Canada's Innovation Agenda
Building on our Natural Resources Advantage
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Panel Discussion

Driving innovation through industry-academic partnerships

Moderator:

Trevor Raymond Stuthridge, Executive Vice President, FPInnovations

Panelists:

J**avier Gracia-Garza**, Deputy Chief Scientist and Director General, Science Program Branch of the Canadian Forest Service (CFS), Natural Resources Canada
Ted Hewitt, President, Social Sciences and Humanities Research Council of Canada
Mario Pinto, President, Natural Sciences and Engineering Research Council of Canada

Referring to the innovation map presented by David Watters, Gracia-Garza said what jumped out at him was the way in which various participants in the innovation process interact with one another. More specifically, he is interested in how money flows as part of those interactions, which is something he deals with as part of his role in the Canadian Forest Service. “One of the roles that CFS plays in this innovation ecosystem is that we are performers of science but we are also funders of science, funders of that R&D,” he explained. Much of this work, he added, is intended to support early adopters of technology by conducting the up-front work that will minimize some of the risks and unknowns surrounding that technology. Given that much of the support for science is now premised on the notion that this research is dedicated to some kind of practical solution, Gracia-Garza indicated that a high priority for such solutions is in the area of environmental solutions. “Demonstrating that we are managing our resources in an environmentally sound manner is something that requires a different type of innovation,” he observed, noting that much of this kind of innovation calls for more fundamental scientific inquiry, including the integrated landscape perspective described by John McDougall. In this way, for example, it becomes possible to harvest wood products in a certifiably sustainable manner and market them accordingly.

Gracia-Garza also regarded social issues as a key part of how natural resources are used, which in turn calls for a separate branch of social sciences research to ensure the success of businesses in this sector. Similarly, he sees the need for those businesses to develop receptor capacity for some of the new expertise that is emerging, i.e. an ability to identify the value that someone with a doctorate in genomics might be able to bring to forestry.

Hewitt outlined the growing significance of SSHRC projects that involved partnerships with industry, which can be supported with grants on the order of millions of dollars. These activities also call for collaborations with organizations like the Ontario Centres of Excellence, which support the participation of students at both colleges and universities in such projects. He suggested the success of such ventures lies in their very existence, since social sciences have not traditionally been considered an obvious aspect of innovation. Out of 3,500 partners for all of SSHRC’s post-secondary initiatives, some 350 are with industry. While this proportion is small, Hewitt insisted “in a world where you might not expect industry partners, 350 is a big number. The mere fact of participation for industry in these projects is significant in and of itself. No company is going to invest the time of its personnel or dollars into projects for which they believe there will be no return.” As for the nature of that return, SSHRC has been working with The Impact Group on ways of framing the value-added for these projects. Often this return can come as a response to what Hewitt called people problems, such as setting up communications with a community near a natural resource or shaping environmental policy for a new building technology.

Pinto recounted his own direct experience with different aspects of the innovation process. “When one embarks on such an adventure, capitalizing on the different strengths in individual sectors, one hopes that the whole would be greater than the sum of the parts,” he said. Unfortunately, that whole often includes redundancies and discord that are opposed to the spirit of collaboration that is necessary for success; in his new post as NSERC president, he is already looking at ways of getting beyond these limitations to set up more fruitful synergies. “It became evident to me that NSERC has to define its place in that innovation continuum, because it’s not at all obvious to policymakers where we fit in, given the plethora of organizations and departments active in this space.” His response has been to enhance investments in discovery, which represents the foundation for the applications that are expected to contribute to innovation. This approach also adds value to strategic partnerships, specifically the de-risking of a potential application for that discovery and paving the way for future investment in that application. “My definition of innovation is a very hard definition,” he added. “It’s not innovation until its monetized or it has societal impact. To do innovation properly, it’s going to need much more than what we provide. We provide the front end — access to the brain trust, great ideas — but in order to develop them further, it needs much more. We need venture capital, angel investors, market research. It’s that whole mix that might give these fledgling SMEs a fighting chance.” With this in mind, NSERC has been reaching out to other organizations such as the National Research Council to simplify the application process for prospective clients. “The end goal is very simple to me: to innovate in Canada, to manufacture in Canada, to sell in Canada, and to sell internationally.” To the extent that research plays a fundamental role in achieving that goal, he declared the distinction between discovery and applied science to be false, as they are two sides of a common undertaking. “Let’s admit that there is no distinction. Let’s focus instead on excellent research and innovation and tap in to the different trigger points in a complementary way.”

Stuthridge noted that a leading challenge surrounds the fact that important information about industrial processes and other data does not make its way into the establishment of academic research priorities. “How do we get more value out of that commercial information strategically?” he asked, suggesting the need to reverse the flow of this information to innovation frameworks so that the entire system will function better.

Hewitt expressed his understanding that private firms might not always be willing to share the data that lies at the heart of their respective business plans. Rather than expect this work to flow into academic settings, SSHRC is therefore helping academics gain a higher profile for their work amongst such firms. Although this work is published in many places, it is not always easy to find and so his organization is also trying to ensure that interested parties not only know where to look but have the earliest possible access to it.

Pinto responded to Hewitt's comments by portraying this kind of open access to academic research as a work in progress. He also conceded Hewitt's point that private enterprises could not be expected to share the details of their intellectual property, but they were sometimes willing to share their market research, which could be even more important. "To know when you're embarking on something that's never going to have an impact, that is a very powerful data set that industry can bring to the table," he said, recalling an example from his own career of a medical diagnostic kit that was a technical innovation but a market failure. "We forgot to do our market research and ask the physicians if they would actually use a 10-minute colour test in their offices," he explained. "The answer is they refused to. They still send it out for three weeks of culturing."

Gracia-Garza offered his own example of what happens when industry releases its data, specific information collected from work that CFS had done with companies on the use of remote sensing to characterize forest resources. He found that in eastern Canada, where there were a number of private firms collecting this data, these same firms were open to sharing their findings. The result was not just an application that met the needs of their industry, but other applications, such as the study of aquatic systems. "By providing all of this information to the public, they are starting to find a lot more applications for the kinds of services that they could be providing," he said.

David Wolfe of the Munk School of Global Affairs asked Pinto what NSERC was proposing that was distinct from what NRC is already doing through IRAP, rather than perhaps coming up with something more ambitious, especially as so many major economic powers are dedicating themselves to fostering innovation. Pinto responded that NSERC is attempting to learn more about these international efforts by talking with institutions in these countries, such as the National Science Foundation in the US and the Fraunhofer Institute in Germany. "We're not very good at learning from history — what works and what doesn't work," he said, noting that some of these organizations have been candid with him in revealing what has not worked for them. "Let's not assume that everything we're doing is not working and everything another country is doing is working."

Pinto also underscored the fact that NSERC funds an academic population of some 11,300 professors and another 30,500 students. "That is a force," he argued. "And we have to capitalize on that force and bring them to the table. But we have to stop exaggerating our capabilities. Each of us has to admit what our niche area is and we have to stop over-promising, over-committing, and exaggerating. Together we can create an ecosystem where the transitions are more or less seamless, but we bring to the table our respective strengths and not our weaknesses."

Rory Francis of the Prince Edward Island BioAlliance asked for more detail about the nature of an appropriate interface between various institutions and cultures that

participate in the innovation system. Pinto recalled running an innovation office whose success was premised not just on open interaction between cultures, but by solidifying venture capital flow and bringing in professional management for start-ups who could make hard go/no-go decisions about how to proceed. “If you’re going to play in the innovation space you’d better play by the innovation space rules,” he said.

Gracia-Garza described a broader innovation interface that the CFS maintains, one that is premised on information coming from all sides. “Working with the forest sector, we make a significant effort to communicate with each other in the provinces, academia, the private sector, and the federal government,” he said.

Hewitt adopted an optimistic outlook on these interactions, despite the complaints that are often heard about the state of such collaboration. “For every company that’s out there saying it’s really too hard to work with universities, there’s got to be five or more who will tell you how great it is to work with universities,” he maintained. “The problem is they’re not shouting it from the rooftops. And the dollars tell the story.”