



HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

44th PARLIAMENT, 1st SESSION

Standing Committee on Science and Research

EVIDENCE

NUMBER 105

Tuesday, October 29, 2024

Chair: Ms. Valerie Bradford



Standing Committee on Science and Research

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• (1550)

[English]

The Chair (Ms. Valerie Bradford (Kitchener South—Hespeler, Lib.)): I call the meeting to order.

Welcome to meeting number 105 of the House of Commons Standing Committee on Science and Research.

Today's meeting is taking place in a hybrid format and all witnesses have completed the required connection tests in advance of the meeting.

I'd like to remind all members of the following points.

Please wait until I recognize you by name before speaking. All comments should be addressed through the chair. Members, please raise your hand if you wish to speak, whether participating in person or via Zoom. The clerk and I will manage the speaking order as best we can.

For those participating by video conference, click on the microphone icon to activate your mic, and please mute it when you are not speaking.

For interpretation for those on Zoom, you have the choice at the bottom of your screen of the floor, English or French.

Thank you all for your co-operation.

Pursuant to Standing Order 108(3)(i) and the motion adopted by the committee on Tuesday, September 17, 2024, the committee is resuming its study of the mission, mandate, role, structure and financing of the new capstone research funding organization announced in budget 2024.

It is now my pleasure to welcome our witnesses. From the Fédération des cégeps, we have Sylvain Poirier, deputy director of research. From the University of Calgary, we have Edward McCauley, president and vice-chancellor. On the screen, from the University of Saskatchewan, we have Baljit Singh, vice-president of research.

Up to five minutes will be given to each of you for opening remarks, after which we will proceed with rounds of questions.

Mr. Poirier, I invite you to make an opening statement of up to five minutes.

Mr. Sylvain Poirier (Deputy Director of Research, Fédération des cégeps): Thank you, Madam Chair, ladies and gentlemen and members of the committee of science and research.

[Translation]

I'm pleased to speak to you today on behalf of the Fédération des cégeps, which represents Quebec's 48 public colleges.

Our institutions house 55 of the 59 college technology transfer centres, or CTTCs, 27 technology access centres, or TACs, as well as numerous disciplinary research units and hundreds of researchers.

We carry out quality research, supported by more than 5,000 qualified researchers working in world-class laboratories.

We're pleased to see that the federal government recognizes the importance of innovation to Canada's wealth and economic and technological competitiveness, and is committed to taking action in that regard.

It's now well documented that Canada, despite the quality of our basic research, still generates few innovations. As a result, we are less competitive than the best-performing countries.

On the one hand, we have universities that produce a constant stream of new knowledge, and on the other, many small and medium-sized enterprises, or SMEs, struggle to integrate innovation into their business culture and undertake research and development activities.

Those SMEs, which represent 90% of the private sector workforce, are the backbone of our economy. It's therefore essential to take this reality into account when comparing our research and innovation support programs with those of other countries.

SMEs and organizations with a technological, social or environmental vocation are rooted in our cities and villages, and they fuel our local economies. However, they often lack the resources to expand internationally.

Building a bridge between universities and SMEs or organizations is essential to facilitate the transfer of scientific advances to the business sector. This bridge already exists in applied research conducted at our CEGEPs, colleges, institutes and research centres.

This gives SMEs and organizations access to a research potential comparable to that of major corporations. However, this potential can't be fully exploited if we continue to provide that college research with only 2.9% of the funding for research.

For an SME or local organization, the proximity to a college's researchers and specialized laboratories, which are accessible at a reasonable cost, can become the foundation upon which to build its growth. Access to expertise and facilities to build test beds, scale up discoveries, improve processes or integrate the circular economy is an essential element in boosting performance and productivity, and expanding the market occupied by businesses with direct socio-economic and environmental benefits.

Our CEGEPs, colleges and research teams are present throughout the province. They are already working with SMEs and local and regional organizations. They train the workforce that will implement new practices and technologies, while providing pathways where students interact with research teams and companies. The younger generation can therefore play an active role in finding concrete solutions to societal challenges. As a result, interest in scientific careers is emerging within our institutions.

If the government sets up the umbrella organization, the Fédération des cégeps hopes that it will adopt a neutral, inclusive and results-oriented approach, and that it will have the power to redistribute funding to enable every research and development actor to play their full role. We also ask that the college community be represented on the board in proportion to its research contribution.

In closing, only a well-funded and effective continuum of research, development, innovation and commercialization will contribute to the vitality of our regions, to the creation of quality jobs, to Canada's prosperity and to a more equitable distribution of wealth.

Thank you for your attention.

• (1555)

The Chair: Thank you, Mr. Poirier.

[English]

We'll now turn to Dr. McCauley.

You have the floor for five minutes.

Dr. Edward McCauley (President and Vice-Chancellor, University of Calgary): Thank you for your invitation today.

[Translation]

Thank you for the opportunity to address this parliamentary committee today.

[English]

The University of Calgary is one of Canada's research-intensive universities. We are Canada's entrepreneurial university, having started over 90 companies in the past five years, which is more than any other university in Canada over this period.

We have one of the fastest-growing rates of research funding, with \$589 million in externally funded research revenue in the past year. One-third of that funding comes from industry and our community, which speaks to the relevance of the research we do.

Our scholars consistently demonstrate excellence and transdisciplinary collaboration, which are among the reasons why our external funding continues to grow and it's why the prospect of the capstone research organization is so exciting.

UCalgary welcomed the renewed investments in innovation and talent, as well as the plan to create a capstone research organization in budget 2024. This investment follows important historical investments by previous governments, both Conservative and Liberal, that built Canada's excellent research ecosystem.

When creating the capstone organization, I urge you to keep in mind the common definition of a capstone. In building our architecture, it's a stone that lies on top that adds strength and protects the function of the pillars underneath. If we create an organization that truly reflects the common meaning of a capstone, we will have a better research ecosystem in Canada that will flourish, attract investment and build new partnerships with sectors of Canada and internationally.

The implementation of a capstone organization that increases synergies across the granting agencies and includes governance structures supporting interdisciplinary and mission-driven research is a big enhancement to Canada's research ecosystem.

As you consider the implementation of the new capstone, I have four requests for this committee.

First, establish governance for the capstone that maintains a balance across the scientific disciplines and is inclusive of all actors within the research ecosystem. The implementation of a capstone organization recognizes that science is not siloed. It has the potential to result in better integration and processes across disciplines, with streamlined access to international partnerships, and with resources for mission-driven and interdisciplinary research for the 21st century.

Some coordination gains were made through the Canada research coordinating committee and the tri-agency institutional programs secretariat, but results were limited. Both entities encouraged coordination, but integration without governance relies on relationships for progress.

Greater integration is achieved when governance demands it. The capstone therefore must be equipped with a clear mandate, structures and resources to facilitate integration across the granting agencies.

Second, move toward more harmonized processes across the councils over time, without disrupting research cycles during transition or unnecessarily losing discipline-specific cultures. A healthy harmonization of processes and systems across the research ecosystem is a positive opportunity and, in fact, there are many benefits.

Third, maintain political independence of funding decisions and the core commitment to academic freedom, peer review and the free pursuit of knowledge. Federal support for research in Canada is based on rigorous, independent review that rewards the merits of applications and is considered the best practice internationally. Maintain this political independence for both discipline-specific and mission-driven research. Funding decisions should always be guided by scholarly excellence based on competitive applications and merit-based peer review.

Finally, the capstone mission-driven and interdisciplinary research should be funded through a new envelope, rather than redistribution of existing granting agency funds. This will ensure that Canada is best positioned to compete on a global scale.

Thank you for your time.

[*Translation*]

Thank you for the opportunity to share my thoughts with you today.

[*English*]

I look forward to your questions.

The Chair: Thank you, Dr. McCauley.

We'll now turn to Dr. Singh.

You have the floor for an opening statement for up to five minutes.

• (1600)

Dr. Baljit Singh (Vice-President, Research, University of Saskatchewan): Thank you very much, Madam Chair and the committee members, for this opportunity to be in front of this committee. In addition to being vice-president of research at the University of Saskatchewan—a 117-year-old institute of higher learning and research enterprise—I serve as professor of veterinary medicine at the University of Saskatchewan.

I had the privilege of being a member of the advisory panel on the federal research support system, which was commonly called the Bouchard panel, and that was the panel that did the review and submitted a report to the Government of Canada in 2023.

Today, I appear in front of this committee as a representative of the University of Saskatchewan, although I will refer to the findings of the Bouchard panel report in my testimony and during the discussion. Before I talk about the capstone organization that is being proposed to be set up in the country, I want to make a couple of comments on the report itself.

Since the report was submitted, the Government of Canada has taken a number of actions on the report, and I thank the government for doing that. The first and foremost is the investment in funding graduate student support and also the post-doctoral fellow support. As we know, the lifeline of any innovation system is the young talent that we grow domestically and also the top talent that comes from around the globe to make Canada their home. They will not come to Canada if we do not have a well-funded program to support them.

In addition, the Government of Canada also made a commitment to grow the funding for the tri-councils in our country so that our investigators can continue to get the best grant support to do the type of science that they do.

The last point I will make is because I am at the University of Saskatchewan, which is home to two of Canada's largest research facilities, the first of them being the Vaccine and Infectious Disease Organization, VIDO, which did a commendable job during the pandemic in protecting the health of Canadians; and the Canadian Light Source, which is Canada's only synchrotron located in Saskatoon. I appreciate the steps that the Government of Canada is taking to create the major research facilities framework to provide sustained funding to some of our largest and most globally recognized research facilities in our country. Still, we have lots of work to do. We know Canada suffers from innovation gap, productivity gap, in comparison to our peer G7 group countries or the OECD countries when we measure ourselves against them.

The proposal to create a capstone organization is in play to bridge some of those gaps by creating very cohesive coordination and integration among multiple components of Canada's research and innovation system. For example, the capstone organization could itself create a better coordination among the tri-councils and other players in the innovation system, such as the Mitacs and the Canada Foundation for Innovation.

However, I also want to create a caution here that we must continue to support, protect, preserve and enhance the excellent research funding mechanisms that have been created by NSERC, SSHRC, and Canadian Institutes of Health Research to support globally recognized research programs in our country.

We also need to pay attention to the colleges and the polytechnics that exist across our country. We know that the colleges, even though they are small, are deeply connected to the needs of the communities locally and have great capacity to be part of the innovation system to support small and medium enterprises in small towns and villages across the country. Hopefully, the capstone organization, once established, will try to bring these components—small universities, colleges and polytechnics—into Canada's innovation agenda.

The last point that we generally heard across the system is that international bodies and the government sometimes do not know on which door to knock when they come looking for Canada's participation in large-scale, mission-driven interdisciplinary research with global impact. Creating a capstone organization will allow Canadian scientists and the stellar work they do to be part of the global story and bring more recognition to our country.

In closing, I believe the time has come to evolve and adapt by creating a capstone organization so that the Canadian research and innovation system can keep pace with our peer global economies in the G7 or the G20 countries.

Thank you very much, Madam Chair.

The Chair: Thank you, Dr. Singh.

That concludes our opening remarks. I'll open the floor to members for questions. Please be sure to indicate to whom your questions are directed.

We'll start with our six-minute round.

We have MP Lobb for six minutes.

• (1605)

Mr. Ben Lobb (Huron—Bruce, CPC): Thank you, Madam Chair, and to everybody who presented today.

My first question is for Mr. Singh.

The Chair: That's Dr. Singh.

Mr. Ben Lobb: He's Dr. Singh, yes.

The Canada research coordinating committee, from what I've heard from previous guests and I think guests here today, is not quite living up to expectations. You're a part of the committee. What do you feel the failings have been there? Maybe they aren't failings; they just didn't do enough. What are your thoughts there?

Dr. Baljit Singh: The committee did not succeed as much as the system thought it would. President McCauley has also made a comment that the committee was left to the relationship of the leaders of the individual organizations to work together and develop programs; however, there have been successes in creating interdisciplinary large-scale programs through that particular body.

If we really want to achieve the type of integration and coordination within our system to eliminate the gaps between various funding players and the innovation leaders within Canada, we need to have a very robust governance system in place in the organization that will demand that level of integration and coordination.

CRCC did what it could within the mandate and the scope it had, but it did not have the type of empowerment to undertake large-scale changes to the system. That's what my impression and understanding is.

Mr. Ben Lobb: How many people were on the committee that was set up, and how many staff were involved on that committee?

Dr. Baljit Singh: CRCC was comprised of the presidents of the councils, who had rotating chair responsibilities as well, and they were supported by the staff from these bodies.

Mr. Ben Lobb: Is the capstone going to have different people involved, or will it be the same cast of characters under a different umbrella, a different name?

Dr. Baljit Singh: The capstone will need to have a totally fresh way of looking at organizing this body. It needs to be very inclusive. It needs to bring a fresh set of leaders into the organization. Yes, the leaders of the councils, from NSERC, SSHRC, CFI, and the CIHR will have a role or maybe membership in this particular capstone organization. The governance piece will need to be very separate, independent of the councils that we currently have in front of us.

Mr. Ben Lobb: When you guys were putting this together, did you come up with a budget in your mind? There aren't a whole lot of details on the budget. Do you have a budget or an estimate for each year?

Dr. Baljit Singh: We simply presented the principle that this new organization should have a new infusion of funding. It should not be money taken from the existing funding organizations to start a new funding body in the country, considering the scale of the programs that we might be looking at. For example, Canada launched a quantum strategy a few years ago with \$400 million. That type of large-scale, mission-driven initiative will be coming out of the capstone organization that we are proposing. In a way, the funding needs will be determined by the scope and the scale of the initiatives that the capstone organization will be launching.

To answer your question directly, no, we did not put a dollar figure on the budget for this particular proposed organization.

Mr. Ben Lobb: I asked this next question a week ago when I was at the last committee meeting that I attended. Concerning the mission-driven focus, in your mind, who gets to decide what those are?

Dr. Baljit Singh: That will need to be a highly consultative process based on the needs of our country and the investments that we need in the type of areas we need. It cannot be determined in a top-down way. There needs to be participation of, for example, businesses. There needs to be participation of the academic institutions. There needs to be participation of groups such as the first nations, Métis and Inuit peoples of our country. It depends on what we are looking at, but there needs to be an in-built, robust, consultative framework that will allow us to identify the areas in which the Government of Canada is trying to invest.

For example, if we are looking at water security in our country as to how we use our water for demographic expansion, for our agri-food enterprise and for our mining and resource extraction, it will need to bring in all those relevant stakeholders for consultation and identification of the mission that the government or the capstone organization will then launch.

As has been said, we will need political independence within the development of those missions so that the academic and the scientific parts and the needs of society are put at the front end of the development of those initiatives.

• (1610)

Mr. Ben Lobb: How much time is left?

The Chair: You have 15 seconds.

Mr. Ben Lobb: I'll put that into the pot—15 seconds.

The Chair: Thank you, MP Lobb.

Thank you, Dr. Singh.

We'll now turn to MP Kelloway for six minutes.

Mr. Mike Kelloway (Cape Breton—Canso, Lib.): Thanks very much, Chair.

Hello to everyone, and thank you for your testimony.

In particular, I want to say hello to President McCauley. Full disclosure, I'm an alum of the University of Calgary, and I taught in the leadership and development program for a period of time. I have great admiration and respect for the university and for what it does.

When you were talking about your four recommendations, you talked about political independence, and Mr. Singh just also spoke to political independence.

On the flight here, I was preparing some questions. Sometimes when you're flying from Sydney to Toronto and then to Ottawa, the flight is delayed or cancelled, so you have plenty of time to think. I was watching a movie and preparing my questions. I was watching Ted Lasso, who mentioned a quote attributed to Walt Whitman that we need to be less judgmental and be more curious.

This, to me, ties into political independence. Whether it's a left-wing government, a centrist government or a right-wing government, we don't want political interference in research. It's tempting even for someone like me. When I look at certain research projects I say, "My God, that's esoteric. My God, what is the relevance?"

I think of researchers like Geoffrey Hinton, who is a pioneer in AI. I would assume that if we brought Dr. Hinton here, he would say, "You know, when I was starting out, there were a lot of questions about the research I was doing in AI." We could also choose another researcher in advanced technology, so I think we need to be careful.

With that in mind, can you unpack a bit of why it is so important that politicians and political parties—because we do have oversight, to a certain degree—know our lane and respect the institutions that are there to do the research?

Dr. Edward McCauley: Thank you.

The market for ideas is global. That's the competitive market for ideas. Canada is really blessed with having a large amount of talent across the country that has developed at CEGEPs, polytechnics, colleges and universities that are building their abilities to create those ideas.

The capstone organization, I think, will be a great opportunity to identify some of those big, very difficult problems that Canada needs to solve to improve the quality of life and productivity. Very often, the solution to those problems requires contributions from different disciplines from people who have been trained differently.

One of the common characteristics of people who have been trained in Canada in this way is that they're critical thinkers. Again, the ideas are competitive on the global stage. They're competing against other ideas. Having that base of independent thought, the ability to come up with an idea that looks like it's out in left field—or right field, depending on the political party—is essential to being able to test that idea and to have it move forward in that global landscape.

We need that broad generation of critical thinkers, the broad generation of people who are willing to commit to respectful debate across the ideas. Political interference precludes some of that because some voices are then not heard as loudly as other voices. I think we need all voices at the table in order to move forward.

Mr. Mike Kelloway: I'm going to stick with you on this.

I'm moving from political independence to the second recommendation. You talked about harmonizing processes and understanding what that is.

Can you unpack that a bit for us? What would you like to see when you say "harmonization of processes" across different research bodies?

• (1615)

Dr. Edward McCauley: I mentioned some of the big challenges that Canada faces in solving, for example, the productivity gap that we have. Very often, the solutions to those problems come from a combination of different disciplines. Right now, we have the tri-councils, which are very effective: NSERC, SSHRC and CIHR.

In solving those problems, very often we want to bring the expertise from those disciplines together into a productive environment where ideas can be tested and solutions could be moved forward. The capstone organization will facilitate that, and including the process associated with the tri-councils would enable that cross-fertilization.

One of the reasons the University of Calgary has been so successful in moving external research revenue forward and attracting investment is that we've invested over the last decade in a transdisciplinary scholarship. We've incentivized our scholars from those different tri-councils to work together to come up with new ideas or new questions to move Canada forward. That's why this new organization, I think, will be very important in increasing the information flow and the effectiveness of the collaboration among the tri-councils.

Mr. Mike Kelloway: How much time do I have left?

The Chair: You have 36 seconds.

Mr. Mike Kelloway: Is it 36 seconds, or it is 30 seconds now?

The Chair: It's now 35 seconds.

Mr. Mike Kelloway: We can go along with that joke.

On your first recommendation, you talked about establishing balance. You had four recommendations. I don't know if they were chronological for a reason. If we were to start somewhere with the capstone project to ensure that we start on the right footing, where do we begin?

Dr. Edward McCauley: As I mentioned, we need to establish for the capstone organization a clear mandate, the structures and the resources to facilitate that integration to be the stone that provides the glue, in essence, to support the pillars below. The mandate, the structures and, again, a clear strategy associated with the implementation will be very important to move it forward.

Mr. Mike Kelloway: Thank you.

The Chair: Thank you.

We'll now turn to MP Blanchette-Joncas for six minutes, please.

[*Translation*]

Mr. Maxime Blanchette-Joncas (Rimouski-Neigette—Témiscouata—Les Basques, BQ): Thank you, Madam Chair.

I want to welcome the witnesses who are here to take part in our study.

Mr. Poirier, you put into perspective the importance of colleges and CEGEPs in Quebec, and you provided several figures. I'm proud to have a CEGEP in my riding, the Cégep de Rimouski, which has a training site in Témiscouata.

I'd like to come back to your presentation, more specifically to the new umbrella organization's approach to research funding. You said that it should be neutral, inclusive and have the power to redistribute funds. Finally, you talked about college representation.

To begin, I would like you to tell us about representation.

What are you really asking for? What are your expectations of the federal government regarding the composition of the new research funding umbrella organization?

Mr. Sylvain Poirier: If we want to achieve the desired results and objectives, which are to increase Canada's productivity and affect wealth and growth, the new research funding umbrella organization must ensure that all research actors have a voice that carries equal weight within the body. I'm thinking of those who carry out research, whether it's fundamental or applied, or whether it concerns development, innovation or commercialization.

That would make it possible to distribute funding and projects and ensure that everyone can maintain this continuum, so that the development of knowledge becomes the application of knowledge and, ultimately, a product or service that benefits Canadians.

Mr. Maxime Blanchette-Joncas: Mr. Poirier, the elephant in the room is representativeness, and you talked about that. I imagine that you would have liked to share those recommendations with the federal government in the past and be part of the advisory panel on the federal research support system, created by the government in October 2022. We did get the report on that. It states that CEGEPs, colleges and polytechnics are key players. I'd like to hear what you have to say about that.

The Fédération des cégeps was completely ignored when the advisory panel was created. In your opinion, does it make sense not to include CEGEPs and colleges when we want to represent the scientific ecosystem?

• (1620)

Mr. Sylvain Poirier: I think that the advisory panel that conducted the study identified the right problem, but there was a lack of overall vision for implementing solutions that would cover the entire continuum I described.

We would have liked our voice to be more present or more active on the advisory panel and on all committees and organizations. It's the same with the funding, the Canada Foundation for Innovation, and Mitacs.

The voice of colleges should be present and heard in all discussions about funding and advancing research. Colleges shouldn't take over, but they should play their rightful role in bridging the gap between basic research and business innovation.

There are colleges everywhere, throughout the province, and they are already in contact with businesses. So they can play that role.

Mr. Maxime Blanchette-Joncas: Mr. Poirier, we have publicly asked to consult you, particularly following the Bouchard report, the report of the advisory panel on the federal research support system. That report was tabled in March 2023, which is to say, a year and three months later. We don't know why, but we may find out one day. The government woke up and said that it should launch a public consultation. It did so at the end of June, when most of your facilities, if not all of them, were closed for the summer. It gave you 30 days to do this.

In your opinion, is it realistic for a government that says it wants science to be a priority to give organizations 30 days to participate in the process when those organizations will be closed during consultations?

Mr. Sylvain Poirier: I don't want to judge intentions, because I'm not aware of them. However, there may be a lack of understanding of how colleges and CEGEPs operate in Quebec. Of course, July isn't the best month for consultations, when just about everyone has gone on vacation.

So the Fédération des cégeps could not consult its members. We then joined forces with Colleges and Institutes Canada, or CIGan, for an exercise involving a few permanent members who could be present.

I would say that this consultation went a little too quickly and that it didn't benefit from the full contribution that we could have made.

Mr. Maxime Blanchette-Joncas: It goes back to the importance of being inclusive, as you said in talking about the new umbrella organization and your recommendations. Far be it from me to make a judgment, but it's a matter of observing the facts. However, consultations took place over a period of 30 days, on the spur of the moment and in the summer, when your facilities were closed.

I'm worried that not all members really had the opportunity to speak and be heard. I'm talking about the members you represent here today.

Mr. Sylvain Poirier: In this particular case, our members couldn't be consulted, and they were unable to think about a coordinated response and arrive at a federated position regarding the consultation.

Mr. Maxime Blanchette-Joncas: Thank you.

[English]

The Chair: That's the time, right on. Thank you.

MP Cannings, the floor is yours for six minutes, please.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you all for being here with us today.

As Dr. McCauley said, this is kind of an exciting moment when we're getting to talk about a new way of funding science in Canada, and, hopefully, a better way.

I'm going to turn to you, Dr. McCauley, to try to expand on some of the four points that you mentioned, especially regarding the governance piece, because I think that's critical, off the top.

You mentioned that there should be voices from all sectors and all actors. How do you see the scope of that? We will have to maybe balance the size of a board, for instance. How do we get those voices heard in there? This is what I've heard from some groups; their main concern was they had felt, whoever they were, that their voices weren't being heard in the previous system, and they wanted to be part of this new body.

Dr. Edward McCauley: Getting the structure correct is very important to supporting those pillars that I was referring to. I'm sure the government, in the consultation, has brought in information from all different sources as to what that should look like. I wouldn't guess as to where the government is right now in terms of identifying it.

In the capstone organization, my understanding is that there would be, for example, a CEO, and there would be a board. Like any well-functioning unit, the board would have representation from across the research ecosystem, which is very deep and broad in Canada. It would be diverse, and it would also have the opportunity in its governance to get information from the people who are actually creating the new knowledge and are coming up with the solutions to the problems. Feedback from the investigators across the country in those different components of the research ecosystem will be very important.

What I would see, hopefully, would be information flowing up to the capstone program and then, in the combination of strategic decisions and governance, ideas around mission-driven research and things like that being discussed and, in essence, given to the community to ask if they could solve this problem with input from the community.

• (1625)

Mr. Richard Cannings: This body will take ideas and make decisions on what those missions would be. Then, as you suggest, later there would be a new envelope of funding for those missions. Is that correct?

Dr. Edward McCauley: Regarding some of the big challenges that Canada has faced in terms of, for example, its productivity gap, getting to and identifying those solutions will require extra resources. Again, it's the research ecosystem that needs to be funded to come up with those solutions or test those new ideas and deliver the solutions that Canada needs. There has to be a clear mandate. We have to have clear structures and, again, we have to facilitate that integration, because the solutions primarily are probably going to come from across the tri-councils rather than from within a tri-council.

Mr. Richard Cannings: Are there any specific recommendations you have about that structure—thinking back to what maybe hasn't worked so well up until now—or if there are structures like this in other countries, other agencies that have worked, is there something that you would like to see?

Dr. Edward McCauley: It's great to be a first mover, but in this situation there are other countries that have taken this sort of approach: the U.K., France and so on. I think we can take a lot of

lessons learned, from how they amalgamated their system, in terms of designing the capstone and then designing the governance structure associated with it. I would, once again, gather information and then implement some of the best practices, with learning from what was successful in other jurisdictions and what would work in the Canadian context.

Mr. Richard Cannings: Again it's important, I think, to get back to the voices: We have CEGEPs here today, big universities, colleges, new researchers, experienced researchers—all those important aspects of it.

Dr. Edward McCauley: The big problems that we face are going to require input from the broad research ecosystem. We're a U15 university. In our jurisdiction, once again, we collaborate extensively with polytechnics. We help to support the research endeavours in our community through help with animal care, research policies, research security issues and things like that. We work with our colleagues across the research ecosystem to actually build up the capacity of that research ecosystem. That's what a research university can do in a community.

The Chair: Thank you.

We now go to our five-minute round, and we kick that off with MP Tochor, please.

Mr. Corey Tochor (Saskatoon—University, CPC): Dr. Singh, you are a legend for your energy and wisdom. Thank you so much for being here at committee. We have, roughly, a minute and a half for these questions for you. You mentioned that there are fragmented investments in place. Can you give an example of what opportunities might arise as a result of the creation of this coordination body?

Dr. Baljit Singh: Thank you very much. Did you say \$5 billion?

Mr. Corey Tochor: Yes.

Dr. Baljit Singh: With regard to some of the opportunities, we will need to go back to what president McCauley was saying about going back to the consultative process to see what Canada's biggest needs are. If I take one example, one gap in our system is mobilizing our discoveries from the universities into the private sector for value-added creation of businesses and support of economic enterprise in our country.

How can we find better policies, frameworks and procedures to connect the universities with the small and medium-sized enterprises from small communities to larger cities? If we can plug those gaps between our innovation ecosystem, and between basic and applied research and commercialization, I think we will make so many gains within our system that it will pay for the investment that we are making. That will be one of the major investments that I will think about.

Another piece—

• (1630)

Mr. Corey Tochor: I have another question, and I have only 30 seconds for the answer on this one. You mentioned the international opportunities that we are missing out on at the moment. Can you expand on just that portion, please, quickly?

Dr. Baljit Singh: Yes. Let's take the example of pandemic preparedness. It's not that COVID-19 is gone: another one might be coming soon. The global collaborative effort among vaccine and infectious disease organizations—for example, in Saskatoon, with the leading organizations at Oxford University or in Germany—will require that level of international collaboration and appropriately matched investments, which none of the existing councils are in a position to make. The development of a capstone organization will help us forge that level of collaboration to protect the health of Canadians and other citizens around the globe.

Mr. Corey Tochor: Thank you so much for that.

We've heard from many universities, and most universities—either researchers, presidents or experts—all want more money. They are all starving. It's not just the 2 million Canadians who are starving and needing the food bank; it's universities that are starving for research. We're very supportive of not having a partisan approach to the picking of subject matters, but government is about choice, and it is a choice about what you invest in and where you invest.

All three associations and universities have a climate change department, and I have a list here of some the investments that Environment and Climate Change has made. I just can't think that governments pick winners and losers, and with regard to this list of things, I'd point out that if we are fortunate enough to form government, we're going to bring in a law that for every dollar of new spending—and perhaps that's on research—we have to find a dollar of savings.

I'm going to list off a couple of projects that Environment and Climate Change Canada has offered. Jump in at any time to say, "No, this is a project that should not go ahead", and we'd forego the reinvestment of those funds in facilities.

The first one we have is for Iron Ore Canada, and this one's \$18,125,000. This is for the decarbonization of the iron steel-making process for reducing fuel consumption and improving fuel efficiencies. This is a company that Rio Tinto owns 58% of. Their total asset cap is \$103 billion, but the Canadian taxpayers paid \$18 million to them. Once again, this is corporate welfare that Environment and Climate Change Canada has invested in, versus universities.

Another one is Glencore Canada Corporation, and it's \$10 million for critical minerals and mining conversion to electricity. Once again, it's Environment and Climate Change. This is a company that had a \$38 billion U.S. in equity in 2023, and we're giving them \$10 million.

The next one is Copper Mountain Mine, for \$3.2 million. It's the same idea; it is, once again, a for-profit organization that is getting funding that could be refocused for research at universities.

There's FCA Canada Inc., and that's \$2.4 million. That's in Toronto. Once again, it's Environment and Climate Change Canada.

We have other ones. Etobicoke Casting Plant's carbon neutrality project, and that's \$2.2 million, we—

The Chair: That's your time.

Mr. Corey Tochor: Thank you so much.

You can send us written briefs. If there's anything that you think you could use those dollars better for on research, rather than this corporate welfare, please submit that in the brief and we'll make note of it.

Thank you.

The Chair: Thank you.

We'll now turn to MP Longfield, for five minutes.

Mr. Lloyd Longfield (Guelph, Lib.): Thank you, Chair.

Thank you to everybody who is here, and a shout-out to Dr. Bouchard—who will be here in the second round—for the work that you've all been doing around governance.

I think the honourable member across the way was pointing out the importance of peer review in research.

Last week we had a similar list, and one of the things was music therapy in bettering mental health and education. This morning I was with Parkinson Canada, and with researchers from across Canada and clinicians.

There is some great work in Alberta, Dr. McCauley.

There were some surprising recommendations from the panels this morning, where we're looking at Parkinson's treatment in Canada and really focusing on the physical aspects of Parkinson's. One of the areas that came up was music therapy for patients. One of the patients who was there said one of the best therapies he had was singing Kenny Rogers tunes. He got to choose the tunes and then that helped him with his voice, which was diminishing because of the symptoms of Parkinson's.

Another person said that we need to deal with Parkinson's in terms of a family of support—that it's not just the patient, but it's the care provider. They said that social services needs to be involved in research and that the therapists are supported by families who provide different social aspects.

We heard about the importance of interdisciplinary research, not just from the neurologists, but from the people who improve the quality of life for people who are dealing with Parkinson's—as a specific case.

Dr. McCauley, could you talk about the interdisciplinary approach and how some research, which may seem disconnected, could be brought together with an interdisciplinary approach?

• (1635)

Dr. Edward McCauley: Thank you.

We're very fortunate at the University of Calgary to have the Hotchkiss Brain Institute, which is a major investment from our community in the university to advance research in neuroscience.

These diseases that you just mentioned are horrible. While we're unlocking the biological causes, in the neurosciences, of what produces these results, we have to look at many different alternatives to assuage the difficulties associated with it for both the individual patient and with the families.

The key piece is the evidence-based approach or the peer-reviewed approach of ideas that could help in that area. It's putting the ideas forward, testing them in situ—testing them in the hospitals and testing them with the families to move that forward—and then choosing the best outcomes.

While we figure out some of the root causes and while we figure out some of the better therapies, again, it's the multidisciplinary approach of bringing in these different pieces of the environment that the patient is in, like the track record of the individual's experience throughout their lifetime, what they've been exposed to and things like that. Those all require integration of information from social sciences, as well as familial relationships and so on.

Again, it's pulling that information together to come up with efficient therapies that are tested.

Mr. Lloyd Longfield: Thank you very much.

It's exciting to think that we're on the cusp of being able to do that more efficiently, thanks to your work and the work that Dr. Singh has done.

We've had several conversations over the years in terms of veterinary medicine, looking at the range of colleges and universities across Canada that work together on veterinary medicine. Of course, the University of Guelph is part of those conversations, but so is Olds College in Alberta, and so is Prince Edward Island. Of course, Saskatchewan is there as well.

When we're looking at new approaches to plant and animal health, could you maybe expand a little bit on the importance of being able to tie into international peer review and for us to provide international peer review?

Dr. Baljit Singh: Thank you very much.

I have had the good fortune of studying at Guelph, working at the vet college in P.E.I. and being a dean of the college at the University of Calgary and then in Saskatchewan. These are stellar institutions spread across the country.

The example of the peer review process that we undertake in understanding animal health and its connections to plant health, environmental health or human health under the rubric of "one health", is something that truly brings the multiple disciplines together. If we are going to peer review that level of complex science, then we also need international peer review panels.

The Canadian peer review system stacks up against the best around the globe, whether it's the Germans, the Brits or the Ameri-

cans. We do participate in international peer reviewing bodies. We contribute Canadian scientists into international bodies and we invite scientists from other countries to work with us.

I will give the example of a collaborative program between the German science council and the Canadian NSERC to fund the training of the graduate students in very interdisciplinary areas. That's where the German and Canadian peer review systems work together to adjudicate on those grant projects.

• (1640)

The Chair: I'm sorry. That's our time.

Thank you very much.

Mr. Lloyd Longfield: Thank you, Chair, for giving a few extra seconds.

The Chair: We will now turn to MP Blanchette-Joncas for two and a half minutes, please.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Thank you, Madam Chair.

Mr. Poirier, federal government published the Bouchard report, but Quebec also had its Bouchard report, whose authors are the eminent Guy Rocher and sociologist Jacques Bouchard. In that report, published in 2021, they recognized CEGEPs as key institutions that support Quebec and its objectives regarding access to education, regional development, technical training and adaptation to modern challenges.

That conclusion is very important. In your remarks, you mentioned some eloquent figures and pointed out the relevance of CEGEPs throughout Quebec. You said that the federal government allocates just over 2% of the budget to CEGEPs, colleges and polytechnics. If I give 2% of my budget to something, that means I don't give much to it.

I'd like to hear what you have to say about that. Would you go so far as to recommend that a minimum of 10% of the funding for higher education research be allocated to the college sector, mainly for the purpose of conducting applied research, and that this funding be sustainable and predictable?

I'd like to hear your opinion on the importance of that support.

Mr. Sylvain Poirier: Thank you for the question.

Not only are we calling for a significantly higher percentage to be allocated to applied research, but also for a good portion of applied research programs to be primarily assigned to and managed by the college sector. As we know, the latter can and will collaborate with universities. However, we are changing the paradigm by funding colleges, that is, instead of having a scientific thrust—according to a marketing term—we have market imperatives.

So we end up with needs that justify investment in research and call for investment in research. I'm talking about investment in research, because money invested in college research is money that pays off. In fact, numerous studies prove it.

Mr. Maxime Blanchette-Joncas: Thank you.

Do you have a recommendation for the federal government to recognize the relevance of your organization? Once again, when the federal government gives you only 2% of the budget, I wonder where it puts you on the priority scale.

I understand what you're telling me. I also recognize the importance of your organization, but what message do you want to send to the government about recognizing the contribution you make to research and socio-economic development in all communities?

Mr. Sylvain Poirier: That kind of comes back to the question raised a little earlier about the lack of representation, which results in not being listened to and not being seen.

What we would like is to be seen as being among the bodies that distribute funding sources for research inside Canada. We would also like research being done in colleges to receive its due, without taking away what anyone else is due, so it can play a role in terms of applied research in SMEs.

[English]

The Chair: That's our time. Thank you so much.

We'll now turn to the final round for this panel. MP Richard Cannings has two and a half minutes.

Mr. Richard Cannings: Thank you.

I'm going to continue with Dr. McCauley.

Again, I'm trying to find out what we've attempted to do in the past in Canada, in terms of coordinating research and research funding. We have the Canada research coordinating committee, etc.

Do you have any examples of frustrations among researchers who have tried to build co-operative projects, ones that could have been better organized regarding funding and direction? How might this help with that?

Dr. Edward McCauley: I think one thing has changed in Canada considerably: the desire among scholars to collaborate. In previous generations, there tended to be solitary scholars: "I'm going to work in my discipline, and I'm going to have an impact in that area." The new generation of scholars in Canada recognizes that they have incredible value to offer in solving some very important problems. That has led to, in essence, a generational shift in collaboration and in how scholars want to work together to solve those problems. That's been a very fast-moving tide. It is a challenge for built-up granting organizations, such as NSERC, CIHR and SSHRC. They have specific mandates and have delivered incredibly for Canada, but, in terms of discovery research, it's about being able to anticipate those changes at the global level.

I'll give you one example. We were involved in a project—I won't give you the area—that brought together interdisciplinary work from the U.S., Germany and Canada. It was a challenge for our tri-council to get their head around the magnitude of the problem. The new capstone organization would be a one-stop shop for that, in terms of engaging with international partners to facilitate this. That was driven by the scholars up into the organization. Having that opportunity to collaborate across the councils, I think, would be beneficial.

There has been a sea change in collaboration across the world, in a very short period of time.

• (1645)

Mr. Richard Cannings: I would assume that, even within one of the tri-councils—say, NSERC—there have been collaborative grants. I was peripherally involved in a big ecology one in Yukon. However, what you're talking about is broader than that. It's across all of these disciplines and countries.

Is that the kind of thing you mean?

Dr. Edward McCauley: Exactly. Think about how we're going to mobilize capacity around Arctic research in Canada for our sovereignty, safety and so on. We have to bring together those disciplines from a variety of areas to conduct research. Where do they go to get funding for the field experiment, for legal or societal analysis or for working with indigenous populations? How do we pull that together?

I think the capstone organization would provide that governance, as well as the structure and mandate, to go after some of those bigger problems.

Mr. Richard Cannings: Thank you.

The Chair: That is your time.

Thank you to all of the witnesses—Sylvain Poirier, Dr. Edward McCauley and Dr. Baljit Singh—for your testimony and participation in this committee study.

If you have any additional submissions you would like to make, you may make them in writing by submitting them to the clerk. We're always happy to receive them.

We'll now suspend briefly so our witnesses can leave, then resume with our second panel.

• (1645)

(Pause)

• (1650)

The Chair: I'm going to call this meeting to order.

I know we're all very excited to hear our next panel of witnesses, so we'll get under way.

It's now my pleasure to welcome, as an individual, Frédéric Bouchard, dean, faculty of arts and science, Université de Montréal; and from the Canada Foundation for Innovation, we have Sylvain Charbonneau, president and chief executive officer.

Up to five minutes will be given to you for your opening remarks, after which we'll proceed with rounds of questions.

Dr. Bouchard, I invite you to make an opening statement of up to five minutes.

[Translation]

Mr. Frédéric Bouchard (Dean, Faculty of Arts and Sciences, Université de Montréal, As an Individual): Thank you, Madam Chair.

Committee members, I had the privilege of chairing the Advisory Panel on the Federal Research Support System. I would like to take this opportunity to thank my colleagues on that committee and to say that although my remarks are informed by that report, my testimony today is offered as an individual.

We submitted our report in early 2023, and several of our recommendations were included in various measures in the 2024 federal budget.

I would like to highlight and recognize the higher value of scholarships for research students, the larger budgets given to granting councils, and the creation of a capstone organization, which is the subject of your study.

Research and innovation are not luxury hobbies in advanced societies. In fact, they are the necessary prerequisites if we are to collectively flourish. These budget measures are therefore crucial to guarantee the welfare, prosperity and safety of our communities.

This is now one of the many reasons why it is urgent to breathe new life into the federal research support system. In 2026, Canada, the United States and Mexico will be re-examining their free trade agreement: CUSMA, the Canada—United States—Mexico Agreement. It is essential that Canada be able to explain how it is a strategic partner in various economic sectors. Scientific research is a fundamental pillar of the United States' growth strategy.

• (1655)

[English]

The U.S. recently adopted the U.S. CHIPS and Science Act, with approximately \$280 billion U.S., and the Inflation Reduction Act, with approximately \$800 billion U.S. in authorized spending. These policies aim to anchor advanced manufacturing operations and scientific pre-eminence back in the U.S. More broadly, this renewed ambition supports the whole knowledge pipeline, from basic science to applied science, innovation, commercialization, and national security. More broadly, substantial investments strengthen their National Science Foundation, their National Institutes of Health, NASA and so on. There is also increasing public and private support for humanities and social sciences research in various agencies to make sure that the U.S. will have access to the best human capital available. Put simply, like other ambitious countries, the U.S. is anchoring its future well-being, prosperity, and security on talent, research and innovation.

How important is Canadian science to American science? According to scientific co-authoring data, Canada is the number three international partner for U.S. scientists, all fields combined. Given Canada's size, third place is nothing to sneeze at, but we used to be number one until about 1995 or so.

As the Naylor and Bouchard reports have shown, there are many reasons to pick up the pace in the race for talent and ideas. I am emphasizing one of those reasons here: Canada must invest in research and innovation to ensure that we remain a priority partner and avoid becoming a vassal economy that would succumb to brain drain.

[Translation]

To respond to emerging challenges and profit from unprecedented opportunities, we recommended the creation of a capstone organization that would support interdisciplinary, mission-driven research and international collaborations. That would also enable granting councils to intensify their efforts to support non-oriented research, research that is essential to discovery and to training talent.

[English]

How would this work? Well, for example, capstone could launch mission-driven funding calls for advanced materials research with U.S.-supported partners. Such funding calls could demand an interdisciplinary component to make sure that ethical and policy insights propel technological developments, and they could support novel university-industry partnerships in Canada. Other possible funding calls could focus, for instance, on disinformation, cybersecurity and democracy projects with NGOs, Europe, the U.S., other key allies and so on.

However, I have a word of caution. In doing this work, we must ensure that it is never at the expense of the excellence of investigator-driven research. Investigator-driven research is the foundation of talent training, research excellence, innovation, and science diplomacy with the U.S. and other allies. This is true from a graduate student in history to a Nobel Prize in physics.

Let us never forget that societies that are ambitious for their research enterprises thrive, while those that are not falter.

[Translation]

We very much hope that your work will help Canada set its sights higher in the search for knowledge.

Thank you.

[English]

The Chair: Thank you very much.

We'll now turn to Mr. Charbonneau for five minutes, please.

[Translation]

Dr. Sylvain Charbonneau (President and Chief Executive Officer, Canada Foundation for Innovation): Thank you, Madam Chair.

Hello, everyone.

Thank you for inviting me.

This is my first opportunity to address a parliamentary committee since becoming the president and CEO of the Canada Foundation for Innovation just a few weeks ago.

The CFI funds research labs, equipment and other infrastructure at universities, colleges and research hospitals, and we are a critical element of the research funding landscape in this country.

[*English*]

Our unique mandate allows us to support the bold ideas of researchers and innovators. We also serve as a vital link between academia and the private sector to deliver tangible benefits to Canadians. We support the proposed capstone research funding organization. This initiative presents a valuable opportunity to harness the strengths of all players in our research ecosystem.

Today we offer three recommendations. First, maintain the existing independent status and mandate of the Canada Foundation for Innovation. Second, include representation of research infrastructure interests and perspectives in the governance of federal research funding. Third, preserve the CFI's rigorous merit review process for funding.

Let me elaborate on these points. First, we recommend maintaining the existing status and mandate of the CFI. The CFI is an independent arm's-length organization with a unique federal-provincial funding model. Over 27 years, this model has allowed us to leverage more than \$10 billion in federal funding and translate it into over \$25 billion of investment in state of the art infrastructure. This successful program has helped Canada achieve its research goals and priorities.

Our second recommendation is that the governance of federal research funding should include representatives with deep knowledge of research infrastructure to ensure that this perspective is considered in the capstone activities. With its own expertise in research infrastructure, the CFI is also ready to collaborate with the capstone organization to help develop a comprehensive road map for research in Canada. We are well positioned to identify areas that are ripe for exploration and innovation built on existing infrastructure capacity.

Finally, we emphasize the importance of maintaining a rigorous assessment process. As a custodian of taxpayers' dollars, it is incumbent on us to focus our process on excellence, relevance and impact, and to demonstrate our value to Canadians. Let me provide you with a few examples of how our investments have been translated into meaningful outcomes.

CFI invested \$35 million in state-of-the-art equipment that allowed a University of Alberta virologist to develop vaccines for hepatitis C, a disease that costs the health care system about \$160 million each and every year. Look at the Niagara wine industry, which in 2019 contributed over \$1 billion to Canada's GDP. It has benefited from process and product testing in CFI-funded labs in both colleges and universities in southern Ontario.

• (1700)

[*Translation*]

I also point to Chantiers Chibougamau, a lumber company in Quebec that applied research insights from a CFI-funded facility to create a new line of engineered wood products, and in so doing created 250 new jobs for the community.

[*English*]

In Saskatchewan, the Vaccine and Infectious Disease Organization continues to break ground in infectious disease research and vaccine development for both humans and animals.

Our investments also touch small and medium-sized enterprises. They gain access to expertise and cutting-edge equipment to solve their business challenges.

[*Translation*]

It is also important to note that 25,000 students and post-docs every year work with research leaders and gain hands-on experience in the labs we support.

These rich training environments foster an entrepreneurial spirit that prepare the next generation to innovate and contribute to the economy.

[*English*]

In summary, I invite the committee to consider our recommendations as you move forward with your capstone report. By maintaining our current status, considering infrastructure expertise in federal research funding, and upholding our assessment processes, we can further strengthen Canada's research ecosystem and continue to deliver remarkable benefits for Canada.

Thank you. I would be happy to answer your questions.

The Chair: Thank you both very much for your opening remarks.

I will now open the floor to questions.

Members, please indicate to whom your questions are directed.

MP Tochor, you have six minutes.

Mr. Corey Tochor: Thank you very much.

I'll start with Dr. Bouchard.

In your testimony, you talked about CUSMA, the importance of being a partner, what the States is looking for in other trading partners and how Canada is being strategic with its research. I couldn't agree more. What we spend our research dollars on tells our story to the world. We have to make sure that we're investing in things that are practical and real. Some can be foundationally based, driving toward a goal, and then there's other research that gets done in Canada.

In the context of how you think the CUSMA renegotiation goes and how we're doing strategic investments and research, we have, from McMaster University, the project "Superheroes, sacrifice, and salvation: themes of redemption in the modern comic book". That was for \$17,500. This is what we are strategically investing in in Canada.

Meanwhile, we have other investments. It shouldn't be comical, but these are comic book investments we've made.

Another one we've invested in is "Batman vs Superman: visions of the American cityscape in contemporary graphic novels". We spent \$17,000 on that. This is from the University of British Columbia.

Mind you, earlier this year, in the Vancouver Sun there was an article entitled, "B.C. drug 'super labs' producing fentanyl for here and abroad—but charging suspects proving elusive". That was that reported in the Vancouver Sun on October 21.

We're investing in research looking at Batman versus Superman for \$17,000, when dollars could be put into research on, hopefully, crime reduction. That would be a strategic investment for our country, but that's not taking place.

This is the last one, and then I'll get your comment on those three. "History is Magic: The Importance of History and Memory in Harry Potter". That was for \$17,500 as well, and that's at McMaster University.

You might have heard the story CBC reported, entitled, "Hamilton becomes latest Ontario city to declare state of emergency over homelessness, other crises".

You have money going to study Harry Potter in a community that CBC has declared as being in a state of emergency because of homelessness. Don't you think, strategically, we could be investing in better projects?

• (1705)

Mr. Frédéric Bouchard: Thank you for the question.

Not knowing these projects in particular, I'm not going to comment on them. However, more broadly, most prosperous countries support this kind of research in the social sciences and humanities, and they do so for two reasons.

First of all, they do it—

Mr. Corey Tochor: I know there's a Canadian connection with Superman actually starting in Canada, but why would the Canadian taxpayer be willing to put money into a study for Batman versus Superman?

Mr. Frédéric Bouchard: Most of these dollars go to supporting graduate students. They are supporting people in training to acquire skills in communication, critical thinking and creativity, and these skills are portable skills. The proof of that....

I don't know these projects in particular, but when Ubisoft, the game company, set up shop in Montreal, one of the first things it did was hire medieval history grads to develop one of the games in Assassin's Creed. Batman is in the DC universe. I'm not going to say that the Marvel universe will hire these grads, but there is some

expertise here that has value in the media industry. It's the same thing with Harry Potter.

Again, beyond the specifics of these projects, which we know actually do have commercial value—even if they didn't—there is some valuable training of the talent here. I would look at these projects—

Mr. Corey Tochor: That's a very thin line to draw, saying there might be a grad student who gets a job in the gaming world that would work. That is—

Mr. Lloyd Longfield: Madam Chair, the witness isn't being respected here. He's given us his opinion and his answer, which are very informed. We don't need to belittle him at this committee.

Mr. Corey Tochor: I'm not belittling anyone, my honourable colleague—

Mr. Lloyd Longfield: I'm talking to the chair, not to you.

Mr. Corey Tochor: —but we were talking—

Mr. Frédéric Bouchard: I'm comfortable with the thin line I'm drawing, because these are actual cases.

There's a question in the cultural sector, which is a big economic centre in Canada, be it for video games, the movie industry or the cultural industry, and the students in a lot of these projects, beyond the knowledge they're acquiring, are developing skills that have economic value in the private sector afterwards.

Mr. Corey Tochor: These would be some of the people for whom I don't think there would be a heightened brain-drain concern, because here at committee we are looking at strategic investments for the benefit of Canadians. The three examples of taxpayers' dollars being spent.... Indeed, it was mentioned earlier that sometimes the federal money gets paired with provincial money, and \$10 billion can grow into \$25 billion. Well, there is only one taxpayer, and the taxpayers of this country are sick and tired of their tax money being wasted in research that goes into Batman versus Superman, Harry Potter, and a whole host of things. We have real issues in Canada that aren't being researched.

Mr. Frédéric Bouchard: I think we should look at the talent base that is being developed, and this is, in fact, human capital that is being developed. This is why most European countries, the U.S., and the U.K. are investing in research in these kinds of topics—not because they want to learn more about Batman or Harry Potter, but because actually it's a good way of developing the talent base.

Perhaps you will allow an analogy. If you do CrossFit training, one of the exercises is flipping tractor tires. Now, it's not because you're expected to flip tractor tires every day, but because it's a very efficient way of developing muscle mass. These kinds of Master's theses and Ph.D. theses are a CrossFit for the mind. They're basically developing the talent base beyond the domain expertise that is being developed.

• (1710)

Mr. Corey Tochor: At the expense of research....

The Chair: Thank you for making that point.

Mr. Lloyd Longfield: That's a good answer.

The Chair: I will now turn to MP Jaczek. You have the floor for six minutes.

Hon. Helena Jaczek (Markham—Stouffville, Lib.): Thank you so much, Madam Chair.

Thank you, Dr. Bouchard, for answering Mr. Tochor's question so effectively.

Now perhaps we could get back to capstone. Clearly, the concept—I think we all understand—is an overarching body supported by pillars to coordinate research activities, specifically with international collaboration, and also on a mission-driven basis.

However, having said that, I would really like your opinion on how this should be structured. We've talked a little bit about the board of capstone—obviously, its being interdisciplinary, etc. There is a request for funding specifically, as I understand it, for the projects that capstone would be announcing after full consideration, but what happens to the tri-councils? I don't quite understand. Will they continue to receive applications for research, or is there some mechanism to ensure that applicants, researchers, are so aware of the capstone's priorities that in future, researchers will attempt to fit into one of those priorities? On the other hand, will there be two sets of research activities that will, therefore, require a board for each of the tri-councils and a CEO to remain? On the face of it, it looks like a bit of duplication.

Could you just flesh that out a bit?

Mr. Frédéric Bouchard: First, I want to point out that the previous question was fully legitimate and I didn't feel slighted by the way it was asked. These are important questions about how to think about funding.

I just wanted to put that down.

First of all, in terms of the structure, the best model to look at is the UKRI model. The United Kingdom did some sort of capstone reorganization. They have their capstoning—I don't know if that's a verb—and then they have the equivalent of the councils below it. The councils still handle most of the investigator-driven research calls. I don't like to say that it's just “basic” science, because it's not. Let's say “basic” and “applied” research. That is closer to a disciplinary structure. Those are the verticals. That's how UKRI handles it.

As soon as it gets to mission-driven or international research, it has to go beyond the councils. One of the reasons.... Look at the innovation pipeline. I'm going to use technology-readiness levels, because that's a scale used at NASA, in the aeronautics industry and in most commercialization efforts now. Low TRLs—1 to 3—are close to discovery. They're close to basic science. That's probably going to be within the councils. As soon as something matures and gets closer to commercialization, when applicable, it gets interdisciplinary. That's because, when you're trying to deploy a product, technology or vaccine, you have to look at social, technological and health aspects. It's going to get interdisciplinary, so it has to go beyond the councils.

That doesn't mean all projects will migrate from the councils to the capstone. A lot of fundamental discovery.... We talked about Jeff Hinton. I'm going to speak for Yoshua Bengio, who is one of my professors at Université de Montréal. It was basic science for a long time. It would have stayed in the equivalent of a council. When a proof of concept becomes a product and can be deployed, it becomes mission-driven research because it has all sorts of impacts—economic, policy, security and health.

Basically, the structure is this: We still have the councils to support a lot of the investigator-driven research. It's more than an incubator, if you will. You can see it as an incubator. Then, when some projects become bigger than their disciplinary silos, they may need some interdisciplinarity. At any given time, you would have a portfolio of funding calls. Some would be investigator-driven and some would be mission-driven. They're not in competition, because they have different objectives, structures and partners.

• (1715)

Hon. Helena Jaczek: Thank you.

Is there any reason why Genome Canada has not been included with the tri-councils? I looked at their website. I see there are funding opportunities. They seem to be engaged in very collaborative efforts around, obviously, the fundamentals of genomics.

Is there any reason why they are not part of it?

Mr. Frédéric Bouchard: I don't know the specific legislation for the proposed capstone. I can only speak about the report.

In our report, we point to CFI, Mitacs and Genome Canada, but there are other organizations and non-profits that are currently essential partners in the research innovation portfolio. These aren't coordinated enough with other agencies. CFI is very close to the councils, but the other agencies have a different legislative structure. Basically, one of the capstone's main objectives will be to coordinate with outside actors, such as CFI, Mitacs and Genome Canada, and with different departments within the government.

Earlier in the discussion.... I'm happy if somebody wants to ask questions, because I think time is running out on this one. If you want to ask about the budgeting of this, we don't have numbers, but we've thought about it a little, in terms of human resources and the efficiencies we could get through a capstone organization.

Maybe we can get to that later.

The Chair: That's excellent material for another question.

Now we're going to turn to MP Blanchette-Joncas for six minutes.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Thank you, Madam Chair.

I would like to welcome the witnesses who are with us for the second hour of our study.

Dr. Bouchard, it is an honour to have you here at the Standing Committee on Science and Research. I would like to thank you personally for all the work you did on the report. It is an exhaustive, long-term accomplishment, and you entirely deserve this recognition. Thank you for being with us today, and, of course, for telling us about everything you have discovered and learned. Thank you for making suggestions, as well.

Rumour has it that there was good news in the 2024 budget, this being an increase in research funding. We have to admit that funding had stagnated in the last two years. However, we are worried that the funding will not be available if the government does not put this new capstone research organization in place.

I would like to hear what you have to say on this subject, the importance that funding be available, even if the process of putting a new organization in place is not yet under way.

Mr. Frédéric Bouchard: Thank you for your kind words and for the work you are doing.

It is not just a problem of money. If all you do is put more money into research, that will not solve the problems we have in Canada in research and innovation, nor will it solve anything if all you do is put a capstone organization in place. There has to be speedy progress on the capstone organization and there must be follow-through on the financial commitments. In fact, we have already fallen well behind in recent years, as compared to the other countries we are competing with.

If we do nothing but increase funding, that will make some researchers happy but it will not be sufficient to fill some of the gaps that the research ecosystem is experiencing in Canada at present. What is needed is work on both the governance framework and funding at the same time. If all you do is put the capstone organization in place rather than increasing funding, you are redistributing the existing funds over a greater number of missions and we will find ourselves in a situation that will turn out to be worse than before.

Our colleagues at UK Research and Innovation in the United Kingdom have told us that during the initial years after UKRI was set up, they were promised a lot of money and a new organization. Once the new organization was put in place, they did not receive the money promised. For years, they have had to deal with an administrative labyrinth, to no avail.

I urge you to see this as two parts of a whole. It's as if I said to you: Do you want a car or some gas? Without one or the other, you are not going to get very far. You need both. The capstone organization is the new car, and the gas is the additional budget.

Mr. Maxime Blanchette-Joncas: Thank you, Mr. Bouchard. Your comments are clearly illustrated and easy to understand.

Since we are talking about gas, you consulted hundreds if not thousands of people when you chaired the advisory panel that produced the report. You have given a pretty exhaustive picture of the situation. You said we had lost ground on the commercial side in relation to our main ally, the United States, and we were losing ground now on the science side. The figures speak for themselves.

I don't want to be a prophet of doom, but in the last 20 years, Canada has in fact fallen considerably behind at the international level. It is actually the only G7 country that has reduced its investments in research as a proportion of GDP, its gross domestic product, in the last 20 years. We did get some good news recently, but you don't just need gas once every three years. That is what I would like to hear your thoughts on today.

We have also witnessed a brain drain. We are the only G7 country where the number of researchers per 100,000 population has gone backwards. It hurts to hear that.

I would like to hear what you have to say about a more comprehensive and exhaustive picture. It's fine to have more gas, by which we mean more funding, and the best car, that being the best capstone, but it also takes a short, medium and long-term vision to be able to stand against our competitors. The whole world is in competition in the field of scientific research.

• (1720)

Mr. Frédéric Bouchard: I agree with you entirely.

I am going to offer an analogy. I am a philosophy professor, and this analogy is going to surprise some of my colleagues. To me, it's like the support associated with military spending. We can't say we are going to deal with that spending or pay attention to this some other time. At some point, we have to maintain an ongoing, robust capacity in order to support the national interest.

This is also not a partisan issue. The fact that major investments in research have been made under both Liberal and Conservative governments shows us that. We have to see research and innovation as part of the national interest, and therefore we have to make consistent investments over time. If we adopt an approach that involves spending money when things are going well and withdrawing it when things are going badly, our best talents are going to leave the country every time we see budgets shrink. We have to avoid that. This is also not just a matter of our best talents. It affects the next generation too, the people who could become that next generation.

We must therefore make sure there is predictable, ongoing funding so that research is able to develop its full potential.

Mr. Maxime Blanchette-Joncas: Mr. Bouchard, I want to talk to you about just that, the fact that our best talents are leaving the country. At present, Canada invests 1.6% or 1.7% of its GDP in research. Our neighbours, the United States, devote 3.4% or 3.5% of its GDP to this. How can we compete with them and succeed in retaining our best talents? At present, I actually get the impression that we are a branch plant for the United States.

I would like to hear your thoughts on that.

Mr. Frédéric Bouchard: That is a very important point. First, I must point out that the Canadian government has made a big effort. The proportion of research funding that is provided by the government is substantial. A large part of why Canada is lagging behind is the fact that Canadian companies invest less in R and D than American companies do.

The Canadian government is inevitably going to have to play a bigger role, because the Canadian economy is heavily structured around small or medium-sized businesses that do not have the capacity to support research and innovation in the same way as big corporations do. The government must therefore play a bigger role to make up for this lag.

[English]

The Chair: Maybe someone else can pursue that further, or you can submit something in writing as well.

We now will turn to MP Cannings for six minutes, please.

Mr. Richard Cannings: Thank you, Chair.

Thanks to both of you for being here.

I'd like to echo Mr. Blanchette-Joncas' comments about Dr. Bouchard and your report, and what that has really meant to us here at this committee in pushing to provide support for research and science in Canada. We're happy that some of those things have come to pass, and we're hoping that we will see more and more.

You mentioned what the United States is doing, and you finished by talking about the difference in Canada with more SMEs and fewer big companies here—fewer Googles, Microsofts and so on. However, the U.S. is investing vast amounts of money in science and research, and from all reports, it seems to be paying off handsomely already.

You mentioned that Canada has dropped to number three in being a partner with United States. Who are the top two?

• (1725)

Mr. Frédéric Bouchard: I was hoping somebody would ask that. Actually, there was a rise in Chinese science in the nineties, so you do see collaboration across the world with scientists from China. That has been dropping recently, right? In 1995, however, Canada stagnated and other countries picked up.

Number two is the U.K., which did a major reinvestment in research and innovation, and it paid off because now they're the number two international partner to the United States.

In third place, we're tied. I claimed the bronze just for ourselves, but we're sharing it with Germany. Part of it is a result of the reunification between East and West Germany, where all of a sudden Germany became a bigger country with more scientists, and it had a big impact on its potential to collaborate, but Germany has been investing in both basic science and applied science.

Sometimes we hear about the Fraunhofers, which do industry-university partnerships, and Germans also have the Max Planck institutes. Germany is actually a good example of a country that has huge ambitions for its research and innovation sector, and this makes it incredibly interesting to the U.S. as a scientific partner.

Mr. Richard Cannings: Thanks.

I'd just like to follow up on that. You said that the funding isn't enough by itself, that more money isn't enough. We need the structure, we need the organization. I'm just wondering how the Americans have dealt with that and what we can learn from them. Maybe they're too different, but what have the Americans done? What has the U.K. done? You mentioned Germany. What are the real take-aways from other countries? There's so much to learn from not being the first off the mark.

Mr. Frédéric Bouchard: The U.S. and Germany just put in, to use the technical term, “crazy” amounts of money, so it's very different, but if you look at Germany and the U.S., their growth strategy is fully committed to research and innovation. They fund it through all kinds of different agencies.

I'll focus on the U.S. for a second. In the U.S. what's very different is that a lot of the mission-driven is handled via DARPA. DARPA gets part of its funding through the U.S. military. It's not just military research, but it's technological research. They have access to the largest procurement in the U.S. government. It's a huge pool of money. Now they're trying to replicate the DARPA model in other non-defence sectors. You're seeing DARPA-like instruments elsewhere.

We did not propose a DARPA-like model, because that type of procurement is not available to the Canadian tax base. The capstone model is more realistic with regard to our capacity, but it has the same philosophy of agile, quick-acting, mission-driven calls that could be university-industry, or just university, or...to answer a mission.

France and the U.K. are more alike. I mean, they have very different organizations, but they've invested significantly historically. In the U.K. the private sector plays a larger role than in France. They basically have agencies that they've been nurturing through time. It's the same thing with the U.S. I think the NSF is 70 years old. They'd much rather put more money into an organization to reinvent it.

We don't have access to as many resources. This is why we went through a slightly different model with capstone. I'd say that capstone looks a bit like UKRI. It looks like the U.K. model, but with differences. That's the structure it kind of resembles.

The Chair: You have 34 seconds.

Mr. Richard Cannings: Okay.

How do you envision, when we have mission-driven calls for funding, who applies? Is it individual researchers who say they want be part of this, or is it groups of researchers who get together from all across the spectrum?

Mr. Frédéric Bouchard: Actually, this is the part where I can say what I think it should be, but I have no idea what's in the actual legislative framework.

This is the way we were thinking about it in our report: You should have differently scaled missions. Let's say there's a new accord with Europe on food security. Well, you could have both governments committing to putting x million euros or dollars for mission-driven calls. Capstone would get that envelope, and they could tier it, depending on how its scientific directorate would see what has more bang for the bucks. They could say that they'll be funding \$50,000 exploratory projects and funding five million projects. They could be very small teams, medium teams or large teams.

I guess the biggest change with the existing councils is to have the legal framework that allows it to be agile in terms of programming. For example, for the next five years they want to develop quantum security, quantum cryptography, and they would do the calls. Five years later, they could do something else.

• (1730)

The Chair: Thank you. That's way over. Maybe someone else will pursue that, or you can send something in writing, because that was quite fascinating.

We'll start off our five-minute round with MP Viersen.

Mr. Arnold Viersen (Peace River—Westlock, CPC): Thank you, Madam Chair.

We heard here, just today, that small and medium-sized enterprises in Canada are not investing in R and D. Part of that, I think, is due to the carbon tax, which the Parliamentary Budget Officer notes as taking somewhere between \$20 billion and \$30 billion out of our economy. One of the first things that small and medium businesses end up cutting is R and D, so I would totally translate that the costs of the carbon tax are impacting the research that small and medium enterprises are doing.

We also see two million people lining up at the food bank every month. One thing that I often hear back home is that the government seems to be focused on nothing in particular and everything at once, and also pursuing.... Folks are very frustrated when they see Canadian dollars going abroad.

I have a list here of studies that have been funded, to the tunes of hundreds of thousands of dollars, in the United States. We just heard about, I think the technical term was “crazy amounts of money”—I like that term—that the Americans are spending on research. Why in the world would we be funding American universities? The University of Maine, Clarkson University, Michigan Technological University and the University of Vermont are all getting hundreds of thousands of dollars. Boston University...\$90,000. The one that galls me the most—I cannot figure this out—is \$600,000 for the study of conservation of a central habitat for polar bears. As far as I know, Canada has the market cornered on polar bears. Why are we sending money to the University of Washington to do the study on the essential habitat for polar bears?

I get the impression that you've been proponents of this capstone research program. All this money that I've mentioned comes through the ministry of the environment, which...I'm not quite sure

whether that money is then funnelled through the tri-council or what, so how do we...? There are two things to this. One is that this money is being funnelled to the United States, and we're competing with “crazy” money down there. Two, why is this money not being run through the tri-council? Do you imagine that this capstone would capture...so that we're not seeing this “madly off in all directions” research funding?

Go ahead, Mr. Bouchard.

Mr. Frédéric Bouchard: Well, I should also point out that, when I said “crazy amounts of money”, I said it with a loving appreciation. I wish we had that kind of that money.

More seriously, I don't know the types of grants that are...it's not through the tri-council, that I know of, so it's probably the department. One intention behind capstone—and again, this is a legislative and a government issue, so it goes beyond the purview of our report—is that it should try to concentrate the research capacity, let's say. Right now, you have departments that have grants here and there—

Mr. Arnold Viersen: Would you say my “madly off in all directions” is a reasonable description of what is currently happening?

• (1735)

Mr. Frédéric Bouchard: No, it's a historical artifact. All departments need research because it's really important. Initially, they didn't have a mission-driven instrument, so they would do funding calls from within their department.

If you have capstone, you can have the department of agriculture say, “Okay, I want to look into soybean production,” and, instead of running a funding call through agriculture, they can transfer the envelope to capstone, which will have the full-time equivalent to do the calls, disburse the money, have the excellence, the peer review and so on. It can basically act—I don't want to say “broker”—as the point of service for these funding calls. You would have the expertise. Is that not right? Whereas not all...different departments don't have the capacity to run these funding calls at scale.

Mr. Arnold Viersen: Mr. Charbonneau, you were nodding along there. Do you want to add a comment quickly?

Dr. Sylvain Charbonneau: No. I think that Monsieur Bouchard expressed himself very well.

I'd like to come back to a challenge that has troubled me for some time. You talked about business expenditure on R and D in this country—

Mr. Arnold Viersen: Yes.

Dr. Sylvain Charbonneau: —which really has been in free fall for over two decades. It's something that we need to address in Canada.

If I can just revert back to what the mandate of the Canada Foundation for Innovation is—which I did not expand on during my brief—we are supporting core facilities of all sorts across the country in colleges, CEGEPs, in universities.

I spun off a company myself about 20 years ago, an IT company, and if had it not been for these core facilities and these very sophisticated pieces of equipment that I could have accessed, there is no way I would have been able to raise tens of millions of dollars in venture capital. This is extremely important for the country, plugging into what Mr. Bouchard was saying.

Mr. Arnold Viersen: Thank you very much.

The Chair: Thank you very much. Now we'll turn to MP Chen for five minutes.

Mr. Shaun Chen (Scarborough North, Lib.): Thank you very much, Madam Chair. Thank you to our witnesses.

Mr. Bouchard, thank you for being here and for your great work.

I want to continue with some of the conversation that's happened today, and you described your "loving appreciation" for the "crazy amounts of money" that the United States spends on research.

At the same time, I think you might hear from others, perhaps on the innovation committee, talking about the same crazy amounts of money that Canadian government invests in supporting research and development and innovation in driving it.

I'd like to understand that gap. I think it's important to start off by underscoring that Canada has an incredible education system. It is the envy of the world. We have incredibly talented people and a well-developed system of education that consistently ranks high. Yet at the same time we do see the talent gap widen between Canada and our OECD partners.

How do we bridge that gap in supporting the innovation that is needed? As you mentioned in a previous comment, the Canadian economy is focused a lot on SMEs. How do we bridge that gap between this great investment in research that we are doing, that perhaps, yes, we should continue to do more on, and ensuring that these talented researchers and workers of the future economies are going to stay in Canada, are going to help develop the next generation of technologies and innovation that are going to support our economy?

Mr. Frédéric Bouchard: I'm going to give you a concrete example. I'm dean of the Faculty of Arts and Sciences at Université de Montréal. Part of my job is raising money, philanthropy with donors, and so I'm trying to do this because the research money is not sufficient for the government. There are other people willing to help, but even then, that's not up to the scale that is required to maintain the talent here.

I had managed to get a \$6 million endowed chair for one of my chemistry professors, a young star, awesome. I got the money and I was telling him, I've got it, you're going to benefit from this, this is an endowed chair, you're getting money—well, I didn't tell him forever—but an endowed chair basically means that you have the capital and you're just using the interest to fund the research.

He got an offer from Germany. He left for Germany, and he took three of his Ph.D. students. He was nice about it. He said, "Thanks, Dean Bouchard, for trying this, but Germany is paying me for a brand new lab". He left with his graduate students who are not German. These are Canadian students and they could have a nice lab in Germany. He works on batteries, and I can guarantee you that in

five years he'll have some patents in Germany and we'll be licensing them here.

The government is doing a lot and I am extremely grateful. I think the additional investments that have been announced in the last budget will go a very long way in making us competitive, but before these investments, we were in the league, if you will, but we weren't competitive, and so we were losing out concretely talent that we desperately need to keep in Canada.

• (1740)

Mr. Shaun Chen: The creation of capstone is to modernize the system and to create the coordination and the agility that is needed.

How do you believe this can help play a role, beyond investing more funding to innovation, to research and to science?

How can the organization play a role in also bridging the gap?

Mr. Frédéric Bouchard: Right now, if you want to coordinate with, let's say, CFI, with Mitacs or with Genome.... Let's say, depending on the project, you have other external actors that you want to connect to. There's already good coordination between each council and CFI, but then you would have capstone talking to CFI to see if they can work together to simplify things. You could have a link to Mitacs. It just simplifies leveraging other actors in the ecosystem.

It simplifies discussions with the provinces. This we can get to with CFI. A lot of the money is actually provided by the provinces as matching funds for infrastructure, but all of these discussions are happening in a diffuse way. Now some of it would be in capstone. That would help identify goals, identify priorities, move on to these strategies, and then leverage the other partners so that they can add additional funds beyond government money.

Mr. Shaun Chen: To go back to your example about—

The Chair: You're out of time.

We've allowed each one to go over because it's just such wonderful testimony.

Now we will turn to MP Blanchette-Joncas for two and a half minutes, please.

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you, Madam Chair.

Mr. Bouchard, as a former president of ACFAS, the Association francophone pour le savoir, you are aware of the importance of the advancement and dissemination of knowledge in French.

In your report, you stress the importance of equitable treatment of funding applications submitted in French within the federal system.

Could you explain how you envisage the implementation of the recommendations you have made, in particular the ones intended to ensure that research conducted in French has the same opportunities and the same resources as research conducted in English?

What specific mechanisms would be needed to ensure fairness in this regard, and how could a capstone organization play a key role in promoting the production and dissemination of knowledge in French, both in Canada and at the international level?

Mr. Frédéric Bouchard: Thank you for your question.

I don't know whether I can talk about a specific mechanism, but I will offer you some avenues for thought.

The proportion of research that is done in French—and I am not talking about francophone researchers, I am talking about research done in French—varies widely among the various scientific communities. In literature, humanities and social sciences, there are more researchers doing their research in French than, for example, at NSERC. Again, I am not talking about francophone or anglophone researchers, I am talking about research being done in French.

Having a capstone organization would allow for better exchange of ways of doing things and of tools and practices, and this would help to generate more of certain types of research. For example, without presuming to know what would happen, I think it might encourage NSERC or the CIHR, the Canadian Institutes of Health Research, to conduct more research in French.

With respect to the dissemination of scholarly publications in the humanities and social sciences in French, I am letting my personal interests show when I tell you I am the chair of the board of directors of *Érudit*, which is supported by the CFI and the Social Sciences and Humanities Research Council.

How can we deploy these tools, which are born out of a need that comes mainly from the francophone humanities and social sciences community? How can tools like these be disseminated in other scientific communities? Generally speaking, the capstone organization could make it possible to disseminate good ideas or good tools outside the context in which they initially emerge. Will it? That is a different matter.

• (1745)

[*English*]

The Chair: Thank you.

MP Cannings, go ahead for two and a half minutes, please.

Mr. Richard Cannings: Thank you.

I wish we had another day to do this because I'd like to get to Dr. Charbonneau as well.

Dr. Bouchard, you mentioned that you had some ideas about budgeting and I don't believe you had a real chance to answer that question. I'll give you my time for you to comment on that because I think it's a very important aspect.

Mr. Frédéric Bouchard: This is where each word I say... Well, you know, a lot of people are listening right now.

Let me be honest. We have most of the programming capacity, if you will. We have the staff to run most of these competitions, exist-

ing and otherwise. I think it's about redeploying existing human resources to support the agency, rather than growing them. There will be a need for a certain number of employees, but the councils are efficient organizations in terms of human resources. Even with that efficiency, certain of those human resources could be redeployed towards the capstone. Currently, there is some tri-council programming run from TIPS, some run from NSERC and some run from CIHR. My hunch is that there are ways of redeploying existing human resources. They could be allocated to mission-driven calls or interdisciplinary calls.

In terms of programming budgets, that's where it's floating. Again, this is very important: If you're redeploying existing resources but don't increase research budgets... I'm putting aside the operational budget. I think a lot of the operational budget could be redeployed in the system to achieve many of the goals, but not all of them. There will be some need for new employees, but it's not a huge over-and-above addition, if it's done correctly.

However, the research programming budget needs to be increased because, if we reallocate CIHR, NSERC and SSHRC funding to do the mission-driven part, we will lose even more ground relative to our competitors. The programming envelope, in certain respects, is more floating, because mission-driven calls could be part of a strategy that has a few years. The recurrence of some programming envelopes is not seen in the same way. If you say that you want to do five years of quantum cryptography or five years of food security, you budget for five years. There's no recurrence. You just say that, for five years, you're supporting this kind of research. Everybody's expectations should be adjusted to the fact that, in five years, there may not be additional money—or there may be. The government of the day will have to determine that.

It's a different kind of programming budget for the mission-driven part than it is for the council part. The council part is about more stable funding, so the recurrence is very important. The predictability of the funding for investigator-driven research is more important than it is for the mission-driven part.

The Chair: Thank you.

I think that's a good place to wrap it up, although I agree that we could sit and listen to this for a long time.

Thank you to both of you. If there's anything further you would like to add or didn't get a chance to speak about here, please feel free to make a written submission to the clerk, because it would be welcome. Again, we're very grateful you were here.

The next committee meeting will be on Thursday, October 31. I don't know whether you're coming in costume or not.

Is it the will of the committee to adjourn the meeting?

Some hon. members: Agreed.

The Chair: Okay, the meeting is adjourned.

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