MR. SCHWARTZ: I would like to answer your question is this the best of times or the worst of times. The answer is, yes.

(Laughter)

MR. SCHWARTZ: And I think that is a very important answer, frankly, and it is not a joke.

The fact is that in America we do not have a broken machine; we have a machine that is badly in need of repair and installing some of the productivity gains that we know we can install into our machine. There are some things that are easy to identify as problems, but somehow we do not have the political will to change them. For example, if we want young people to go into the hard sciences, why do we arrange it so that when students get out of school with advanced degrees, they owe $200,000 to $300,000 to the school? Why don't we make it easier for them to go into that profession and come out of with some dignity?

If we want them to go into the hard sciences, why don't we pay them to do so? It is not that we have the inability to do so; it is that we don't have the political will to focus on what is important to us in this complex dynamic that we are talking about here.

I am very optimistic about the economic strength of the United States but only if we do some good things. The machine is going to continue to run down if we do not repair it, but it is easy to repair it, and we have the resources now to repair it. I depart from those in the political debate who say that we have to delay these repairs until we have a balanced budget, until we find the money to do so, that we have an agreement with others in Congress that if we spent money here, we have to save money there. The fact of the money is, our priority should be to remain technologically ahead of the rest of the world.

We talk about globalization as if it is a current phenomenon. It certainly is not. If you read the history of the United States, globalization has been around since the early 1700s. And despite the fact that we no longer in this country manufacture ships, we do not manufacture textiles, there is a whole range of items that the United States had a supreme situation in the competitive situation against the world that we do not do anymore. Yet if you look around at our economic situation, we are hardly deprived; we hardly have become a second-class nation because globalization has taken those industries away. The fact is we are preeminent in many of the economic activities, and more importantly, we are preeminent in some very important technologies.

In aerospace, for example, the United States is a leader. In biochemistry and biomedicines we are a leader. In oceanography and a whole bunch of other things that I could say we continue to be a leader. And I think it would be no large challenge for us to convert that advantage in leadership and technology to an advantage in leaderships in the economic portion as it relates to those things. We need the political will to do so and to allocate the funds to make that happen.

We are a very strong economy. We have a $13 trillion economy. The amount of money this country now spends in R&D and education runs about 9.6 percent of our gross domestic product. It is not that we are not spending the money; it is that we need to spend a little bit more money and allocate it smartly.

MS. BRAINARD: That is a nice segue to Don Evans. You talked about how a lot of this agenda is a bipartisan agenda. If we look at the bipartisan champions in the Senate, the President took this on in the State of the Union and has been very forward-leaning on it. If

you go out to any state in the country, it does not matter whether the governor is Republican or Democrat, this is the number-one issue on their minds.

The question is that it has not moved. What is the political analysis and what is the political strategy for moving it?

MR. EVANS: Lael, I guess I have a couple of thoughts on that. One is that certainly parts of it are moving. If you look at the President's 2007 budget, he has upped the budget on programs that are a part of the American Competitiveness Initiative that were already in place. So you can take those programs and add money to them. The President has the ability to begin the ramp-up of doubling research dollars for basic research over a 10-year period, so he has started that. In the education budget, the President has the ability to fund training 70,000 teachers across America. So there are elements of it that are already being funded and in fact are a part of the President's 2007 budget. In fact, in those areas that relate to the American Competitiveness Initiative for 2007, the President's budget increases 9/3 percent which is a pretty healthy increase given the environment that we have today with respect to the budget, given the environment when it comes to defense, homeland security, nondiscretionary spending or nondefense homeland discretionary spending, that budget is basically flat. So there is some movement.

Is it everything? No, not yet. And the Senate has under the leadership, as you said Senators Alexander and Bingaman started the process and it has been taken over by Frist and Reid. They have a very strong proposal out there where over a 5-year period they talk about expenditures of some $72 billion or so. The President is out there with something that is in the $64 billion range. That is not a very big spread between the two, and it is all part of the process. The Senate will hopefully get their legislation passed, the House will get their

legislation passed, the President has his marker out there where he is, and so the process will move ahead toward maybe new legislation, I would like it to be sooner rather than later, but the process is underway and it was not underway a year ago.

Everybody is talking about it, and I will tell you just a personal story of the kinds of things that need to happen. I went to my son's open house last week and went room to room and listened to his teachers. Two out of the six teachers spent a lot of time talking about globalization and how important it is to make sure that the students understand who they are going to be competing with in the years ahead. It is not just science and technology, it is like Norm said, we can create a lot more jobs in other aspects of our economy than science and technology. So what needs to happen is out across America people need to be talking about it and parents need to be talking about it to their local representatives, what are you doing about making sure that my children and my grandchildren are going to be able to compete in this global economy.

That is what I think forums like this do for us. That is what Norm Augustine does for us. When he travels across the country delivering hundreds of speeches to lots of people, you begin to build the momentum for it and it has to happen out across America at the grassroots level to bring the urgency back to this town so that this town responds to that urgency.

What I would say is we are underway. The President already has increased the budget in this area of American competitiveness and there is more legislation to be dealt with and worked through, but the process is well underway. And the powerful message is, and you mentioned it, there is a bipartisan spirit about this. I have talked to the leadership on both sides of the aisle about it and they are all enthusiastic about it. So I think this is one area that policy

in this town can continue to move in a very positive kind of direction, and it will. I am not here to handicap exactly when a new piece of legislation may be signed by the President, but don't take that to mean that nothing is already happening, because there are things already happening and additional funds are already going into the budget to deal with the issue.

MS. BRAINARD: Let me open it up to the audience and again ask that people who ask questions identify themselves.

MS. ARSHOVSKY: Peggy Arshovsky — Hispanic Outlook for Higher Ed and other publications.

I have been following a lot the science initiatives and it mainly is to help universities and education and the money is going in there. You spoke of starting up the ramparts to double research money, but it is really a long way from that. What is totally missing in a lot of these conversations is, and I think what I would love to have you address since you are all out of industry, where is corporate responsibility for this? You talk about getting rid of Sarbanes-Oxley. Why was that written? Because of Enron. You have asked for tax incentives. I guess you mean tax cuts. What guarantee is there is you have tax cuts that that money would go into research?

A lot of kids including my son, I have personal stories, too, have dropped out of engineering because they do not see that it is worth spending so much time and money in engineering courses when the jobs are being outsourced, when wages are low, when they are competing with people who are paid one-tenth.

Do you see that corporations have any responsibility at all in keeping the jobs in America and putting more of their money into research themselves? Maybe they need to make a little less profit.

MS. BRAINARD: Let me broaden out that question a little bit, too. One of the themes that keeps arising is does the corporate sector and workers have the set of interests in the competitiveness agenda or are there places where there are tensions? Can you talk a little bit about those tensions and how policy makers should address them? Bernard, do you want to go first?

MR. SCHWARTZ: I would say that corporate responsibility is a very important one, and we have a lot of reasons to feel optimistic about that. With minor exceptions I find that corporate leaders do step up. A shining example is Norm's responsibility not only now but his feeling of responsibility when he was chairman of Lockheed Martin and his sense that there was a responsibility on the part of corporate America to invest and look long-term rather than short-term.

But I think what has been lacking now, and this is not a partisan statement, Mister Secretary, unfortunately we have been following a bad course with respect to government leadership for a long period of time. If you look back at our history at our infrastructure investment for example, using innovation, using everything that corporate America could bring to bear and you identify the major advances that have been made in the United States that goes back to investment in infrastructure of the canals and waterways, the railroad systems, the land grants to colleges, the G.I. Bill, those were issues that were led by government, and private enterprise in the United States took those resources that came out of it and allowed for a mobile and free system where employees could reach out. I do not see that there is a very great divide in purpose between the employees of good American companies and their executive leadership. I think they are on the same line.

Where I think that we have a distance, where we have a disconnect, is that a large part in America of the advantages that we are going to be receiving from continued prosperity is going to be enjoyed by a smaller and smaller band at the top of the educational spectrum. If you cannot get into the labor market with the ability to read and write, and if you are not technically literate at least to be able to manage the computer, you are not going to make it in the United States. I think the United States will make it, I think prosperity will be here and the economic machine is going to be doing well, but it is going to be spread among our citizens in a very uneven way and I think that is a major problem. It is not an economic problem, it is a major problem from a social point of view, and that has to do with spreading around education and making sure everybody really does have an opportunity and making sure that the K through 12 system is better than it is today.

I would like to see a system that allows free education K through 16. I would like to see a broad range of the things that Norm talks about and the secretary talks about in terms of educational capability on top with master's and graduate degrees. We can do it and I do not see any great disparity in our ability to do that.

I would like to say one other thing. There was a question before that I am not sure we answered. In fact, is the game from the United States, is the challenge for the United States to turn out more Ph.Ds in the hard sciences or is it to turn out competent literate people in our citizenry among the other 96 percent of the people? Are we going to have enough capability to employ all Americans so they participate in the shared wealth? In order to do that, we are going to have to have some public investment on the part of government. There will have to be some infrastructure invested in policy that allows Americans at all walks of life to be able to participate. An infrastructure investment policy that would spend money bringing

our facilities into better productivity and a better way of life for the United States will employ all Americans, and I think that is important.

MR. AUGUSTINE: I think that was a very good question and a very fair question that I think Bernard has answered very well. I would like to just add a little bit to it.

Does American industry have a responsibility? Indeed it does. Its most fundamental responsibility is to comport itself with integrity, and as we all know, small parts but not de minimus parts of American industry have failed us in that regard and we are suffering from that.

But does American industry have a responsibility to preserve jobs in America? As much as I would like to do so, and believe me, I would, let me talk a little bit about the other side of that story. I added up the other day in my career, I cannot believe this, but I have sat at over 500 board meetings of Fortune 100 companies and on a number of occasions I voted to build factories abroad. I did it with considerable unhappiness, I guess. You might ask, why did I do it? Why did we do it?

One way to address that is to point out that perhaps you are considering putting an assembly factory abroad and you say we will not do that, we will just pay the higher wages here and we will just raise the price of our products. If you do that, you do not sell the products, and the consequence is not only do you lose the jobs of the people who would have worked in that factory or were working in it, you lose the jobs of the people in research and development, in accounting, in marketing and sales, the management. You destroy the company and it is not a viable strategy.

There also are enormous market pressures on American companies that cause them to behave in a fashion that they might not like to. I will give you a firsthand example if I

can take just one more minute. Several years ago the company I was serving on thought we had some wonderful opportunities in what we called basic research. It was probably applied research, but research. We were so excited about this that we were going to spend considerably more money, not enough that it endangered the company in any way, but more money on research. We sent our president to Wall Street to make a presentation about the exciting new work we were going to do and how promising it was. The audience from Wall Street listened to him attentively. When he finished, they got up and literally ran out of the room and sold our stock. Our stock dropped 11 percent in 4 days, and we continued to slide for 2 years before we got it turned around.

I asked one of those audience members, What did we say that was wrong? I can remember almost verbatim what he told me. He said, Don't you realize that it takes 10 or 15 years for basic research to pay off and that your average shareholder owns your stock for 18 months? They don't care what happens to you 15 years from now. And furthermore, they don't want to pay for it. They will probably own your competitor's stock 15 years from now. Then in the cruelest comment of all he said, our firm does not invest in companies with such shortsighted management. That is the sort of challenge we are up against. We have some structural challenges and we have to learn to live with those, and I am very much afraid that does not mean we say to CEOs build your plans in America. What it means is you will have to build your plants where it is most competitive and go out and help America the most competitive.

MR. EVANS: May I add just a couple of thoughts to that? One is back to the question of corporate responsibility. My view is that businesses and corporations are at the strategic center of our society, they are at the strategic center of any civilized society because

they have the most important responsibility anyone has which is to provide to people what they want the most which is a job. People want jobs so they can put a roof over their family's head, educate their children, feed their children, and that is in my judgment businesses and corporate America's responsibility.

It is the government's responsibility to create the framework and the environment for them to do that and do it well, and now government has to create the framework so they can do it well in a globalized economy. So for somebody who ran a public company, I must say to you that I took the responsibility very, very seriously of providing jobs for people in my community, but I also could never forget who owned the company. I did not own the company, the shareholders owned the company, so you always have to be making decisions based on knowing who owns the company.

When I think about that and I think about the world today, and I think Norm hit it right on the had, you have to keep your company where you can compete in the world, and when we are talking about plants moving outside of America, let me tell you that in 1946 America was exporting crude oil to other countries in the world. We were an exporter. We had so much gas that you could not believe it that you could buy for 5 cents per thousand cubic feet a day. It is not there anymore and that is why companies will take some of their plants and put them some place else, because they will put them on top of where the resources are. In some cases it is labor resources and in some cases it is natural resources. If you take a petrochemical complex, I am probably going to put a petrochemical complex on top of where there are a lot of natural gas reserves that are easy and accessible. If you look at Brazil and ask why they are a big exporter of steel, it is because they have some of the purest iron ore deposits

in the world. That is how the world is starting to get shaped in terms of where plants are and where they are not.

I keep coming back to wanting to make sure our children K through 12 understand this, and go back to Western China where I was 3 months ago and at a little school outside of Xi'an at a school that I participate in. It was a Sunday morning and we were having a little program there. We finished the program and I asked the children what they were going to do that afternoon and they said they going back to school Sunday afternoon. They are hungry for it. They have a passion for knowledge and learning and being part of this what they are seeing as a growing economy in their own country. So they are out there every day and we need to instill that in our own young people of our country K through 12 whether it be in the sciences, history, English literature or whatever it is, that we are going to be competing not just with people within our own country, but we are going to be competing with the young man in Chen Zhao village outside of Xi'an who is going to school every day and loves it and has a passion for it.

MR. SCHWARTZ: May I just say one thing about corporate responsibility also? We cannot give corporate executives a free pass. I sit on a couple of boards, too, in the history of where I am today. I have never, never voted to buy a company's stock back. I think it is a failure of leadership of a company when they are buying their own stock back. That is good for Wall Street and everybody loves it and the stock goes up, but unfortunately, that is not what makes great companies going forward. I would like to see less of that and more investment in R&D and in productivity.

Let me say one thing, R&D takes about 15 years to show on the bottom line. Investments in technology and machinery and educating your employees to improve your

productivity do not take 15 years to see a return. You get that back very quickly. It goes to the bottom line very quickly. I think corporate America has to be induced to continue to make those kinds of expenditures, and 2- to 3-year investments should not be beyond the capability of any CEO. So I think that we have to resist somewhat the determination of Wall Street of what is important in the world. Wall Street is only one aspect of what America's strength is all about, not the only one, and you know that, and that is the way you ran your company, and so did you.

MR. McGUIRE: I am Nancy McGuire, Office of Naval Research. What I have been hearing a lot of this morning is the view from the corporate suite, from the executive suite, and how you are going to go out and tell everybody how it is going to be. What I would like to know is have you gone out and done listening? Have you gone to the labs and talked to the people in the labs and possibly even with their managers out of the room and asked why are you in this career, what do you like best about it, do you plan to stay? If you plan to leave, why? Have you gone out to the schools and talked to the students and ask them does science and technology interest you, and if so, why, if not, why not? I would like to hear a little more about what kind of listening you have done.

MR. AUGUSTINE: I will be glad to start out with that. That is also a good question.

In our own case of those of us who served on the National Academy's commission, we invited 72 people from different fields to come and spend an entire weekend with us the first weekend we worked on our project and tell us what they thought was wrong and what they thought the answers were in their fields.

Speaking as an individual, I have gone out and I have talked to 4-year-olds about the space program last year, I taught a half a day of math to eighth graders, I taught science to fourth graders for a day, and I have taught for 2 years or more graduate students and seniors at college.

We have talked to a lot of people, and the interesting thing is there is very little disagreement by anyone as to what the challenges are, what the problems are that we need to address, and there is not all that much disagreement about what we need to do to fix the problems. At this point we are dealing with an issue of will, do we have the will to solve the problems. Some say we cannot afford to, and I dismiss that argument. It is strictly an issue of priorities, if we think this is important we could afford it. The recommendation that the National Academy has made costs $9 billion the first year, it goes up to $19 billion a year steady state. A lot money? Yes. Last year Americans spent $7 billion gambling on the Super Bowl. They spent $32 billion last year on movies and DVDs. We could afford to fix our education system to invest in science if we have the will.

MR. EVANS: What I would add to that is this trend in the decline of U.S.-born engineering graduates in the United States is something that I have been concerned about and focused on for a long, long time, and it has been underway since the early 1980s. I am particularly close to the University of Texas system and watch those engineering schools and what has been happening there and have talked to students and have talked to the dean. The answers I hear are the lack of excitement or focus and enthusiasm at the K through 12 grade levels, and also the marketplace. People get up to their junior or senior year of high school and what do I want to be when I grow up and where is the market and they start hearing too much about the money they can make if they are an investment banker or get out into the business

world and say I am going to be an investment banker, I am going to be on Wall Street. We have the strongest capital market system in the world and financial services systems in the world, we are the leader in that space and we are going to continue to lead that space around the world, but I hear that too much. There is just not the opportunity seeking in engineering that I see over in the business world particularly when it comes to the markets.

I think it gets solved by doing exactly what Norm, Bernard and others at Brookings quite frankly are doing to just get people talking about it and keep people focused on it and talking about it at the K through 12 level. To me that is the key. You have to get them excited there.

MR. SCHWARTZ: When you go around to American factories you find people who have abiding faith in the American system and they are doing the kinds of things that they want to do. When you speak to engineers and scientists who are already employed, you do not find any lack of enthusiasm or commitment from those people. You know who you do speak to, however, if you go to plants in the Silicon Valley or elsewhere in the country, you see a lot of students who are Asians, you see a lot of Russian students, you see a lot of people from overseas. Not all of those people go back. There is nothing wrong with educating those people because many of them stay here.

By the way, when Toyota wants to reach the American market in automobiles, who do you think they are going to be manufacturing those cars as they are today? So globalization has pluses and minuses to it.

The real challenge, however, is not what the student says in the labs in the United States. The real challenge is to get 53 percent of the American young people who never get to that stage, who do not have a passport into that room, and we have to start that in K

through 16 to make sure that those people have not only the resources but the enthusiasm for entering the system. We are barring those people now from our system and that is the real challenge. We are going to make the other challenges, we are going to compete against China and we are going to compete against India. I think we going to do that very well. We need to some leadership to do that, and I agree with my colleagues up here. But what we really need to do is find a way to get the other 55 percent where the door is locked to Americans.

MR. REYNOLDS: My name is Andrew Reynolds and I work at the Department of State at the Science and Technology Adviser's Office.

I have two things. First of all, this globalization phenomenon. Norm, you made it very clear in the gathering storm, and in fact, everyone has reinforced the notion that this all begins in K through 12 and inspiring young people, young girls and boys.

I wonder if you might go into some additional detail, this is the first question that I have, about the income structure for K through 12 educators, because maybe the real incentive has to begin there. We underpay our educators in K through 12. So aligned with this is the excellence we are trying to push through the American Competitiveness Initiative, but rewarding the teachers in K through 12 for bringing excellence to the classroom before our young students. Could you maybe expand on that?

The second question comes from the notion of popularizing science and technology. Mr. Evans, you perhaps are as well disposed on this point as anyone to reflect on it. How do we mobilize American media to make the roll models in science and technology in fact more public and in front of our young people to demonstrate why we can stand here in this building and have these very important discussions?

The first point is, how do you better pay your K through 12 educators in science and mathematics to start the process earlier in the pipeline? And second, how do we use our powerful media to popularize scientists and engineers in our society?

MR. AUGUSTINE: I will start. Two good questions again. Thank you for them.

Today, America spends more per capita for students in K through 12, as many of you know, than all but two other countries. I think they are Lichtenstein and Switzerland. So we spend a lot of money. The question is how we spend it. A great deal of that goes to administrative noneducational functions. Certainly our teachers are badly underpaid, there can be no question about that, but in some cases the answer is not to pay the same teachers more money, the answer particularly in science and technology where your question focuses is to get people who are qualified to teach science and math to teach it.

Today I think the number is about 68 percent of the ninth graders taking math have a teacher without a degree or a certificate in math. In science I think it is 93 percent have a teacher without a degree or certificate, and they do not want to teachers. There are physical education teachers who are told to go teach algebra. They are not good at it. They do not know the answer to the second question. They dislike doing it, and it shows through. The kids respond to that and they say I do not like science and math. As a result, if we are going to lose a child in terms of interest in science and math, we have lost them by fourth grade. Only 20 percent of the engineers who graduate in America are women and we lose a major part of our talent base. Six percent of the scientists and engineers in America come from the minority population. We lose a very major part of our base, and we cannot afford to do that.

How do we convey the message? I once gave a speech in which I proposed we needed a TV program called "L.A. Engineer." It went about as far as most of my ideas.

(Laughter)

MR. AUGUSTINE: We do have a cultural issue. George Heilmeyer who ran the Advanced Research Projects Agency wrote me an e-mail recently. He had just come back from Russia, and he said, "When I go to Russia I always like to go to the movies because there the engineer always gets the girl."

(Laughter)

MR. AUGUSTINE: We do have some societal challenges, but we have to do a better job like the people sitting here are conveying.

In my career I played a tiny part in putting 12 of my friends on the moon. How good does it get to be able to say that to my grand kids? That is a big deal, and enough said.

MR. EVANS: I was trying to think of how do you communicate the message of how to get the media involved, I guess all I would say is that when I was in junior high and high school, one of the really, really big deals that happened in our school district and in our city was the science fair. That was a big deal. The whole school got excited about it and lots of kids participated in it, we judged all our local ones in high school, and then we went to a regional, and then we went to the city, and then whoever prevailed, and it was a big news item and a big event. To me, there ought to be the Super Bowl of science fairs.

My buddy Dean Kamen up there in New Hampshire, the guy who invented the Segway, he has a program like that that he had kicked off several years ago, but have to create some excitement at the local level. Just trying to think about, I know they have big science fairs in China. I can tell you that. You talk about a lot of young people, I do not know what

the numbers are, they are staggering. They have millions involved in their science fairs, and what do we have? We still have science fairs, but if you want to take a project, let's have the Super Bowl of science fairs and get the whole country excited about it.

QUESTION: How about Hollywood?

MR. EVANS: Yes, get Hollywood excited about it. That is a good place to go to get them engaged in it.

MS. BRAINARD: I am going to take one more question and then we are going to take some time to wrap up.

MR. JERGENS: My name is Colin Jergens from Georgetown University. I am a graduate student. I want to thank you for coming today.

My question is about when you have talked about the importance of high education, particularly Ph.Ds in the sciences and in math. I am wondering about the low-skilled manufacturing jobs and the farm jobs that have sustained tens of millions of Americans for the entire history of our country. Are the days gone when a student can go straight from high school into a good-paying manufacturing job or continue the family farm? If that is the case, do you advocate every American going to college?

MR. SCHWARTZ: I would like to answer the last one, yes, every American should be able to go to college. It should not be a K through 12 program, it should be a K through 16 program. I think that is very important to us.

The first part of your question is even more important I think, and that is, for whom is this new prosperous shiny world going to appeal, and we have to solve that problem. If the United States does in the future what it has always done in the past in investing in infrastructure investment in the United States through public and private partnership, then we

will be able to keep our citizens fully employed. If you think in terms of why should the United States be number 17 in the deployment of broadband wiring throughout the country and you have South Korea as being number 1, we need a partnership of government and private enterprise to get that done.

And the same thing I think you can apply toward alternative energies and the technologies that come out of that, and biochemistry and biomedicine, and all of those things in which we do have an opportunity to be the leader, will also bring jobs to the United States. Those are jobs that will not to overseas because you cannot build a railroad and lay tracks to improve the railroad system in the United States, you cannot do that in a call center in India, you cannot improve the physical plant of our schools and our courts in India, you have to do that here. There is an extraordinary opportunity for us to build a better America and keep America employed if we get a coordinated, consolidated, directed will to do so.

MR. EVANS: A thought I would have is, I don't know if anybody knows how many new jobs we created in America last year, but it was about 54 million new jobs, but we lost about 52 million, so we had a net addition of about 2 million, but we are creating new industries all the time in this country. If you look 100 years back, look at many of the industries that no longer exist, but look at the new industries that we do have, and that is the challenge that America has for the world. When you think about it, we ought to play a leadership role in the world in my judgment. Of 6 billion people on the planet, half of them live on less than $2 a day. So if we really are going to lead this world to a higher standard of living and help bring people up out of poverty and know hope, it seems like to me we ought to do what we can to make sure this global economy continues to grow at its full potential, and an element of it is us continuing to make sure we are leading in the innovation, science, and

engineering space because as Norm said, they are the people who create new industries and new jobs. So that ought to happen around the world.

Is our economy going to continue to change and be dynamic? Of course it is. It always has been. And we will continue to create now jobs. I agree with Bernard 100 percent, if you are going to compete in the new world, it had better be K through 16, not K through 12, it has to be K through 12 plus something. You have to have some degree or advanced training or something beyond K through 12 as we are set up right now.

But try and think of the importance of America's leadership in the world and the kind of world you want your children and grandchildren to live in, and it is not a world where half of the people live in abject poverty. With globalization we have a chance now to let this economy really grow and everybody participate. This is not a zero-sum gain. Let's just grow the global economic pie, and if we continue to lead we will get our fair share. We will get our fair share of jobs, we will get our fair share of standard of living, and we will get our fair share of whatever our fair share is. But it is not a we versus them. Let's lead the world and continue to help lead this place to a place where our children and grandchildren all want to call home some day.

MS. BRAINARD: I am going to ask each of you to ask with a final 60 seconds of wisdom, but I am also going to ask you to make some predictions. I am not going to ask you to predict the Dow Jones tomorrow, but where are we going to be in the World Economic Forum rankings this time next year, and is the R&D tax credit going to be extended and when? Norm Augustine, you first.

MR. AUGUSTINE: The Dow will be down half a percent tomorrow.

(Laughter)

MR. AUGUSTINE: I can't even remember the question, let alone the answers.

MS. BRAINARD: The World Economic Forum competitiveness ranking a year from now.

MR. AUGUSTINE: We will be down next year a couple of places, a place or two, and back up in the longer-term.

MS. BRAINARD: And the R&D tax credit?

MR. AUGUSTINE: The tax credit will probably be renewed for 1 year, but now permanently which is a great disappointment.

MS. BRAINARD: Sixty seconds of wisdom, Norm Augustine, if you care to give some final words.

MR. SCHWARTZ: The first thing I'm going to do when I leave here is call my broker.

MR. SCHWARTZ: I will make a prediction that it is going to be a half a percent up. And what was the second question?

MS. BRAINARD: The competitiveness ranking this time next year.

MR. SCHWARTZ: I don't know, but we are not going to be doing badly. I think the problem is it is not a numbers game. When we talk about the scientists who are being produced in China and India and we look at it when dismal apprehension, they have to be ahead of us in the numbers game. There are 700 million illiterates in China, maybe more. There may be 5 or 6 million illiterates in India. They have to do much better than we do. We have an infrastructure already in place so that when an engineer graduates from our university system he is immediately employed in a high-quality, high-effort, high-skilled game, and the leverage that the infrastructure affords that graduate is significantly greater than happens in

India. So let's not be dismayed by the disparity of the numbers. As we keep our quality up, the numbers will not count.

MR. EVANS: I am not sure how much wisdom this is, but let me just tell you a perception from 4 years of traveling around the world, and that is that the world marvels at America. They look at us, and I cannot tell you how many times I was asked, How does America accomplish so much in only 200 years? We are a young country, and I would always tell them that it is our freedoms, it is our free-enterprise system, the American people are good people, they wake up every morning trying to do the right thing.

The point I would make is I am not sure where we will be ranked a year from now, hopefully we are up some, but we should always be number one when it comes to leadership in the world and that is what we cannot I think lose sight of, thereat responsibility that we have to lead this world in a direction that we would like to see it go. That is what I would impart. Let's do continue to lead. Science, technology, and engineering are absolutely key to that.

You also asked about the R&D tax credit. I think that is asking me to predict what is happening on November 7, because if I knew what was happening on November 7, I would have a little better feel of what was going to happen—

MS. BRAINARD: You are welcome to do some other predictions, too.

MR. SCHWARTZ: Wait a minute. Norm and I are stepping out about tomorrow's stock market. The least you could do is step out to the November 7 elections.

(Laughter)

MR. EVANS: My crystal ball is not any clearer than anybody else's right now, believe me.

MS. BRAINARD: I want to ask everybody to join me in thanking our panelists. I think we came away with a message somewhat of optimism, but the need for will. Thank you very much for that.

(Applause)

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