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May 31, 2007

ECONOMY: Hillary Clinton Speech and Q&A on Innovation

It is a real pleasure for me to be here, speaking to the Silicon Valley Leadership Group, which I understand has been around for nearly 30 years. It is hard to believe that 30 years have passed but it is clear that those 30 years revolutionized our country and our world. And I am grateful for the contribution that all of you have made to that revolution.

[Click here to read Hillary's innovation agenda.](#)

You know it as well as anyone, the benefits that spring from globalization. It has lifted more people out of poverty around the world than probably any other advance in recent history. It has certainly helped expand our prosperity here at home in many important ways. Again, it is inevitable. So, there is no escaping this and what we have to do in America today is figure out how to best harness the force of globalization to ensure a continuing quality of life and standard of living.

But I have to tell you, here in the Silicon Valley, based on the work that I have done for many years, and in particular as a Senator from New York for the past six and a half years, and now as a candidate for President, there is a deep sense of anxiety in America. It is an anxiety that is rooted in the reality that for many Americans, they have seen their wages stagnate. They have seen the price of everything else that they need in life, health care to college tuition to the price of gas at the pump, continue to go up. And they believe that somehow they are not getting ahead, despite the fact that many of us here, and millions of others of us around our country are.

I think that the fear that our prosperity will not be shared has very serious consequences for not only our economy but for our society and for our politics. And certainly the policies of the last six years have done little to assuage the fear that people feel. Over the past six years, while productivity has gone up 18 percent, average family income has gone down 1,300 dollars. The result is a pessimistic view that America can't win in the global economy unless the middle class loses.

Well, I believe we ought to hit the restart button on the 21st century because America not only can but must succeed in the 21st century. And it's time for a thoroughly modern and optimistic, progressive vision for how we do that.

Now, I've given a series of speeches outlining what I believe that vision should be. I've talked about reforming our government so it works for the vast majority of Americans. I've outlined a series of steps to ensure that prosperity is shared and that equal opportunity is real. And today, I want to discuss policy that I believe would help us promote innovation and steps to spread the benefits of that innovation throughout America.

That means dedicating more resources to areas like alternative energy and basic research and involving more people in the innovation economy. There is no doubt in my mind that American ingenuity is the key to greater prosperity in the face of global competition. That's what set us apart in the 20th century, and combined with the right policies to create opportunities for all, it will set us apart in this century.

Unfortunately, while other nations have marched ahead, we've been marching sideways. Over the past twelve years, while American investment in research and development has remained relatively static, China has doubled the share of its national wealth invested in R&D. The European Union has set a goal of increasing R&D investments by member states to 2.5 percent of GDP by 2010, nearly matching us. The education pipeline, the source of future innovators, reveals the same trend. Between 1970 and 2000, as many as of you know too well, America's global share of PhDs in science and engineering declined from 40 percent to 20 percent. That rate is expected to drop to 15 percent in the next 3 years. Too few of our college students are studying the STEM subjects: science, technology, engineering, and math.

Our innovation infrastructure is falling behind, too. We've dropped considerably in our broadband deployment. Depending on which survey you look at, it's going to be 12th to 25th. The bottom line is it is not good news for what we're trying to achieve.

Now in this debate about how to move forward, too often policy makers will wall themselves off into two competing camps. There are those who say there is nothing to worry about and others who say there is nothing we can do. I have familiarity with both camps, and I believe both are wrong. For those who say there is nothing to worry about, I think that their rosy scenarios are doomed to failure and they will be unfortunately proven wrong. But at what cost? And for those who say that's just the way the rest of the world works and we can't really do anything about this, I think that's a streak of fatalism that I find profoundly un-American.

America remains the preeminent destination for discovery, but our global leadership and vision did not happen by accident. It took smart, forward thinking policies that used what was right about America to make America stronger. Yes, global competition is a challenge, but it is also an opportunity to lead the world in new fields like nanotechnology, while lifting up our standard of living and opening up new markets to American products.

Energy dependence is the greatest innovation challenge that America has faced in generations. It is also an unparalleled opportunity to start new green industries and reduce our dependence on foreign oil. Climate change is a major threat, but if we act to address it rather than ignore it, we could move toward new renewable energy and create millions of new jobs here in America.

I mean just think about it, America was built on innovation. One of my favorite examples is President Lincoln, in the middle of the Civil War, a war that no one could predict that he would win and keep the Union together, decided to give the go ahead for two major national endeavors, one to complete the international, in the sense of cross-national, railroad, you know, to be able to go to from one coast to the other. The second was starting a system of land-grant colleges. Imagine the optimism it took to be sitting in the White House getting so many reports of dire outcomes in battles across the East Coast and to think when this is over we are going to need places to educate the next generation.

Obviously, we had the same spirit of can-do progressivism at the turn of the last century; during the Great Depression; there is a highway system under President Eisenhower, putting highways where people didn't even live yet with the confidence that they soon would. The space program is a perfect example. And we certainly can point in the private sector to two guys in a garage named Hewlett and Packard or a team of researchers working for the Defense Department on a technology called "Stealth," and see how the partnership that was forged, starting in the 1950s and into the 1960s, had such far reaching consequences for both the public and the private sector.

A culture that values and invests in ideas is part and parcel of the promise of America. And we have always supported that culture with public investments that accompanied our entrepreneurial spirit, the availability of capital, and the best university system in the world.

Now, what is happening today is we are not realizing either the benefits of those earlier investments or keeping our eye on the horizon as to how we, in this generation, in this century, will make our own contribution as a part of America's

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innovative agenda. Think about how the first lanes of the information superhighways were laid by our researchers. They built a new way of sharing information because of an insatiable appetite for data in the pursuit of discovery. Hugely consequential advances in logistics were pioneered by American companies. And we know that America may well be the land of opportunity, but it's also the land where people keep their eyes on opportunity costs.

The fire that was sparked here in this valley has made such a difference but it can't just be allowed to sputter out. There has to be a partnership again between our government and our great companies and the entrepreneurs who yet have not discovered what it is that will revolutionize the way we live today. So, what are we to do and how do we do it?

Well, today I'm proposing a nine-point agenda to renew the promise of America, create good jobs, and bolster our capacity to innovate. Investing in alternative energy and basic research. Strengthening our science, engineering, and mathematics workforce. Reinforcing our innovation infrastructure through broadband with better incentives for research and development. Restoring scientific integrity in Washington.

First, I propose a national commitment to solving the energy and global warming challenges. A \$50 billion Strategic Energy Fund, paid for in part by closing the tax subsidies and loopholes that the oil companies still enjoy. It's almost impossible to imagine we are still subsidizing companies that have made the largest profits in the history of the world. Now, I do think there is a role for subsidies, and I'll get to that in a minute, but for mature companies in mature markets, that has to be carefully considered.

This fund would invest in technologies available right now, to promote conservation and combat global warming, end our dependence on foreign oil. The fund creates an energy initiative modeled on DARPA -- the Defense Advanced Research Project Agency. We bring together, as we once did in DARPA, the best minds in the public and private sectors to think outside the proverbial box. To do high risk, high reward research we can't even predict what the benefits will be.

I know that the Silicon Valley Leadership Group has just put forth a 12 point campaign with an agenda called "Clean and Green," and I just received a copy of that and I look forward to looking at it. But winning the 21st century energy race is as important and as potentially productive and profitable as winning the 20th century space race. We can safeguard our environment, grow the economy, protect our security, and create millions of good new jobs.

I think that if you look at the experiences of other countries, you can certainly see the economic impact of this. United Kingdom signed Kyoto when we didn't. And not only did they meet their earliest Kyoto target to reduce greenhouse gas emissions, but they created thousands of jobs, they kept unemployment low, and wages increased.

Instead of leading the world in oil imports, America can lead in green technology exports. I know that this organization is holding a series of events on this, and that Applied Materials is doing innovative work with solar technology. I believe, however, that in the absence of a national effort, modeled on the Apollo project for example, it will be very difficult to bring to scale and commercialization the changes that we need and that we can produce with the proper incentives. The country that split the atom can end our dependence on foreign oil and launch an energy revolution. We can call it Energy 2.0.

Second, as President, I will increase support for basic and applied research by increasing the research budgets at the National Science Foundation, the Department of Energy's Office of Science, and the Department of Defense. We'll boost funding by 50 percent over 10 years, with a greater emphasis on high-risk, high-return investment.

Unfortunately, under the Bush administration, spending on basic and applied research has declined in real terms four years in a row. DARPA -- where basic research led to the precursors of the internet, the computer mouse, and so much more -- is putting less of its resources into truly revolutionary research. In fact, DARPA is becoming

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much more problem-solving oriented, and there is a reason for that. When you look at how difficult it is to combat the improvised explosive devices in Iraq, it's understandable that people would be put on overtime to try to figure out how to jam the signal -- how to do anything to prevent them from exploding or being placed in the first place.

Why is it an either-or? And why don't we continue to fund what we need to for our military and their protection for both defensive and offensive purposes, and put the money in that we need to continue the kind of cutting edge research that has produced such great results?

Often investments in basic research take decades to pay off, as so many of you know, or they don't pay off at all. That's why the private sector devotes only 5 percent of all its resources to basic research. But when this type of work leads to big breakthroughs, applied research, and eventually to new tools and products, the entire economy benefits. And I think government can work in partnership with the private sector by taking the lead in funding these kinds of "blue sky" endeavors.

Third, I propose we increase the National Institute of Health budget by 50 percent over five years with the goal of doubling it over the next decade. What is happening with NIH is particularly troubling. We know that NIH funded researchers have produced breakthroughs and treatments for heart disease, cancer, AIDS and so much else.

The NIH budget was doubled between 1998 and 2003 and universities and researchers had high hopes for continued funding and we truly are on the brink of so many important breakthroughs. In the years since, the rug has been pulled out from underneath a lot of our best minds. The President's budget for 2008 actually cut funding. The consequences of unpredictable and declining resources are halted construction on new laboratories, fewer grants for researchers, uncertainty in current projects, and less support for creative, outside-the-box ideas being investigated by younger researchers.

Nobel Prize winning biochemist Roger Kornberg recently said, "In the present climate especially, the funding decisions are ultraconservative. If the work that you propose to do isn't virtually certain of success, then it won't be funded. And of course, the kind of work that we would most like to see take place, which is groundbreaking and innovative, lies at the other extreme."

America has led the world in biotech research but we cannot rest on our laurels. Singapore is investing massively in biotech. European communities aren't standing still. Investments in NIH will not only help lead to cures, but will grow the economy.

Fourth, I am proposing renewed commitment to multidisciplinary research, such as a combination of biotechnology, information technology, nanotechnology, a greater emphasis on public-private partnerships, and new efforts to promote collaboration and off-the-grid ideas.

Here is an area where America has a unique, built-in competitive advantage. No other nation lays claim to the depth and breadth of excellence across different scientific and technological fields than we do. By bridging areas of expertise, we can bridge gaps in our understanding. And as well you know, sometimes the best answers involve approaching an old question in a new way.

For instance, we should increase investments in non-health applications of biotechnology. NIH funded effort dominate life science's research but few programs explore non-health applications, such as bacteria that could dramatically reduce the costs of cleaning up Superfund sites.

Another important step we must take is in health information technology. Bringing the efficiency of the information age to medical care -- through electronic medical records, for example -- can save money, save lives, and prevent mistakes.

I have been working on this for more than four years, I started with former Senator Frist in a bipartisan effort to create a framework for health information technology. We finally got it through the Senate, but it died in the House. We're going to try to

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bring it back and get this done once and for all. And I know some of the companies represented here have been very helpful in thinking through the architecture of a health IT system for our country.

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We should invest in e-science to accelerate the pace of discovery. You know as well as anyone, information is only as useful as the means of putting it in useful hands. Billions and billions of data points are waiting in laptops and flash drives and paper files -- waiting to become the next great medical discovery or understanding of how to stem global warming. By investing in new tools to help scientists collaborate, process information, and share data, we can unleash a wave of discovery and benefits to our society.

Promoting these new collaborations between universities and industry is also essential. We have to fill the gap left by the decline in great private sector research institutions like Bell Labs, which produced technologies like the laser and many world-renowned scientists.

One other idea: let's use competitive prizes to encourage innovation. We've got all these reality shows about singing and modeling and hair styling, and you name it. Well, let's do some reality shows about innovation, and let's have some cash prizes out there to get young people to start thinking that way. I've long said that if we could have some really good programming about math students and engineers that would get people excited. We have so many kids who now want to go into forensics because they've seen it on TV.

If we propose prizes to be part of our budget at our research agencies, we could seek out new ideas from unexpected places. We ought to try to construct buildings that use onsite renewable energy technologies. I'm holding a contest to pick campaign theme song, and my campaign got ideas we never would've thought of from very unusual sources -- look at YouTube and you can see that for sure.

While investing in ideas and research, we should also invest in skills and education. This has become almost a cliché, hasn't it? And I have had countless meetings with people from the Silicon Valley and in Silicon Valley bemoaning the shortage in the skills that are needed.

But I hear that across the country. There are auto mechanic jobs we cannot fill today. Thousands of them, making 50, 60, 70 thousand dollars. There are airline mechanic jobs that we can't fill -- there are so many jobs that we can't get the right mix between the person and the skill and the job. We need a much better approach to doing this.

Now, with respect specifically to innovations, I propose tripling the number of NSF fellowships, and increasing the size of each award. We need to treat our young scientists and engineers with respect and provide real rewards. They should know that our country needs them, because in fact we do.

I've talked to many people who went into math, or physics, or chemistry after Sputnik and the space program which peaked their interest. They're all reaching retirement age. You think there's a skill shortage now, project it out a decade and we're going to be in real trouble if we don't figure out how to get the pipelines built.

Now, light bulb moments require electricity. And education is the ultimate innovation prerequisite. Unfortunately, here again we are ceding ground to other nations. 50% of the undergraduates in China are earning degrees in science and engineering; in America the rate is 15%.

The U.S. instituted National Science Foundation fellowships in response to the Soviet Union and the space race. In the decade since the number of grants is largely unchanged, despite a three-fold increase in the number of college students graduating with science and engineering degrees. So we face different challenges, but we need a similar commitment.

I co-sponsored the America Compete Act, which recently passed the Senate, to increase the advanced classes for high school students in math and science, and to put more people in the scientific and engineering pipeline. We have to act now to

improve education and research in science, technology, engineering, and mathematics in order to retain our leadership. And we've got to start using new ideas.

My husband recently spoke at a school that he and I started in Arkansas -- the Arkansas Math and Science High School. And it was started because there are a lot of young people around the state who cared about math and science, but their high schools couldn't offer a very challenging curriculum. It's a boarding school and kids come from all over, and they come mostly from small towns. There were only, I recall, maybe 88 graduates, and they brought in \$9 million worth of scholarships because in that environment, which was self-selected and which drove a really high standard, they responded.

So I think we should do even more to think about how we are going to find these skills. It may be that we need more of these public boarding schools. Let's think about how we really make math, science, engineering and technology attractive.

Two of my proposals were included in the bill that passed. First, I would create new fellowships at the NSF to allow math and science professionals to become teachers in high-need schools, and to train current math teachers with expertise to become mentors and professionals.

These are modeled on two successful programs in New York. I also included a study to be conducted by the National Academy of Sciences to investigate promising practices in math and science education.

We obviously need to do a better job of reproducing educational excellence and we need to have national standards in math and science education. There's not a difference in algebra across state lines and we act as though there is, and it's time to say enough. We need national standards, at least, in math and science.

Sixth, we have to open the doors of science and engineering to more people, especially women and minorities. We've done a great job bringing the best and brightest from around the world but we have to do more to get women and minorities to be involved, and as president I will try to promote that, to tap new sources of talent and to set examples by having a greater public awareness of what awaits. You know, one of my favorite people is the president of RPI in New York who previously was the head of the Nuclear Regulatory Commission. She's the first or the second African American woman to receive a PhD in nuclear physics. Well, I don't know if enough people know about her and know about what she has done with her life and how she can, perhaps, serve as an example for others.

So we need to do more and we have to also recognize the shortage that exists now. So I am reaffirming my commitment to the H1B visa and increasing the current cap. Let's just face the fact that foreign skilled workers contribute greatly to what we have to do in being innovators. And certainly that's understood well here in Silicon Valley where more than a quarter of highly skilled professionals are immigrants. But I would hope that we could do more of what I've suggested simultaneously. Yes, increase the cap; yes, try to get green cards for those who graduate from our colleges and universities after we've trained them so they don't go home, let's try and keep them here. There's a lot we can do to deal with the overreaction, in many ways, post-9/11, but let's also think about what else we're going to do here.

One thing that I would offer for your consideration is whether it is possible to create some kind of continuing education or curriculum that could be available because what I find as I travel around the country are engineers who come up to me and say, "I've been an engineer at this country for 12 years or 18 years, and now I'm being asked to train my successor because my job is being outsourced. What am I supposed to do?" Well, if that engineer's talent and skills truly are not marketable in the current from, then what can we do to try to make them marketable? How can we create that opportunity?

Seventh, as president I'll ensure we have a national commitment to broadband. Now we need to invest in our infrastructure and, what the railroads were to the 19th century and electricity was to the 20th, we know that innovation tools like broadband are essential to the economy of the 21st century. We should not be satisfied with our

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standings slipping year by year. We are the birthplace of the Internet, but our broadband infrastructure is stuck in adolescence. And I proposed an agenda to bring the information age economy to every corner of our country. It is possible to do this. We need national leadership. I've introduced broadband proposals, we're going to keep working on this, but it's critical if we're going to connect up the country.

Eighth, I've proposed overhauling the research and experimentation tax credit. Let's make it permanent, more effective, and larger if necessary. We will not get exciting new applications unless we encourage companies to invest in research -- and do it in America. The R&E tax credit is used by more than 15,000 companies who might not otherwise put many dollars into innovative ideas. We have failed to make the credit permanent; we always renew it year-by-year. It needs to be made permanent not only for the practicality but also as a symbol of what we believe about our future.

And finally, a culture that values innovation requires a government that values facts.

I am just often struck by how hard this Administration has tried to turn Washington into an evidence-free zone where the facts are subordinated to partisanship and where evidence was disregarded in favor of ideology. The integrity of science has been under assault for six years, and whether it was mercury in our water or carbon dioxide in our atmosphere or decisions over women's health, ideologues called the shots. Everyday, here in the Valley, you make decisions based on facts and evidence, not preconceived notions. I don't think it's too much to ask that our government does the same.

In April, I outlined a comprehensive government reform agenda, and this was an important piece. Now way back in the 1990s, Congress had an Office of Technology Assessment that was charged with just one task: telling us the truth about science, sorting out the competing claims, and to the best of the scientists' abilities, telling us what to believe. For decades they cut through the myths and the spin on everything from Star Wars to AIDS prevention to solar technology. It's time to put this office back in business, because how can we as a democracy make good decisions if we either don't have the facts or if they are actively withheld from us? And if we're going to reap the benefits of innovation, we have to take every step to ensure that our trading partners adhere to a standard of intellectual property protection similar to what we have in the United States.

I know that intellectual property piracy costs companies millions of dollars every year and that piracy and counterfeiting hit our high-tech companies more than any other sector in the economy. So let's get back to free and open scientific enquiry and the promise and provenance of a free and open society, and let's also take the steps necessary to protect the results of that free and open enquiry.

So do we face big challenges? Yes. Is our economy changing? Of course. But we've done this before and I'm confident we can do it again. Call me an honest optimist or a practical visionary, whatever, but I believe this is all doable because we are a nation of innovators, and you are both the beneficiaries and the benefactors of that innovative culture. And it is a culture of ingenuity, and in its absence we cannot expect to continue the standard of living and the quality of life that have marked our country, that have served as such an inspirational route to the American dream.

We need leadership to get this done; I believe America is ready for change. Obviously I'm offering myself to lead that change because I believe it is one of the most important issues confronting us, and I want to hear your ideas and to work with you. Call this version 1.0 of my innovation agenda, so after collaborating with some of you we'll perhaps tweak it and fine tune it, but the ultimate consequence of this has to be leadership that once again sets our sights on the stars and gives us the tools to get there.

Thank you very much.

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