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Discussion following the Remarks of Richard D. Rosen

Discussion

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DISCUSSION FOLLOWING THE REMARKS OF RICHARD D. ROSEN

MR. McILROY: Thank you very much, Rich, and we are now open for questions. It is open season so to speak, and I think Dr. King would like to lead off.

DR. KING: I look at that crazy quote of all those activities, and I admire your role in this. I wonder what instruments of national coordination there are for making sure that we set priorities for certain areas where they are needed. Perhaps you could give us some idea of the national scene in that regard.

MR. ROSEN: Sure. I can give you a couple of snapshots, Professor King.

A number of different advisory functions, let's start with the science mission. The science mission that is largely managed on behalf of the Department of Energy, all of the laboratories that we mentioned are constantly looking at a 30-year horizon of what should the national science infrastructure be able to support and what's anticipated for future competitive basic research.

In the process of doing that, those multiple laboratories, are their directors on a continual basis, are formulating their own versions of that, and then there is a nationalized coordinated plan around where the DOE science budget will go for key infrastructure, and this is the case again where we are talking about things like these user facilities.

As an example of that, Battelle manages Oak Ridge National Laboratory, the largest existing science project in the United States, called the Spallation Neutron Source, it is a way to characterize materials. It is a \$1 billion-dollar-plus program. It involves the coordination of all of those laboratories and it is a national priority.

We have a number of others, but I would say when we think about the science mission, the largest voice in the science mission typically falls to the DOE science director to inform the country.

MR. BARBER: I was interested by your last slide, but I should say that I have, first of all, spent a little time at various times on the Battelle web site, and I got to say I think there is a lot that all of us could learn from Battelle.

MR. ROSEN: Appreciate that. Thank you.

MR. BARBER: And I don't know how that learning process – I am not calling it an education process – but how that learning process should go on.

My question about the last slide you put up for us, it is one thing for us to talk about innovation and the importance of innovation in the economy, which we are doing in this conference. It is another thing to get innovators.

MR. ROSEN: Right.

MR. BARBER: Who do the innovation – and I guess what I'm seeing in that slide – and I suspect it is at least that bad in Canada – is that young people are not seeing being an innovator as a good career, and they are making other choices. What do you do about that?

MR. ROSEN: Well, that's a great question. First off, in the general sense of what does it mean to be an innovator, you are right. It is not a visible thing at the time that kids are making their decisions about the direction they want for their careers. Our sense of that is that, first and foremost, you need to engage them very, very early.

In fact, many of the United States programs are beginning to address how to reach kids early because they are deciding what they are interested in very early - in fifth and sixth grade. And they are making choices that are based on what they believe, what they see in their world as the things that are most valued by others. So technology is largely hidden these days.

Technology is not necessarily celebrated like it was in the Sputnik era or when we were trying to land a man on the moon. We believe that, first and foremost, you have to concentrate on making science, math, technology, and innovation "cool" for younger kids. It is a contact sport, so a lot of what we believe in is that you need to take those who are successful innovators - as an example, at Battelle, we have a program where we have our engineers, our mentors, and teachers in the classroom so they can see what it looks like to have one of those jobs.

Hopefully, some of them will choose to pursue those jobs: So part of it is simply just choice. It is a long-term phenomenon to turn around those numbers. I think that the key thing is at this stage is to excite more teachers who want to be in math and science and engineering, and that's declining and to find more ways to fuel engagement in the private sector, to be part of the solution.

One of the things we believe especially in relates to education. The private sector has taken an advocacy role to change things, but then it has largely sat at the side line waiting for the education pipeline to deliver them qualified candidates, and then it is disappointed and surprised by what it gets.

And I think there needs to be a more meaningful way for that engagement to take place. So I don't know the solution to it, but the problem is becoming increasingly clear.

MR. McILROY: David Crane also has a question.

MR. CRANE: Coming to your final page, I was intrigued by the sentence "Competitive selection is the best ideas that inspire the highest quality, thinking, and results."

MR. ROSEN: Right.

MR. CRANE: How do you actually go about that? We have in grants to reference a peer review system. A lot of people think that's too conservative.

MR. ROSEN: Right.

MR. CRANE: So could you elaborate on that point?

MR. ROSEN: I will give you some examples of it. There are a number of programs. Here in Ohio, we have an organization called the Third Frontier Commission, which is awarding grants. Those grants are not your traditional

NIH or competitive grants peer reviewed by scientists; they are grants that are reviewed both on the merits of the science, by those qualified to review that, but then also the merits of the competitive results that could be created, and that's done by industry.

There are numerous examples of that around the country where part of competitive selection is bringing more diverse groups together to be able to review the full nature of the proposal and impact.

Now, I don't suggest that the entire world should flip to only doing that. Otherwise, we would only be doing research that benefits us an "hour-and-a-half" from now. But if we balance that with more connection to industry with the problems, that's really what we are trying to do. That's really what these systems are trying to do.

MR. McILROY: Larry Herman has a question.

MR. HERMAN: I thought the discussion this morning and so far this afternoon was very interesting, and it was a good expose' of the differences, some of the common elements in innovation in the two countries. This Institute, as you know, looks at Canada-United States issues both in terms of different experiences but also tries to address areas where there are common interests and the possibility of working on a common basis to achieve shared goals.

MR. ROSEN: Yes.

MR. HERMAN: And I am wondering whether there are avenues where governments can share experiences and programs, what are the impediments to that? It strikes me from the discussion so far that we are moving on parallel tracks, and the two countries don't really share goals and objectives or programs in the area of innovation.

MR. HERMAN: And that's a reflection, I guess, in the differences of the two countries, but where are the common elements, both in terms of government support for R & D and innovation but perhaps, more particularly, in terms of institutional university support? Why are there not more common programs between Canadian and American educational institutions to achieve common goals, and can we move this forward? Could these discussions help in that regard?

DR. KING: This will be the last question.

MR. ROSEN: Sure. I would just respond – it is a great question, which again is one that has some avenues for the opening: In our discussions with Canada around collaborations – and I mentioned we have been benchmarked a number of times to see how a U.S. system might apply – one of the things that I am struck with is, number one, it would seem to me that a couple of things need to be common in order to facilitate that conversation.

One is a more specific statement out of Canada on competitiveness and economic development and the importance of a national science program, and at least right now, as I understand it, there is some silence on that topic,

and I think it is crucial to be able to be explicit about that. So that would be number one as far as raising the priority in relationship to other national issues.

And the second one would be to think about some shared economic development policy. That again always is confounded with where did the results of the licensing go? Where does the talent flow to, etc., but I think the key piece would be having some statement of importance and priority of the science policy, and harmonizing science policy and its effect on competitiveness would go a long way in being able to fuel the underpinnings of the collaborative strategies.

MR. McILROY: I sense that it is time to wrap things up, and I would like to thank Rich. I would like to just close off with a quick comment. This morning we heard about Mr. Bush, not George, who in the '40s really laid the groundwork for the United States R & D infrastructure. We have heard now about a visionary, Gordon Battelle in the 1920s.

I am struck by the fact we are talking about individuals who did what they did 60, 70 years ago, and I hope that we see another visionary or two step forward in the next two years because I haven't seen anybody with the vision of a Gordon Battelle, quite frankly, step forward in Canada.

So it would be very nice to see someone with that kind of vision, and I would like to thank Rich. I think you are a great ambassador for Battelle, which is a very, very interesting organization.

Thank you very much.

MR. ROSEN: Thank you.

(Session concluded.)

