

**Craig Barrett, Chairman Intel
Addresses the Heritage Foundation on
American Competitiveness and Innovation Leadership
May 9th, 2006**

Introduction by Philip Truluck, Executive VP, Heritage Foundation:

I think all of you probably know Dr. Barrett's background, I'll just give you a couple of things though. He's worked for Intel since 1974 and he has been, he is now Chief Executive Officer and Chairman of the Board; he's the Chairman of the Board since May of 005. And before that he was an engineering professor at Stanford for ten years, and that's also where he earned his Ph.D. and his Master's degrees in material science. I think as all of you know and you've seen some of his work on this; he is committed to raising academic standards and to improving schools. He has testified for Congress about strengthening math, science and technology education. And that's some of the things he's doing here as well. Today he's having some meetings with congressmen.

He has also advised the President about education issues and has been a very outspoken advocate for higher standards in schools. And I guess the immediate reason that Dr. Barrett is with us today is that tonight he will be receiving the National Science Board's 2006 Public Service Award for his leadership in science and engineering policy, and for spearheading education programs that provide the impetus for a new generation of science, technology, engineering and mathematics professionals. And under Dr. Barrett's leadership Intel now invests about \$100 million a year in 50 countries to improve math and science education. I'd say probably a better turn on its money than most of the money spent in education.

Ladies and gentlemen please give a warm welcome to Dr. Craig Barrett.

Dr. Craig Barrett, Chairman Intel Corporation:

Thank you, I need to make one slight correction. I'm no longer CEO therefore I'm no longer concerned about Sarbanes-Oxley, (laughter) which is probably the best aspect of being moved up to the Chairman's office.

It is a pleasure to be here to talk a little bit about competitiveness and I want to put that in the following context. I think there have been three interesting publications in the last year or so. One was Tom Friedman's book on the flattening of the world and competitiveness, which was really targeted at the lay person, but I think put the situation of international competitiveness in the right light.

Clive Prestowitz from Washington, ESI, wrote a book called *Three Billion New Capitalists*, which is a little bit more technical book on competitiveness, following Friedman's book, but talked about really the influx of China, India, Russia, and Eastern Europe and a few other countries into the free economic system in the last decade, and those three billion new capitalists and how they're impacting competitiveness and the potential dislocations associated with bringing that many new people into the world's free economic system almost overnight in economic terms.

The last publication came out basically last fall, which was the National Academy's report, *Rising Above the Gathering Storm*. And I was one of the authors on that. The report basically says nothing new. It effectively rehashes trends that have been going on in the United States and the rest of the world for the last five to ten years, some instances trends even longer than that, but put it in the context of U.S. competitiveness. And the basic kernel in all three of those publications is essentially the U.S. has the highest

standard of living, U.S. economy is doing very well right now, but every leading indicator is moving in a negative direction, and people ought to realize this and respond to this.

The other assumption in the three publications is that people enjoy the standard of living in the United States, having the highest standard of living in the world, the only way to continue with that standard of living is the average U.S. worker has to add more value to everything they do than any other worker in any other country, or you can't sustain that standard of living with that per capita income. If you translate that into very simple terms it says you really can only do about three things to be competitive going forward. If your workers have to add more value, you need to have the best trained work force in the world, and we can talk about that in just a second, but it means the best trained work force, not only for entry level positions but for well educated positions.

It also says you need to put smart people together with smart ideas. So the whole concept of innovation in the United States and value creation or new corporate creation, creation of new business models, new products, new companies, new service entities, you have to have those new ideas. And if you want to think of ideas, just think of companies like Intel or Microsoft or Google or the next great idea that comes along, and typically where they come from, they come from investments and basic research and development of some type, either spawning the transistor or the computer or the next search engine. So you need great ideas, and we'll talk about where great ideas come from as well.

And the third you need is an environment to succeed. And environments to succeed come in a variety of formats. In today's timeframe they come from government rules and regulations and tax rates and incentives for investment and innovation and communication

infrastructure. They come from all those things that make it easy to create new businesses and make people want to take the chance to create a new business.

If you then just go back and say those are the three things that you have to play with, those are the three buttons you have to push to make an economy or a country competitive and you assess how the U.S. is doing. On the education side, we still have the best-advanced education system in the world; our universities still rank at the top typically. It's a very competitive environment, which is perhaps why those universities do so well. But the rest of the world has seen the U.S. model and has rapidly tried to copy that. And, in fact, if you just look at the output of engineers and technicians and scientists out of our university system you'll see that we're already being dwarfed by other countries in that area, although we still have the best research universities in the world.

If you take a step back in time from that to the K-12 system it's hard to find one average indicator of the U.S. K-12 system that's positive, moving in a positive direction. I read in the paper today an article which was comparing the Boston public school system to the D.C. public school system and it basically was extolling the virtues of Boston and how improvements they've made, and it cited two examples. And I think I have the numbers right, in fourth grade Boston students had increased their reading comprehension to the proficiency level; they had gone from something like 16 to 25 percent. And an eighth grade mathematics proficiency had gone from 11 to 17 percent.

I read it entirely the opposite way of the reporter that reported it, which was roughly 80 percent of the kids were not proficient in reading and over 80 percent were not proficient in mathematics. But that's kind of the acceptance level of mediocrity in K-12 today. There are some wonderful examples in charter schools and private schools and

some in this area, but on average our young children by the time they graduate high school rank in kind of the bottom 10 to 20 percent of their international peers in mathematics and science. And if you believe that mathematics and science are key to any economy's competitiveness in the future, you have to say that's a leading indicator that's absolutely pointed in the wrong direction.

If you look at the second area, which is ideas and the investment in research and development, U.S. still invests more in R&D than any country in the world by a large shot. A lot of that's invested in the Department of Defense and smart weapons systems and it's not particularly related to commercial ventures. But still basic R&D we excel. The NIH budget has doubled in the last five years or so. It's been great. The President talked about increasing the National Science Foundation budget over the next five years, doubling that, that's great. Congress passed a resolution about five years ago to double the NSF budget; it's only gone down since then. So there's quite a difference between talk and action in this area. I think the key issue is that we spend about half as a percentage of GDP in basic research that we did some 20 or 30 years ago.

And the key here is really research that's done in universities, because that is the basic research laboratory of the United States. It used to be Bell Labs, it used to be GE's research lab and Ford's research lab. Today, it is in fact the tier one research universities of the United States is the research lab of the U.S.

And continuing to invest in basic R&D in universities is to our competitiveness; it creates new ideas, it educates students, it educates faculty, and it creates businesses. It creates products. It creates the Googles of the world or the Intels of the world, the Microsofts of the world. Even though Bill didn't graduate from Harvard, he left Microsoft

as successful today because of the well educated people they get out of our research universities.

The third thing you can play with is the environment for success. And in this area I do have the advantage I get to travel to about 30 countries a year and I look at environments for investment and innovation in countries other than the United States as well as here. And you can see wonderful examples, you don't even have to compare the United States to other countries, you can compare our Western European allies, like France and Germany to countries in Eastern Europe or countries like Ireland and you see where the investments are going in the future. They're going to areas with relatively low tax rates, incentives for innovation, good education infrastructure and where governments are welcoming investment because investment creates jobs. And they are typically willing to forego high corporate tax rates to provide high paying jobs which give their own tax stream back into the system.

If you look at the Irish miracle in the last 15 years going from the bottom of the European Union to the top performing economy in the European Union, there are two critical issues in my mind. This is a paid political announcement: Intel is the biggest investor and about the biggest employer in Ireland, but the two things the Irish government did right is they lowered the corporate tax rate from basically 40 percent to 12 percent, Intel went there early we got 10 percent, it was great, and they have a good education system. But before they lowered the corporate tax rate to invite investment in Ireland they exported every engineer that they educated in Ireland. It was only in the last three or four years that they started to re-import those ex-pats back into the country, because of job creation.

But it's not just tax rates; it's communication infrastructure; it's incentives for investment, R&D tax credits. All of these things which create incentives for companies to make investments in countries, to grow their work force, grow their products, grow their capability.

And if you read the book, *Rising Above the Gathering Storm*, authored by the 20 National Academy members, it's a whole series of recommendations that focuses on these three topics: improving math and science education in K-12; educating more math and science majors in the university level, some of them come back to teach, it talks about increasing the federal R&D investment in research and development in our universities; and it talks about a series of issues to in fact promote investments in innovations in the United States.

I don't know what else to do in the U.S. to turn around every one of those negative leading indicators. And you could go down the negative indicators; it's not just k-12 education, it's patent applications, it's technical publications, it's new business start ups, and it's the competition coming across the board from the new entrants into the world's free economic structure. I just don't think the U.S. is paying attention to this at this point in time. That's why I welcome these publications that I've mentioned in terms of they're describing the situation and trying to galvanize action.

The President raised this issue with his American Competitiveness Initiative in the State of the Union message. I applaud that initiative. It doesn't exactly follow the National Academy's suggested list, but it's close enough. And it does tend to focus the Congress and focus the country on a competitive thread.