

**Secretary of Energy Steven Chu**  
**Address to National Science Bowl Participants**

Monday, May 4, 2009  
National Building Museum, Washington, D.C.

Thank you. It is true that I've gone to several science bowls. It is not true, however, that I could have answered all the questions but I probably would have been eligible to be a contestant.

First, let me congratulate you, all the participants who have gotten this far in the science bowl. I think it's a wonderful thing as I watched the Lawrence Berkeley National Lab play host to the local area and certainly watching the face-offs and the competition was a great testament to the youth of our country.

Let me tell you how important I think it is that people like you are interested in science. I was on a committee that put out a report called "Rising Above the Gathering Storm." It was chaired by the former CEO of Lockheed Martin, a very distinguished group of people. Roughly a third of them were scientists, a third were CEOs of various companies and a third were university presidents. And the charge of the committee was very simple – how was the United States going to be competitive in the 21<sup>st</sup> century given the way we trade with other countries and given the fact that low-cost manufacturing could be driven overseas quite easily and many of the other issues.

And the answer was quite simple – the way that the United States is going to maintain its present and future prosperity is by nurturing the intellectual capital of America. And in particular, the intellectual capital of the young budding scientists and engineers. This was a very simple question; it was a very simple answer – train more scientists and engineers. And I think that you being here today is something where, not to put too fine a point on it, the future of the country and the future of the world depends on people like you.

When I was younger than you -- considerably younger than you I'm sure -- in 1957, something happened. Russia, the Soviet Union, put Sputnik up in the air. And then in 1960, President Kennedy made the announcement that within one decade, the United States was going to put a man on the moon. And what happened, beginning in 1957 and 1960, was an incredible investment into the future prosperity of the United States. That there was an incredible investment in science and I was a benefactor of that.

When I was in high school, I went to science programs sponsored by agencies like the National Science Foundation. When I was an undergraduate, I was a participant and a benefactor in this big thrust for science, and when I went to graduate school, I got a National Science Foundation graduate fellowship and I did my post-doc I got a national Science Foundation post-doctoral fellowship. All designed to train and support young scientists.

And so we are pledging, President Obama, and the rest of us in the administration are pledging to do a similar sort of thing today. And I just want to quote from a speech that President Obama gave addressing the National Academy of Sciences on April 27<sup>th</sup> of this year. And he said, “We know that progress and prosperity of future generations will depend on what we do now to educate the next generation. Today, I’m announcing a new commitment in the education of mathematics and science. Through this commitment, American students will move from the middle to the top of the pack in science and math over the next decade. For what we know that the nation that out-educates us today will out-compete us tomorrow. That’s why my administration has set a goal that will greatly enhance our ability to compete for the high-wage high-tech jobs of the 21<sup>st</sup> century and foster the next generation of scientists and engineers. In the next decade by 2020, America will once again have the highest proportion of college graduates in the world.”

And he goes on to say just how important science and math education is.

So, you, as one of the representatives of our future, I urge you, please stick with it. I should also warn you that it’s not all fun and games. That sometimes when you make this transition to college, that learning science can sometimes be pretty painful. But you should never lose sight of the fact that during those painful times, that fundamentally, it is an incredible occupation.

When I was in college, I fell in love with science. Actually, I was told to fall in love with science when I was in grade school. My parents gave me this option. But, I did in fact fall in love with it through junior high school and high school. When I got to college, there were times when it was not a good experience and I felt a little bit discouraged. , I remember one particular instructor professor in my sophomore year. I was majoring in both mathematics and physics at the same time. And I thought perhaps I should just go over into mathematics and forget about physics.

But I did stick with it in part because somehow in my bones I felt I was more a scientist than a mathematician, even though in math you can accelerate much faster and so by the time I was done with my sophomore year, I had finished all the undergraduate classes in mathematics and was beginning to take graduate classes. I still felt that I was probably going to be a better scientist.

It was the love of the material, even though I had some less than spectacular teachers, I had some others that were great. But it was actually the love of the material. You go to graduate school. You take lots of courses. And something magically happened to me when I was in graduate school.

About this time, after one and a half years, I began to do research. And all of a sudden, it became much more fun. I cannot tell you how much more fun it is to go from reading textbooks and doing problem sets to actually beginning to read papers and beginning to think of all the things that we don’t know and trying to design ways to find out questions that we don’t know the answers to. And it was incredible that it suddenly transformed my life – that instead of reading a textbook, ‘hmm I’ve got twenty more pages, pain pain

pain. I've got ten more pages, looking at the clock, looking at my textbook.' It went to an era where I forgot about time. I got so wrapped with what I was doing that I would simply forget about time. I would simply forget about getting hungry.

Weird stuff was beginning to happen. I really got into a mode where I could go six, eight hours and forget to eat. And now in my later life, this gets me in trouble with my wife, because I would forget to come home. You know, eight o'clock, nine o'clock, oops. And so now she calls me and says "last warning." So it's being fixed.

So that's something that I think, if you stick with it, you can look forward to. That your job becomes your hobby. And it's so exciting to be working with people whose basic mission is to understand how nature works, to understand how the world works in its various forms.

In addition to that, science and technology are going to be used to help America and the world solve many of the important problems of our time. And in particular, the energy and climate change problem. Many of you know that this is a very, very serious problem. It's a problem that we, of previous generations, have given to you.

We know that we don't have today all the technology that we will need in order to solve the problem. The world will want energy but it needs clean energy. And as developing countries grow and prosper -- and they have a right to do this -- we have to develop those methods to use energy as efficiently as possible and to develop those things that will allow us to generate energy

If we don't do this, there will be very dire consequences. That led me to actually shift careers six years ago. I loved what I was doing in science, but I had to turn my attention to helping the country and the world with this problem. So I encourage you also to consider this is sort of a call to arms. if you will. It's a call to arms not to really fight a common foe, not to fight another country, and that common foe is the dire prospects of climate change.

So in any case, I just wanted in closing to say congratulations again to the winners, to all of you really. I hope you stay in science. It's a very exciting area to work in.

Thank you and congratulations.