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Discussion following the Remarks of Thomas Brzustowski and the Honorable Kelly H. Carnes

Dicussion

economy, that makes less and less sense, and we ought to be looking at areas where we can actually learn from research and work going on in other countries, and I don't think we are very well equipped to do that at this point.

In addition, we have this whole set of regulatory regimes and requirements that are based on the belief that U.S. companies providing maximum benefits to the United States. In addition, we have to grapple with the societal and ethical implications of some of the new kinds of technologies that are coming down the road such as nanotechnology and stem cell research. We have to address our education challenges, and we have to move beyond our traditional ways of thinking. That's why I go back to the point; we still are investing on the Vannevar Bush model, even though we have done many things over the years to address some of these issues and challenges. But the new part of our portfolio is less than 25 percent of what the United States government invests, and I think that here we are at the beginning, relatively the beginning of a new century, and it really is time to embrace those challenges. And it is my hope that the next president, whoever he or she is, will take that on as a challenge and will fundamentally reassess what the United States is doing as we go forward into the 21st century.

Thank you very much.

DISCUSSION FOLLOWING THE REMARKS OF THOMAS BRZUSTOWSKI AND THE HONORABLE KELLY H. CARNES

MR. SISTO: Thank you, Kelly; a very, very good and thorough review of the current state and a few comments regarding the future. What I did not mention, when I mentioned the students I was with, is that the majority of them are IT candidates, who have had early and intensive exposure to math and science; so, I do think that, hopefully, if we continue in that trend of introducing them at an intensive stage and earlier stage in their schooling, we will have more U.S. students coming out with an interest in math and science as a career.

My question is to lead off – is that all right, Mr. Chairman? May I ask a leadoff question?

DR. KING: I have a question.

MR. SISTO: I guess I can't. Do you need a microphone?

DR. KING: Yeah. How do you equate the transfer of U.S. research overseas to these other countries with our own self-interest or national policy? Should there be some restrictions on it? Are there limitations? Does it benefit the U.S. economy?

In other words, I see research jobs going overseas. Those jobs could have been done here. What's the effect – what's your view on that?

HON. KELLY CARNES: Since this is a United States question, I will dive in.

You can't stop the transfer of U.S. research. I don't think you can actually legislate or regulate to insist that U.S. companies keep a majority of their investment in the United States. I think some movement overseas is inevitable. When you look at the R & D flows, the U.S. companies investing in R & D overseas are all clustered around centers of excellence. They really are going for two reasons: One is to get access to the best minds in the world in whatever the technology is and also to access foreign markets, because that's one of the reasons we benefited from having foreign investment coming into the United States, because we are such a big market. And that's an opportunity then to attract the R & D into the United States. I actually think rather than trying to regulate it, what we ought to do is try to think about how to make ourselves the most attractive place to invest in R & D in the world, and to collaborate with our colleagues in North America to attract that kind of brain power and that kind of work into the United States in a way that I think we previously have not been.

MR. SISTO: Tom?

MR. BRZUSTOWSKI: Well, the question was a United States question, but there is a Canadian version of it that's slightly different, but nobody is answering it yet. In our case, you know, we have good education, good research. We are good at creating research based startup companies. We are good at getting them started, but not good at growing them or keeping them and we gradually see them sold off and disappear. The question is: How do we operate in a system like that and still create enough wealth to leave something in the Canadian economy?

There is also a somewhat related question. The National Academy of Engineering here is dealing with the issue of what are the skills that should be gained from an engineering education in the United States that will continue to confer an advantage in the marketplace on American engineers as the global economy evolves. There are some very interesting thoughts about that and some important reports of the National Academy of Engineering, but I'm afraid to say our deans haven't even started talking about these questions.

MR. SISTO: I have one quick question: Here in Ohio with the help of Battelle – we will be hearing a speaker later in the program – Ohio identified certain industries as key industries. They borrowed off federal funding, combined it with state and private, and they came up with what they call the third frontier program; at the third frontier program, there are various levels of investment in technology. The one that interests me the most is the investment invalidation funds and pre-seed funds.

In other words, how far are we going to go into the market before we say enough is enough? How far – is it to go into education better than to go into speculative ventures? I am labeling them intentionally to create conversation, but we are now looking at using public funds to go into validation, not even

into prototype but validation funds. Should we stop, or should we go even further?

MR. BRZUSTOWSKI: Oh, golly, I wish we had that kind of a question. The whole question of risk sharing between the public and the private sector is one that is a political issue in Canada, but it is not as well defined as you put it. At the political level, we have a balance between those, including people from the left and right, who talk about corporate welfare, about the companies that can afford to make the investments on their own but are still getting federal help. That's a criticism from both ends of the political spectrum. And against that is the fact that one of the most active industrial sectors that gets most of this kind of money is concentrated in Quebec. There is a political need to promote the development of industry in Quebec, and, in fact, it is very good in that particular area. We haven't come to the sort of question that you are talking about; I wish we were.

HON. KELLY CARNES: Well, I actually think it is a good experiment. I don't know if I know the answer of how far the Government should go. I believe very firmly in the free market and that the Government shouldn't do things that intrude and really result needlessly in making decisions that the market should be making. However, I think that the biggest weakness in the current United States system – and I think I heard this, too, Tom, in your presentation – that some of the commercialization and economic benefits are accidental in the process, and that there are big gaps, which are very, very hard for companies to surpass on their own.

I guess I would be in favor of looking at ways that private sector money could be driven earlier down the value chain investing at earlier stages instead of having the vulture capitalist motto, which invests when they think the company will be successful. They come in and are willing to give you the money right before you push the product to market. Create incentives for earlier stage investments that the private sector could make, and then you have still got market forces, but I am not averse to doing experimentation with public money. I think all the money that we spend on R & D, if it is basic research, it can be commercialized anywhere in the world. It is publicly available research results. So if you want to capture economic benefits from that, you have to have strategies - public and private - that deal with commercialization and doing that more rapidly.

MR. SISTO: Thank you. The microphone?

MR. CRANE: I have a quick comment and then a question.

Immigration is obviously very important, but it troubles me we have to spend so much effort to pursue immigrants from countries that are vested heavily to raise their own level of capacity such as India, nations of that sort, and we are not doing more to improve the capabilities of people in our own countries, and I can see that from an industry point of view. It is much easier to lobby governments to have more visas and issue visas to bring people

from abroad than to take the longer term investment in improving the quality of population at home. And this emphasis on increased reliance and immigration in the Bush Administration's proposals can be a bit troubling for Canada. If you want to improve the number of highly qualified science and math teachers, we going to see more recruiting by U.S. school boards to take away or attract away our own science and math teachers and more recruiting on community campuses to attract away better, younger professors and researchers. That's just a comment.

The question for Kelly, the American competitiveness initiative talks about making the R & D tax credit permanent, but it also suggests it will be changed. My question is: Is there any serious move either to broaden the definition of what is meant by R & D or to increase the value of the tax credit?

HON. KELLY CARNES: Any serious move? I don't know. I mean, we have trouble just making it permanent, which is somewhat ridiculous for anybody who follows United States politics. It is all a factor of the U.S. budget. Year after year presidents don't put a permanent extension into their budget because it costs a lot of money over a ten-year period. Then, therefore, that keeps the real cost of it off the books, and they are playing budget games with it. Permanence is extremely important. There have been a number of proposals, and to be honest – I am not sure which ones are getting the most attention right now – there is some cleanup that needs to be done on the credit because it was – it is an averaging of costs over a certain period of time, and those periods are fixed in history.

So there is some basic cleanup that needs to be done just to make it function properly and then there is some discussion around not broadening what's defined in R & D but broadening the types of activities that might be covered by it. For example, some of the best proposals that I have seen would try to create a further incentive for pre-competitive R & D collaborations to get the benefit from the R & D tax credit as opposed to single company kinds of activities and university industry collaborations, and I think those would be very innovative. In my view, anything that has the industry and the university partner working together at a very early stage speeds up the commercialization process. So, I am fully in favor of any mechanism, whether it is the R & D tax credit, or the funding, or whatever it is that makes those things happen.

MR. ROBINSON: Michael Robinson. I am sure this question will show my ignorance in this field, but could you tell me how the obligation to commercialize that the universities take on when they get ownership of the IP is policed under the Bayh-Dole Act, or is it just a sort of covenant?

HON. KELLY CARNES: It is not.

MR. ROBINSON: It is not?

HON. KELLY CARNES: It is not. I wouldn't even go so far as to characterize it as an obligation. It may be written that way into the original law, but

it is operated more as an incentive structure and really the notion is that if the university has the ownership of the R & D, then they will have the incentive to try to commercialize it because it is a financial incentive.

MR. SISTO: Do we have time for one more question?

DR. KING: One more question.

MR. SISTO: The gentleman over here.

MR. BARBER: Sorry. My question is about focus. It seems that in both of the discussions that we have had here, the focus has been on the Government role in affecting innovation. Has it ever been considered that maybe the role of the Government should be in developing innovators? Innovation is the product of innovators, and the universities and colleges and so on are in environments where innovators are developed, but it seems to be maybe it is more accidentally than deliberately. Has that ever been considered?

MR. BRZUSTOWSKI: Oh, it has been considered all right. Questions have been raised many times about the structure of our academic programs, particularly graduate programs that sometimes seem to have been designed to eliminate creativity. I think it is almost a situation in which those who are entrepreneurial in nature don't choose to enter university teaching as a profession. It is a very difficult thing that a lot of people have spoken about. You, Doug, are among the most eloquent on the subject.

And I guess it is testimony to how difficult it is to change the system that so much has been said and so little has been done. But it doesn't appear just at one level. It appears also at the level of peer review from within the existing paradigm perhaps holding back innovative researchers as well. This is the challenge of "risky research". These issues are all related, and they are very difficult to deal with. And unless certain strong, well-informed individuals take chances, this will not improve, and for that reason, I am a little concerned that the initiatives of the new Government in Ottawa that stress very strict accountability measures might, in fact, shelve initiative and flexibility on the part of senior civil servants for quite a while.

DR. KING: Do you have a comment?

HON. KELLY CARNES: I would just say that I don't see that as a role for the Government. I think that's something that the federal government, having worked inside of it, it is not a really innovative place. Kent is making a face. I think that it is necessary to reform the way that the academics look at their role and that academe needs to really embrace its role in society. Contributing to the economy is an important role, and nurturing the aspects of that and becoming a little bit more entrepreneurial and risk taking as an institution itself. Eventually, I think all these changes will be forced on us by competitive pressures. If U.S. universities start to lose students to overseas schools that have really entrepreneurship programs, then people will change.

MR. SISTO: What Administration did you serve?

I would just like to thank Tom and Kelly for an excellent session and for the program.

(Session concluded.)