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Chair

Mr. David Sweet

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● (0845)

[*English*]

The Chair (Mr. David Sweet (Ancaster—Dundas—Flamborough—Westdale, CPC)): Good morning, ladies and gentlemen. *Bonjour à tous*. Welcome to the thirty-second meeting of the Standing Committee on Industry, Science and Technology. We have a cavalcade of witnesses with us today.

From the University of Waterloo we have Scott Inwood, the university's director of commercialization. From the University of Manitoba we have David T. Barnard, president and vice-chancellor, and Digvir Jayas, vice-president, research and international. As an individual we have Catherine Beaudry, an associate professor in the department of mathematical and industrial engineering at the École Polytechnique de Montréal. By video conference we have Gay Yuyitung, the business development manager at the McMaster industry liaison office.

Welcome, ladies and gentlemen. We're very happy to have you here informing us for our study right now.

Why don't we go first to the person who is remote.

Madam Yuyitung, could you go ahead for seven minutes with your opening remarks, please?

Ms. Gay Yuyitung (Business Development Manager, McMaster Industry Liaison Office, McMaster University): Thank you very much for inviting McMaster University to participate in the standing committee's study on the effectiveness of the current intellectual property regime in Canada.

I will be speaking from the perspective of our office that supports and services the research administration area of the university. In this capacity our office offers a variety of functions related to the management of the university's intellectual property, including negotiating the rights to intellectual property generated at the university through research collaborations with industry; assessing inventions derived from university research, and filing for intellectual property protection; and developing and implementing commercialization strategies for such intellectual property with respect to licensing or startup potential.

The standing committee's examination of Canada's intellectual property regime and innovation support mechanisms is very much welcomed, as McMaster University, through its VP research office, is currently undergoing a review of its policies and procedures in these areas.

That being said, it should be noted that commercialization of technology created at the university is auxiliary to the university's core mission of teaching, research, and scholarly publications. As such, the resources to undertake the commercialization of university technologies are often quite modest and becoming more so with the overall budget pressures that all universities are facing.

University-created technologies are typically at a very early stage of development, where the technical market risks are high and uncertain, and the path to commercialization is long and arduous. In general, given the university's small patent budgets and the high cost of drafting and prosecuting patent applications, as well as the long time to issuance of such patents in the Canadian system, very few patents can be supported by the university on its own. However, most sources of government funding for further research and development at the university toward a commercialization end point requires some form of intellectual property protection, typically in the form of a patent.

The current practice of McMaster University is to initiate patent filings. But without a source of additional funding, be it an industrial partner, investor, or granting agency, many applications become abandoned before commercialization is realized. These issues are magnified in the biotech and health sciences sectors, which typically require not just a single patent but a family of well-protected patents for commercialization, which universities are ill-suited to build. This can result in stifling the development of truly innovative products, or causing many of these innovative ideas to be sold early to large multinationals, with limited benefit to the Canadian economy.

For other sectors, such as software, we typically do not file any patent applications due to the rapid change of technology advancements in this sector. The need to invest limited dollars in being first to market, versus using patents, is a form of gaining competitive advantage.

An additional consideration is the cost of filing for patent protection in Canada. For many inventions the market opportunity is much larger in the United States or other international markets. While McMaster currently supports prosecution of its patent applications in Canada, we are evaluating the value and benefit of this strategy. We know of other universities that do not file in Canada as a general rule.

Recent encouragement has been given to universities from government to extract additional value from their technology portfolios, but the value universities should be measured by needs to extend beyond simply generating revenue from university technology. It should include the impact we have on job creation, increased company productivity through research collaborations, and training of student entrepreneurs.

A university can build a culture of applied research commercialization through supporting faculty members' interests in innovation technology transfer. A university can also serve as a major component in the innovation ecosystem that encompasses elements internal to the university, as well as external parties that are supportive and knowledgeable about innovation.

We would encourage the Government of Canada to investigate ways to cluster the material resources, such as funding, equipment, and facilities; the human capital, such as faculty, staff, students, and industry researchers; and the institutional elements, such as university infrastructure, government-funded centres of excellence, funding agencies, and the co-location of industrial partners. Those are constituent elements of the innovation ecosystem needed by entrepreneurs and companies to support their endeavours.

● (0850)

Ontario currently has a number of successful innovation ecosystems centred around the MaRS Discovery District in Toronto, and Communitech at the University of Waterloo, but there's a need for more. The university can play a significant role in the innovation ecosystem through its support of basic and applied research, its performance in research contracts with industrial sponsors, its training of highly qualified personnel, and early-stage technology transfer. But further support would be welcomed to develop ecosystems that include more entrepreneurial education, larger pools of funds to support both research and patents, development of start-up service providers, and fostering executive mentorship programs.

The failure to leverage the value of the investments made by university research deprives both the university and society at large of benefits to which they are both entitled.

Thank you.

The Chair: Thank you very much.

Now we'll start from the top of our order.

Scott Inwood from the University of Waterloo, you have seven minutes.

Mr. Scott Inwood (Director, Commercialization, University of Waterloo): Good morning, honourable members. Thank you for inviting me to this standing committee meeting.

I've read over the years many reports on commercialization and intellectual property protection. It's actually refreshing to be invited to this kind of format to give you a perspective right from the coal face, from a practitioner's point of view. So again, thank you for the invitation this morning.

I'll make a few brief remarks about the University of Waterloo and set the context for my following remarks.

The University of Waterloo is a relatively new university, incorporated in 1957. It was incorporated with a couple of key principles. One was the co-op education program. It was designed to have a closer working relationship between industry and academe. With students going out into the workplace, learning practical skill sets, and bringing that back into the learning environment, professors would then get that continuous feedback mechanism—which is what's relevant and practical to industry—and that would then get introduced back into the classroom.

Along with that, the university focused on engineering and math in its earliest days. We were the first university to have a faculty of math. It was very much driven by a desire to work closely to solve industry problems. The university's pedigree was based on this closeness to industry, on industrial relevance, bringing that into a learning environment.

The third pillar on which the university was built was an intellectual property policy that granted ownership to the inventors. The principle behind that was that incentives drive commercialization activity. Incentives are is a motivator to actually take innovation, create it under their research programs, and move it out into the marketplace.

That inventor ownership policy has been responsible for attracting more entrepreneurial-oriented faculty members. It draws to the University of Waterloo certain types of faculty members, those who are interested in commercial activity. And actually, those kinds of faculty members play nice with industry, so there's a very interesting dynamic. It's a culture that's been cultivated at the university right from inception.

In the Canadian university IP landscape, I guess the relevant contrast is with the U.S., where intellectual property is owned by the institutions under the Bayh-Dole Act, whereas in Canada it is policy driven. Each individual university sets policy with respect to its intellectual property ownership practices. Approximately 40% of Canadian universities have a form of inventor-own or joint ownership policy. The rest, of course, would be institution-owned.

Waterloo's policy, as I mentioned earlier, is an inventor-own policy. The philosophy is that ownership attracts high-quality entrepreneurial researchers, and incentive is the best motivator to promote the transfer of technology. The result is that UW is widely acknowledged as one of the most entrepreneurial research environments in Canada.

One might wonder why there is a technology transfer office at Waterloo, then, if faculty members own it. Of course not every faculty member is entrepreneurial. There are many who would prefer to just stick to their academic pursuits. Our office is there as one of many options for our faculty inventors and creators to support commercialization activity.

So we are there, and we have to market our services to our faculty members. It forces us to be more customer-focused. It requires us to be proactive in finding the best researchers, and marketing our services to them, and actually offering them a value proposition.

If they work with us, the concept is that we share revenues: 75% to the creator-owners, 25% back to the University of Waterloo. As a consequence of both the ownership policy and the revenue-sharing model, it's one of the most attractive inventor commercialization environments in Canada from a faculty member's perspective.

You can't talk about intellectual property without talking about commercialization. IP, or patents in particular, is almost always a prerequisite for commercialization, with the exception of software, where you don't necessarily need patents. The Institute for Competitiveness and Prosperity has indicated that a solid measure of a region's innovative capacity is patenting. Compared to the U.S. peer jurisdiction, Ontario's patent per output is 55% lower, and intellectual property represents 45% to 75% of corporate value of the Fortune 500 largest companies. It's quite clear that in intellectual property, having patents or investment in patents is a necessary precursor to future commercial opportunities and the creation of wealth.

Universities often make very early and thus very risky investments in intellectual property. We see stuff that's very early. In fact, it's not uncommon for colleagues—Gay, me, and others—to see faculty members come into our offices two days before a conference, when they're about ready to disclose the technology, requesting patent protection to be filed to preserve an opportunity. Then of course you're forced to make decisions very quickly.

● (0855)

Fortunately, there are very affordable ways to file patent protection to preserve those opportunities, but we're in a very fast-moving environment sometimes, and we're forced to make decisions on value propositions on stuff that's very early and without a lot of feedback as to what the market opportunity might be.

Essentially, we're in a position where we are creating an asset. Our investments preserve an opportunity for future commercialization, commercialization beyond intellectual property. IP or patents are essentially an ante to play in the commercialization game. Universities most commonly operate in the pre-commercialization gap space. We spend a lot of time validating technology performance through prototyping and demonstration projects. There are a number of federal and provincial programs that support those activities, such as the NSERC idea to innovation program. We spend a lot of time trying to de-risk technology opportunities to attract commercial interests. De-risking is very important for both licensees who may want to take on the technology and for angel investors who may want to invest in actually creating a start-up company.

Commercialization is done by the private sector. It's either by investment or by licensing. Universities don't commercialize. Universities set the conditions that enable future commercialization. I think that's a key distinction. A lot of people talk about university and commercialization. It should be viewed more as setting the stage for commercialization.

In Waterloo in particular, we have a philosophy that it takes a village to raise a child when it comes to start-ups. Start-up companies require government support, financial support, industry support, and also community support. In Waterloo, we have a very entrepreneurial ecosystem. We have the Accelerator Centre in town, where technologies and young companies can be incubated with mentoring services, and a very active industry association, Communitech, which provides mentoring support and best practices and support for finding financing for these young companies.

Thank you.

● (0900)

The Chair: Thank you very much, Mr. Inwood.

Now we will go the University of Manitoba.

Are you going to split your time, Mr. Barnard, and Mr. Jayas? You have seven minutes.

Dr. David Barnard (President and Vice-Chancellor, University of Manitoba): We will, if that's all right.

The Chair: Absolutely. Please, go ahead.

Dr. David Barnard: Thank you. We appreciate the opportunity to be here. We realize there's been a change in your schedule and a change in ours. As a result, though,

[*Translation*]

we do not have our notes in French today.

[*English*]

We apologize for that, but the time just wasn't available.

We're interested in increasing the impact of our research. We have a strategic planning framework that talks about building on strengths of the university, responding to the reality of being in Manitoba, because where we are shapes who we are, and having a broader impact. To advance this strategic agenda, we've had to revisit some aspects of the infrastructure of the university broadly considered, including policies and, specifically, policy around intellectual property. We're discussing a new approach. We're in the early stages, but we thought it would be potentially instructive to the committee. If I may, I'll ask my colleague, Digvir Jayas, the vice-president of research and international, to describe it to you.

Dr. Digvir Jayas (Vice-President, Research and International, University of Manitoba): Thank you very much for the opportunity to speak to the committee.

Currently, at the University of Manitoba, our policy is that the intellectual property is jointly owned between the university and the inventor. We look at the intellectual property as two separate items: one is intellectual property that can be commercialized; the other is the works themselves, which are original literary, dramatic, musical, or artistic works or performances protected under the Copyright Act.

We separate them and we deal with them differently at the University of Manitoba. Works are owned by the creator, whereas the other intellectual property is owned jointly. We do the commercializing of the other intellectual property through the university's technology-transfer office, either through licensing or through spinning off the companies.

When we develop collaborative projects with industry, industry would like to have the ownership or assignment or exclusive licence to that IP. A lot of time is spent in negotiating. The approach we are taking is that if industry is involved in a project we would allow them to have the exclusive right or assignment of that IP. In a sense, they would have full control of the IP.

We are looking at industry being responsible for deciding whether to protect the IP and manage it through its life cycle. If students are involved, naturally we would want the students to be able to graduate, to defend their thesis. At the same time, we would be willing to delay the public exposure of their research for up to six months, and in exceptional cases for up to a year, so the student's career would not be affected. Researchers would be allowed to publish their collaborative work with the industry, but the industry would have the right to review the material, decide whether it is protectable, and to protect it. Industry partners would allow the university to continue to use the IP for non-commercial, internal research. Because works are owned by the researchers, our researchers would agree to allow industry access to literary works for their internal use.

In return, we are asking our industry partners, who would have full control of the IP, to assess the value of that IP. We are getting feedback from them on the percentage of the royalty we would receive in return for their having full control of the IP. We are having consultations. Our consultations with our research community have shown that this is a model they would like to work within. Many of the industries with which we have consulted also like the model we are proposing.

The advantage of this approach is that the university would continue to receive royalty income, which we would share 50-50 with our inventors. So the inventor is still being recognized for his contribution and the university is receiving some return on its contribution. Industry partners are already the existing receptor of that IP. So by having the right to receptor capacity, issues are solved. They are interested in that IP: they want it to be sold so they can grow their technology.

There would be a significant saving in the costs of negotiating, because the percentage would already have been agreed upon. There seems to be quite a good reception on the part of industry, as they want to work within this model. The negotiation time would also be reduced quite significantly and this should foster a lot more industry-university collaboration.

● (0905)

The advantage we see for our students, in particular, is they would be working then on the problems that have real application and very short timeframes. In that situation they would be exposed to both the basic research required to solve an applied problem and a current problem of the issue. Certainly, there would be some perception that the university is helping industry in this particular case. But we are helping all industry that wants to work with the university, so we are not saying we would only work with such-and-such industry. We are willing to work with any industry in that kind of open model, so it is quite a flexible model in that sense. The reason researchers would want to work in this kind of model is that it is going to benefit their research program and their research program will grow with time. Overall, we think this approach would help us grow our collaborations with the industry and then utilization of that IP for economic growth in provinces and in Canada.

Thank you.

The Chair: Thank you very much.

Now we'll go on to Madame Beaudry, associate professor, department of mathematical industrial engineering,

[*Translation*]

from the École Polytechnique de Montréal. Ms. Beaudry, you have seven minutes.

Ms. Catherine Beaudry (Associate Professor, Department of Mathematical and Industrial Engineering, École Polytechnique de Montréal , As an Individual): Good morning.

[*English*]

I trust you have received my text in French and then you have a translation in English. Yes.

[*Translation*]

So I am going to continue in French.

My position is slightly different from my colleagues'.

As a user of patent data for my research, I have two topics to speak to you about this morning. The first deals with the use by and impact of intellectual property on high technology, especially biotechnology, companies. My second subject, which may seem less relevant at first glance, concerns the intellectual property generated in full or in part by universities. I realize that this is exactly the same topic that my colleagues brought up earlier this morning.

On the first topic, since 2007, I have been able to work with the data from four Statistics Canada surveys on the use and development of biotechnology in Canada. These surveys, conducted in 1999, 2001, 2003 and 2005, were combined with Statistics Canada's Business Register to evaluate the growth and survival rates of those companies through to 2009.

The role of intellectual property was evaluated in those studies. In regard to the survival of small biotechnology companies in Canada, i.e. those with fewer than 50 employees, our results show that a high number of patents increases the likelihood of not surviving through to the next year by 0.72%. In other words, extra patents reduce the chance of surviving an extra year by 0.72%. While this figure is not huge, it nonetheless suggests that support mechanisms should be established to protect intellectual property, particularly for small businesses.

As regards growth measures, our results show that the number of patents does not appear to affect businesses' performances. Rather, we have found that patents have a non-linear effect on growth. In other words, patents have a positive effect on the growth of biotechnology companies until they number about 60. Above that threshold, further patents adversely affect the growth of small businesses in the short (two years) and medium (four years) term.

We have also studied the growth of so-called “gazelle” firms, or companies that have doubled in size within four years. In this case, the presence of small and medium-sized enterprises with strong growth have a clear and positive effect on the rapid growth of those businesses. The patents of those businesses are likely “good” patents in that they contribute to their rapid growth.

It is important to note that, in order to assess the quality of the intellectual property of those businesses, the Statistics Canada surveys would have to be combined with the register of patents for Canada, the United States, Europe, Japan, etc. This type of study is, for the moment, quite complicated.

In terms of the factors that contribute to innovation, measured in terms of number of patents or number of products, as I have but seven minutes for my presentation, I will be able to answer your questions to that effect later on.

The second subject I would like to share with you this morning, somewhat related to my colleagues' remarks, concerns the corporate university. I have studied the influence of patents on scientific production as well as the tendency of university researchers in biotechnology and nanotechnology to seek patents. Which factors affect these two measures? In the first case, our studies show, as does the literature, that patents have a way of reinforcing scientific publication. There is therefore no effect of substitution between patents and scientific publications. However this strengthening effect disappears after about 20 patents over a three-year period. The effect then becomes negative and hence reduces the scientific performance in terms of publication. It seems that researchers are somehow choosing to patent rather than to publish.

In terms of the quality of those publications, an inverted U curve is observed for the number of citations obtained by these publications. Once again, this comes down to the researchers' choice.

In regard to the tendency of university researchers to seek patents, our research shows that it is primarily the fact of cooperating with private enterprise, as measured by the amount of industrial contracts awarded to researchers, that influences the propensity to seek broader patents with a larger number of claims and to obtain more citations, two indicators of patent quality.

● (0910)

If we consider only patents of university inventors, our research shows that the contracts have a positive effect on the number of patents granted to researchers, but that that effect becomes negative in terms of the number of citations obtained by those patents. However, public funding has a positive effect on the number of patents up to about five; thereafter, the effect becomes negative.

In other words, private financing and, to a certain point, public financing, influences the number of patents, but only public financing influences patent quality, as measured by the number of citations.

Before concluding, I would like to mention a related topic that I will not have the time to speak to. This is the leaking of intellectual property out of Canada. These are patents in which Canadian inventors have participated that are owned by foreign interests.

In nanotechnology, a little over 40% of the intellectual property leaks across our borders. This is a marked improvement over the mid-1970s, when the figure was about 60% or 70% of the intellectual property. In addition, these are the patents that list the most claims. So, theoretically, they are those with the broadest scope.

Should we be concerned? It would be useful to consider the issue across all sectors, which is what I hope to do this summer.

I have covered a lot of ground; what can we conclude from all these studies?

In terms of biotechnology companies, the race to the patent house may in fact undermine small businesses and compromise their survival. Support mechanisms should therefore be established to support the protection of intellectual property for small businesses.

It is also necessary to allow and facilitate the combination of data on businesses, their performance and the characteristics of their intellectual property, as well as to construct longitudinal studies on businesses' performance in terms of growth and innovation. Without these indicators, we will never be able to say whether or not there is an impact and whether we want to change the intellectual property protection system.

But with these indicators, we will be able to optimize modifications to the system to ensure better performance by Canadian companies.

In terms of the corporate university, the importance of links to business is well established. However, we must still be careful not to neglect the discovery research usually financed by the public sector that feeds those applications, as the source could dry up. It will also be important to examine the impact of the leaking of intellectual property across our borders, because that generates no value for Canada.

Thank you for your attention. I will be happy to answer your questions in French or in English and to provide you with more details on my research.

Thank you very much.

● (0915)

[*English*]

The Chair: *Merci beaucoup*, Madame Beaudry.

Now we'll move on to Mr. Braid for seven minutes.

Mr. Peter Braid (Kitchener—Waterloo, CPC): Thank you very much, Mr. Chair, and thank you to all of the panellists for being here this morning and for your excellent presentations. We got a great cross-section of perspectives from universities across the country. So thank you.

Madam Yuyitung, I'll start with a question for you, if I could. You indicated in your opening remarks that one of the things you and your office do is to evaluate where or in what jurisdiction a patent should be filed—or you're currently undergoing that process of evaluation. Could you elaborate a little bit on that and explain what criteria go into that decision-making process in terms of where to file a patent and why?

Ms. Gay Yuyitung: We file a provisional patent application in the U.S., partly because, as Scott said, there are times when professors come into our office and say that they're going to be presenting this in the next day, and so we have to file something quickly. Plus, it's just a very cost-effective way.

So we file it originally in the U.S. as a provisional application, which isn't reviewed for 12 months, and then we have 12 months to file a regular filing. Usually we'll try to file that either as a PCT, which allows us to then declare in a country 18 months after that.

In terms of—

Mr. Peter Braid: I'm sorry to interrupt. Could I ask then why you're deciding to file in the U.S. and not Canada in those instances? Could you clarify that?

Ms. Gay Yuyitung: We file the original U.S. provisional application because it's a simpler process. I think there's a Canadian [*Inaudible—Editor*], but we just have that as our standard process. That part isn't reviewed, so in some ways it doesn't matter where that part is filed.

When we enter the national phase, our evaluation of that depends on the market opportunity, where we think the potential licensees or market is going to be for that invention, and also just the cost of what that's going to be.

Typically we don't file in Europe and Asia because of the translation costs, unless we have someone who's going to be picking up those costs.

Mr. Peter Braid: What makes the U.S. process simpler?

Ms. Gay Yuyitung: You mean for the provisional stage?

Mr. Peter Braid: Yes.

Ms. Gay Yuyitung: It's partly because a registered patent agent is the director of our office, so she's familiar with that process. That's part of the reason we do it.

Mr. Peter Braid: Great.

Mr. Inwood, what criteria go into evaluating where a patent is filed, and could you elaborate on what the statistics look like from your office of commercialization in terms of the patent filing jurisdictions?

Mr. Scott Inwood: I would echo some of the comments that Gay just made. The U.S. offers a very informal patent filing process. It's called a U.S. provisional patent. It's very cheap. You don't need to spend a lot of dollars with patent agents to formally structure the patent in the claims that might typically be associated with a patent.

You can literally take a manuscript, send in a fee of $150, and get a stamp. You get a date on which you claim your invention. After that date, you have one year to formalize your patent through any international patent jurisdiction. A PCT, patent cooperation treaty, is where we would go to the next step. So we have one year to file that application. We could file that in Canada as a PCT. A PCT then allows you to springboard into any other country in the world within 18 months of your first filing date.

So this is a strategy that almost any technology transfer office uses, I would say not just in Canada but probably in the world, because the U.S. offers this particular informal way of filing a patent quickly and affordably. That is recognized in all the other patent jurisdictions in the world. So this is what I call common practice.

So the real decisions have to be made within one year. You've got that 12-month cheap window to operate within. Within that year, we've got to figure out where the markets are, where the potential commercial partners are, if we're going to spend money. The big money starts at 12 months with that Canadian PCT filing, and after that you're into much heavier expenses in international jurisdictions with various translation costs, and we'll only continue investment patents to the extent we have commercial traction. Have we got somebody who's interested in the technology, somebody who wants to license it, someone who wants to pay these costs as we move forward?

So you should look at universities as a place holder. We try to create an asset and hold it for a period of time but we only have a limited bandwidth in which we can keep that investment. If we don't have commercial traction from Canadian partners or investment start-up companies, or international companies for that matter, then at some point we have to off-ramp. We can't afford to keep paying patent costs just to hold it for prospective opportunities.

● (0920)

Mr. Peter Braid: Right. Moving on to another topic, you mentioned something in your opening remarks that I want to follow up on. You said that in some cases new software inventions don't necessarily need patents. Could you elaborate on that? Since this study began I have been getting some feedback from constituents on Twitter about this very topic.

Mr. Scott Inwood: The only jurisdiction in the world that allows pure software patents is the U.S., and they have fallen into disfavour. They're very expensive to prosecute as well.

Software is primarily protected through copyright. You keep your source code secret. You don't let people see how your algorithm is structured and how the software is working, and you can commercialize those products with safety behind the copyright protection, keeping your source code secret. It's almost like know-how.

The software world moves so fast. A patent can take up to five years to issue, in some cases. In that space, the IT and software world, five years is yesterday's news, so there's not much point in investing in those kinds of patent applications. They're not really a good time effort. You really want to get first-mover advantage with software. Get it out there, commercialized, get product traction, get eyeballs, hits on web pages, etc., and source code copyright protection is more than adequate to provide companies proprietary advantage with software.

Mr. Peter Braid: Mr. Inwood, one of the reasons we've embarked on this study is that we want to understand how government can facilitate and support the IP framework in Canada and facilitate the commercialization of inventions and technologies. Do you have any thoughts on the role of government and what we can continue to do?

The Chair: It will have to be very brief, Mr. Inwood.

Mr. Scott Inwood: We operate in this pre-commercialization space; so programs of support for de-risking the technology and prototypes.... Quite often you get an idea and then you've got to build a box with some flashing lights and make it look like a product and de-risk it to the point that somebody can be inspired to take that technology to market, either through licensing or through an investment.

So programs like the NSERC idea to innovation program and the CIHR proof of principle program are very valuable programs in the university community.

The Chair: I'm going to limit you at that, and then maybe you can fill it in later in response to a similar question. Sorry.

Mr. Stewart now, for seven minutes.

Mr. Kennedy Stewart (Burnaby—Douglas, NDP): Thank you very much to the witnesses for their very informative testimony.

My first question is for Madame Beaudry. I'm very interested in your U-curve, in terms of patent holdings. You say we're not looking at unlimited growth of patent holdings but maybe rather an ideal number of patents. Can you elaborate on that a little bit?

Dr. Catherine Beaudry: I wouldn't say it's an ideal number; it's just the number we're finding in our research. It might evolve if we examine the same data in 10 years. It might drop down to 50 or 80, if we put in place the supports that will help the firms get more out of their intellectual property and it doesn't jeopardize either their growth or their survival. It's not an ideal number, but a number we're measuring in our econometric study.

● (0925)

Mr. Kennedy Stewart: From your research, do you have any suggestions on how you'd boost that number? Some firms would be able to survive with more patents. Is there anything you found that the government could do to boost that number?

Dr. Catherine Beaudry: I think at the moment there's an incentive, probably from a lot of venture capitalists who want to have something to sell as their exit strategy when they capitalize on the company they have invested in.... Companies decide that if they want to get venture capital, then they need to get patents. The venture capitalists will push toward the patents when they want to move towards their exit strategy.

Patents are also important for the firm when they start to collaborate. More and more firms need external expertise when they want to go towards the market for the clinical trials, for prototyping, and other subjects, or just the production and commercialization. They need to protect their IP before they can collaborate, so they can clearly mark that something is theirs, that something else is yours, and that that is how they're going to move forward as an alliance or partnership.

They need to patent, but there's a race to be the first at what we call in French the *Bureau canadien des Brevets*, the patent office. Maybe firms are spending too many resources on patenting, and once it's time to commercialize then they're left fairly fragile or are weakened somehow.

Mr. Kennedy Stewart: Thank you very much.

I'll just move on to the universities in general. Have you thought about experimenting with the tenure structure? I went through tenure in 2009, and my incentives were pretty clear: 40% publications, 40% teaching, 20% community service. I know they're different for different universities and different departments, but have you talked about your tenure structure at all, in terms of pushing academics towards more patenting?

Dr. Digvir Jayas: At the University of Manitoba, I think it depends more on the faculty. For example, in engineering, patents would be considered and given weight in the tenure application, but in social sciences maybe not as much. So I would say the faculties are certainly aware of patents and the value they bring to the research enterprise. As Catherine mentioned, patents lead to publications and then to increased citations, so researchers see that value in connecting.

I don't think patents won't be used; it depends on the unit. Computer science programs will recognize that, health sciences will recognize that.

Mr. Kennedy Stewart: Have you had these discussions about tenure at your university? You're obviously rewarding with financial incentives as royalties, or that's what you're looking at doing, and that's how you're trying to coax your faculty into making more patents. Have you had discussions about the tenure structure, or is that kind of a no-go area?

Dr. Digvir Jayas: We've not had as many university-level discussions on that, but we have had unit-level discussions.

Mr. Kennedy Stewart: Do you have any movement on that? Is that something you would share with other universities?

Dr. Digvir Jayas: I don't know about other universities. Maybe David would have a better idea.

Dr. David Barnard: If you're asking if we are having targeted discussions about the idea of tenure and how it's implemented, no.

Are there variations by faculty? That's the question Digvir answered, I think. Are we as an institution looking to renegotiate tenure? No, we think there are simpler ways to make progress.

The Chair: Mr. Inwood.

Mr. Scott Inwood: I could make a comment on that. I don't know if I would personally support including patenting as part of the tenure process, because what invariably happens is you'll drive what I call vanity patents—people trying to file patents for the sake of having patents. I think a patent should only be filed if there's a commercial opportunity.

I think what would be more interesting in the university environment—and I've made noises about it with my senior administration in the past—is sort of a sabbatical, an entrepreneurial sabbatical for those faculty members who are involved in something that looks commercially interesting and validated through groups such as ours. When we want to work to promote a technology, quite often you can't divorce the lead inventor from the commercial activity, at least initially. But we also don't want to have our faculty members leaving the institution. That's not what we're trying to do either.

A happy compromise might be to offer periodic entrepreneurial sabbaticals to assist in commercialization.

● (0930)

Mr. Kennedy Stewart: Madame Beaudry.

Dr. Catherine Beaudry: I'm on the promotion committee at École Polytechnique de Montréal and it is not very well seen if someone has, for three years, a patent application and no publications whatsoever because they don't want to compromise the patent.

Academics need to keep other research on track at the same time as they're filing a patent. If I'm mono-disciplinary and I'm aiming for a patent, once the patent is issued and I do something else, it will not be very well seen.

There's an increasing tendency by the grant-awarding bodies—which as you know are the tri-councils or the tri-academies, or whatever you want to call them—toward measure impact, and patents are only one type of impact on the cards, and only for specific faculties. As you mentioned, copyright is better suited for computers and software.

I think it's important to measure societal impact beyond a patent as well.

The Chair: Thank you very much, Madame Beaudry.

Now we'll go on to Mr. McColeman for seven minutes.

Mr. Phil McColeman (Brant, CPC): Thank you, Chair.

Thank you, witnesses, for being here today.

I want to go back to Mr. Inwood to pick up on his de-risking comments that were cut short. I'd like to know more about de-risking and what that means. You talked about packaging it, packaging something that could go forward, but is there more to it than that?

Mr. Scott Inwood: Because the stuff in the university that we see is very early, there is quite often a requirement to package it—at least to build the first prototype to validate that the technology works, to de-risk to the point that somebody will open up a chequebook and buy something, so that they can actually be inspired that there's a product there and that at least the technical risk has been addressed.

I found from my own perspective that the Canadian receptor base is primarily dominated by SMEs, and they are risk averse. They don't have a lot of disposable resources to invest in those de-risking opportunities, so to encourage them to take that leap of faith and to license it in and move forward with it, we have to bear that weight I guess as much as possible. Then we have more likelihood of getting the technologies licensed, particularly to Canadian entities.

It's not as big a problem, quite frankly, with international companies. Of course, we do research with large U.S. and European companies, and they're quite often more amenable to licensing the technology without those de-risking opportunities. But in the Canadian context, de-risking seems to be much more important to encourage the private sector to take them on.

Mr. Phil McColeman: The next question really is for all the panellists to consider and to maybe respond to. Often in industries people look at best practices between industries. There are often group associations. I know there are the university associations as well.

Is there any inclination to look at some basic things—I don't want to say it's one size fits all—across all universities, because it seems to me that you're competing for faculty? I think universities in Canada are set up this way. You're competing for faculty and you're developing your own policies and your own models independently of each other. Or maybe you're not—and you can let me know if that's the case.

But does it make any sense that there would be IP policies that fit across universities? I'm thinking about you describing, in the case of the University of Manitoba, considering the policy and deciding on whether it's 100% researcher owned or there's a split in the ownership. Could you comment on that? Has it been considered that it would be better to not have that but to have a certain consistency across the country?

Maybe we can start with you, David.

● (0935)

Dr. David Barnard: Thank you.

This notion of best practices is a nice way to come at this argument, I think, or this topic. Certainly, there clearly are dominant best practices in a lot of areas, but the reality in universities is that most of these arrangements have been negotiated as part of collective agreements, which are not trivial to change. I would say that the suggestion we tabled is a way to think about making progress, without having to go back to the fundamental parameters of the negotiated agreement, and to say, “Let's just make it simpler”.

We can make progress faster by changing some of the parameters and the way we wield the tool we have in our hand. So we may have a slightly different shape of wrench in our hand than Scott has, but we can get similar results by using ours in a slightly different way. Rather than try to renegotiate with our colleagues to do exactly what Scott does, or vice versa, where he would renegotiate and do exactly what we do, our proposed approach to our colleagues and our potential industrial partners—which seems to be getting considerable positive response—is let's try to mask the details of the underlying mechanism with an implementation approach that moves faster.

So yes, at one level it might be attractive to think about having all these be the same, but because they're embedded in complicated arrangements—typically, collective agreements—it would be difficult to go there. It's probably not difficult to make progress by some of us doing things in more creative ways than we've done before.

Mr. Phil McColeman: Digvir?

Dr. Digvir Jayas: The current policies and different policies of the universities don't hinder...in terms of the collaboration. I think a good example is the national centres of excellence program. Those NCE projects typically would involve over a dozen universities. They may have different policies, but we come to an agreement on how we would make the IP transfer from that research to the industry. So in that sense, those different policies don't really get in the way.

Mr. Phil McColeman: Does anyone else want to comment?

Dr. Catherine Beaudry: I'll just make a quick note that in our study of biotechnology we have looked at the various incentive mechanisms that have been put in place by the various universities in Canada. On the number of patents that the different universities have, we find no impact depending on the incentive structures they have, such as depending on whether the IP belongs entirely to the professor, or whether the IP belongs to the university or it's shared, and as for who pays for the patenting or whatever, we find no difference.

So I don't think the problem is in the incentive mechanism. It's probably more in the creative way of doing things.

Mr. Phil McColeman: Further to that would be when you're collaborating between countries, or universities between countries.... For example, we were just recently in Brazil where there are 75 collaboration agreements signed between universities. Would it be the same type of one-off negotiations with and between those institutions and, as you've described here, the University of Manitoba?

The Chair: Be very brief.

Dr. Digvir Jayas: The negotiations with institutions outside of Manitoba would be similar kinds of arrangements. But in your example, those students would typically come to Canadian universities and work within our framework. If we developed a collaborative agreement we would take that into consideration.

The Chair: Thank you very much.

That's all the time we have for that round.

Now we'll go to Mr. Regan for seven minutes.

[*Translation*]

Hon. Geoff Regan (Halifax West, Lib.): Thank you very much, Mr. Chair.

My thanks to our witnesses for joining us today.

Professor Beaudry, I would like to talk about the way in which we can improve the research funding system in Canada. You mentioned companies that have developed rapidly because of their good patents. Which indicators should we use to distinguish good patents from bad ones, or less useful ones, so that the system can be improved?

Ms. Catherine Beaudry: It is difficult to do beforehand, but it can be easily measured after the fact. There are various indicators for measuring the quality of patents. The first is the number of claims on the patent. That shows the scope of the various applications of the patent.

To find out the number of citations of a patent, you have to wait until other patents have quoted it. That can take five or ten years, which is already too late in a number of sectors. When a patent is renewed after four, eight or twelve years, that is when you can measure whether it is really useful. The decision to maintain a patent is made by the company or the person who decides the usefulness and whether to keep the property. So it is really difficult to tell good patents from bad ones at the time they are issued.

Your second question was about funding, but I don't know what you had in mind.

● (0940)

Hon. Geoff Regan: I think you have answered my question.

I would like to go back to the question about the types of research. Collaboration between private companies and universities is important, but we have to be able to count on permanent funding from the federal government, not only for research specifically aimed at bringing products to market, but also for more general research.

Other witnesses have come to tell us that we should be funding commercial profit-driven research. In your experience, does profit-driven research work like that, or is it often the case that advances come from where they are least expected and where the research is deeper?

Ms. Catherine Beaudry: I personally feel that it is important to maintain funding for what is called “blue sky research”, meaning research that can go anywhere and find anything.

I have seen you all with your BlackBerrys this morning. Maxwell's equations form the basis for the transmission of electronic signals. Fifty years passed before Hertz and Marconi put them to work. I feel sure that, these days, Mr. Maxwell would not have received any funding, so no one would have a cell phone. We have to keep funding discovery research.

Of course, we have to maintain an overall balance between basic research, applied research and subsequently the commercialization of research. Otherwise, discovery research will no longer exist. We may well have brought a lot of things to market, but there will be nothing coming down the pipeline. We have to keep an idea going until it becomes commercial, in a sequence and including all the feedback loops. So granting agencies play a very important role, that of funding basic research. Genome Canada, for example, has funded research that, for the moment, has not led to a lot of commercial applications. But you have to learn to walk before you can run, if I can put it that way.

Hon. Geoff Regan: So we can understand why Mr. Lazaridis has contributed so much to support theoretical physics.

[*English*]

Theoretical physics. *C'est correct*?

Let me turn to Dr. Barnard. As a president of a university, how do you decide the relative priority between focusing on trying to get patents and other intellectual property endeavours within the overall mandate of the university compared to the general mandate of education?

Dr. David Barnard: Sorry, if I can just—

Hon. Geoff Regan: In terms of the general mandate of an institution of higher learning, how do you figure out the relative priority in terms of the funding for pursuing patents and intellectual property as opposed to other things, which are of course commanding your resources? That's got to be a constant problem.

● (0945)

Dr. David Barnard: Right. It's a constant problem for all universities on all aspects of the mission—learning, discovery, and engagement of the community, all of which need to be balanced. That's what research universities are contributing to Canada. As some others on the panel said earlier, patents are part of the evidence of productivity on the research side, and there can be, as Scott said earlier, vanity patents, but there can be vanity publications as well. There's a continuing need that's best met by peers in the disciplines to actually evaluate the work that people are doing.

I think the broader answer to your question is that the work of faculty members is observed and tracked through peer review within their own units, and proxies of that by others from outside who review publications and so on. We try to assess our faculty members making substantial contributions, and it can vary. Computer scientists may not have patents but they may have software. They may have ideas that may eventually become software in some company. I think it's a continual process, and overall, we look to see some macroscopic balance between teaching, research, and engagement in the actual work of solving public problems. We look into the individual departments and faculties for what the particular discriminations would be. Engineers are different. Well, Digvir is one. So—

Voices: Oh, oh!

Dr. Digvir Jayas: So is Catherine.

The Chair: On that note of difference, folks, we're over time. We need to go to our next round, which will be five-minute questions.

So we go on to Madam Gallant.

Mrs. Cheryl Gallant (Renfrew—Nipissing—Pembroke, CPC): Thank you, Mr. Chairman, and through you to our witnesses.

Can you speak to the evolution of IP policy at Canadian universities? How does the evolution at our universities compare to that of other countries?

Dr. Digvir Jayas: I would say that the evolution at our universities is certainly similar to that in other G-8 or developed countries, in terms of IP policies. Most universities' IP policies are the same, in that we would do the initial filing of the application and have that year then to make a decision as to whether we want to protect that IP further. We would try to identify a partner who would be willing to work with us in protecting that IP and moving it forward, and that would basically help guide us in terms of development of policy.

The differences between individual institutions are in how the returns from that IP are shared with the investigators. Some places such as Waterloo have 75-25 split, as an example. Ours is 50-50. In some places it could be 20-80. That's one variation in terms of how the proceeds are shared.

Another variation in intellectual property is in terms of ownership issues. It could be 100% owned by the researchers, as at Waterloo. It could be 100% owned by the institution, as in the U.S. through the Bayh-Dole Act. Or it could be something in between. As an example, ours is owned 50-50 between the inventor and the university.

In terms of the overall direction, when you look at the Association of University Technology Managers' data on intellectual property in terms of the number of patents filed per million dollars of research, Canada fairs reasonably well in those statistics, and certainly in comparison with the U.S.

So the policy differences are more on how proceeds are distributed and what the ownership is in terms of property. Otherwise the general framework is the same.

Mr. Scott Inwood: To comment on that, in the U.S. there are actually quite a few murmurings about whether the Bayh-Dole Act has outlived its useful purpose. There was a recent court case, Stanford v. Roche, where the university's claim to ownership of an inventor's IP was challenged. It has caused great consternation among my U.S. colleagues.

The Kauffman Foundation in the U.S. is also advocating for a more open IP ownership policy. In Canada we have this policy-driven IP environment at the universities, and I wouldn't advocate for a creator-owned approach, necessarily. I think it really comes down to the culture of the institution. At our university it works because we have entrepreneurially oriented faculty members, and it's better sometimes just to get out of the way and let them go with it. But in other universities, where the culture is not that way, maybe nothing would happen if you didn't have an institution that owned the IP and at least took some proactive steps to protect it and try to push it out there.

True to the Canadian spirit, there's something to be said about diversity and embracing the diversity of different IP policies, and it is quite interesting to see what is going on in the U.S. right now. They're possibly migrating to a policy framework that we have here in Canada.

● (0950)

Mrs. Cheryl Gallant: It was stated earlier—and just correct me, if I didn't get this completely straight—that patent generation from Canadian universities was 55% less than in other parts of the world.

Was that the correct statistic?

Mr. Scott Inwood: It was 55% less in Ontario compared to similar U.S. jurisdictions. Canadian companies invest in patenting 55% less than their U.S. competitors do.

Mrs. Cheryl Gallant: Okay, so it's a matter of the companies investing, not that we're patenting 55% less.

Mr. Scott Inwood: Right. The number of patents is broadly viewed as a measure of the innovation capacity of industy. It says that the Canadian private sector is not investing heavily in the patent space, and, therefore, it's a reflection of innovative capacity. There's a notion there again that universities don't commercialize, that it's the private sector that commercializes.

There really needs to be more of a focus on encouraging the private sector to act. We can lead the horse to water, but we can't make it drink.

Mrs. Cheryl Gallant: If the policies that we have in Canada regarding working with the private sector are similar to those for other universities in the G-8, what seems to be the hurdle in getting companies to collaborate with our universities?

Mr. Scott Inwood: You know, there's—

The Chair: Mr. Inwood, I'm sorry, we're going to have to leave that answer for the next round. We've run out of time.

I also want to remind members, because I know it's easy to forget, that Madam Yuyitung is here by video conference as well, so if there's an opportunity, please engage her along with the panel that's here with us.

Madame LeBlanc, pour cinq minutes.

[*Translation*]

Ms. Hélène LeBlanc (LaSalle—Émard, NDP): Thank you very much.

My thanks to the witnesses for their presentations.

Ms. Beaudry, you alluded to the social impact of patents. Could you give us some more details about that? What impact does the acquisition of patents have on society, whether in universities or in business?

Ms. Catherine Beaudry: If a business acquires a patent under licence that was developed in a university, it generates revenue, adds value and creates jobs. If the patented invention subsequently enhances the quality of life for Canadians and Quebeckers, society benefits. It really depends on the type of invention that is patented. I feel that university researchers must give some kind of thought to their impact on society, whether it comes one year later or 25 years. We must not necessarily see things in the short term. The impact may only become apparent in a much longer term.

Ms. Hélène LeBlanc: Thank you.

Your research provided some really interesting information. Could you tell me if you are looking at other types of intellectual property? Patents and copyright are one thing, but intellectual property is often talked about as a kind of fence that is erected around an idea.

The difficulty of obtaining patents for software has been mentioned. I wonder if, for innovative technologies like nanotechnology or biotechnology, you have considered another type of intellectual property, a system that would be a little more open.

Ms. Catherine Beaudry: I am currently conducting research on the openness of innovation in the aerospace industry. We are trying to see the extent to which innovation is open in the product development process.

You mentioned other types of intellectual property. Of course, secrecy is still very much a factor in the aerospace industry. If you are the first to market with a technology, your competitors are going to need a lot of time to catch up. Patenting some kinds of technologies in the aerospace industry doesn't help at all.

At the moment, if you compare Quebec and Brazil, you see that Brazil is more open in terms of innovation. In Quebec, companies are much more closed and secretive. They do not easily open up their processes of innovation. There are a lot of secrets kept inside companies. For example, even for a research consortium like CRIAQ, you basically have a tiny little group of people that trust each other. The innovation is open, but only within a very tightly closed circle.

● (0955)

Ms. Hélène LeBlanc: Mr. Inwood, could you add anything about a more open innovation system, in other words, intellectual property that is more open and more flexible?

[*English*]

Mr. Scott Inwood: I would echo some of the same comments just made. If you look at the open source movement, for instance, there are no patents there. In fact, that community rails against patent protection and constraints on moving knowledge. There certainly are models of intellectual property being shared and value being extracted from that.

[*Translation*]

Ms. Hélène LeBlanc: I am going to ask you to clarify that.

[*English*]

Do you think it's more conducive to innovation as compared to a more rigid, structured IP?

Mr. Scott Inwood: Again, it depends. In the software community, moving fast is really the important thing. Having an open system, open source, works in that space. In industries where you have to make capital investments, such as chemical processing or manufacturing, where there's heavy equipment, there is a lot of risk in those capital investments. People want to make that investment with some surety that they have proprietary advantage. Patents, for instance, play a role in those spaces.

I think it's not one-size-fits-all. You really have to go industry by industry.

[*Translation*]

Ms. Hélène LeBlanc: Okay.

[*English*]

The Chair: Your time is up.

Ms. Hélène LeBlanc: That's all the time?

The Chair: I know. Five minutes goes by at lightning speed.

Now we'll go on to Mr. Carmichael, for five minutes or less.

Mr. John Carmichael (Don Valley West, CPC): Thank you, Chair. Yes, there is so little time, Madame.

I thank you all for your attention today.

Madam Beaudry, you made a statement that I think was important to today's hearings. You talked about blue-sky patents and creativity and there being a need to find ways to finance them as opposed to financing strictly those that are obviously going to be commercialized from the outset. I think that's a very important position to be in vis-à-vis innovation and creativity. It is what we have heard from the Jenkins report and others. As a country, we want to instill that creativity and find a way to create more. Whatever filters out to commercialization, whether it's at inception or is something that evolves, we have to keep that door open. I applaud you for your comment.

At the beginning, you mentioned, Ms. Yuyitung, that at McMaster University, you tend to go to the U.S. for those initial patents very quickly. I believe that it was you or Mr. Inwood.

I wanted to find out the difference in cost. What is the incentive to go to the U.S.? You talked about it being a simpler, less-costly registration process for the initial patents. Is that something that in Canada we should be paying strict attention to? How do we keep those creative and innovative thoughts and ideas here? Are we losing out right from the beginning?

Maybe I will start with McMaster University, if I could.

Ms. Gay Yuyitung: I guess I should clarify. When we file a provisional patent application in the U.S., we're not saying we aren't going to file in Canada. It's just sort of a process mechanism to file in the U.S. first. It gives us 12 months to file a PCT. And then 18 months after that, we are able to say in which countries we will actually keep the patent alive. It's in that 18-month period, when you say that you're going to file in the U.S. only, or in the U.S. and Canada, or in the U.S. and Canada and Europe, that you choose whether it's going to stay in Canada.

Right now, we do file in Canada. I think some universities don't file in Canada. Part of the evaluation is that Canada is a much smaller market than the U.S. or other places. The other part, as Scott said, is that a lot of Canadian companies aren't here. The patent allows you to sort of prevent others from making, using, or selling. If companies aren't going to be making it or using it here, and you are selling it to the United States as a major market, it might not be of value to actually file a patent here and pay those patent costs here.

● (1000)

Mr. John Carmichael: To do that, you would do those registrations concurrently rather than simultaneously. Is that correct?

Mr. Scott Inwood: The U.S. filing is basically just a place holder.

Mr. John Carmichael: You mentioned that, yes.

Mr. Scott Inwood: It's a place holder. Even Canadian corporations would likely file in the U.S. first, because for Canadian corporations the biggest market in the world is the U.S. So there would be a filing in the U.S. for a variety of technical reasons. If the filing starts there, there are certain aspects of U.S. patent law, for instance, that favour filings that are in the U.S. first. It's a major market.

This doesn't preclude our filing in Canada at the appropriate time —or anywhere in the world, for that matter.

Mr. John Carmichael: So it's a function of scale, not just of cost?

Mr. Scott Inwood: Yes. There are some patent-related laws and precedents that drive people to file in the U.S. first, but it in no way precludes our filing in Canada at the appropriate juncture in the future. It's just a place holder.

Mr. John Carmichael: Earlier this month we heard from a witness that Canada is the place of second filings. My concern is that if we truly believe in keeping creativity and innovation here, at least from the outset, are we missing the boat on this? Are we missing the opportunity?

Mr. Scott Inwood: I don't think so, because even Canadian corporations, if they had to file one patent, would probably pick the U.S., because it's a big market. But they're operating out of Canada, so it's still a benefit to Canadian corporations.

The Chair: Okay.

Madam Yuyitung, did you have more to offer on the last question that you hadn't completed?

Ms. Gay Yuyitung: No, that was it.

Dr. Catherine Beaudry: Just very quickly, we surveyed a number of firms in nanotechnology, and what they have told us is that they strategically patent in the markets where they want to expand. They might patent a compound in a number of countries, but not in other countries. They can't afford to patent in every single jurisdiction, so they strategically post their patents throughout the world.

The Chair: That pretty well does it, Mr. Carmichael.

Now we go on to Mr. Harris for five minutes.

Mr. Dan Harris (Scarborough Southwest, NDP): I think getting that first foot in the door is really the critical thing with the patents. I think that has been illustrated by everyone.

I apologize quickly to the witnesses, but I have some committee housekeeping to attend to now.

I noticed that in today's agenda we didn't have the notice of motion that I had submitted, so I would like to introduce the motion now. It is that the Standing Committee on Industry, Science and Technology immediately call representatives from MDA and Industry Canada to appear before this committee on Tuesday, May 29, 2012, to update the committee on the status of the RADARSAT constellation program.

I have a copy of the motion in both languages as well. I would not want us to kick out the witnesses, but perhaps we can attend to this at the end of the meeting.

The Chair: I think you'll find agreement on that—I would hope.

All right, then we'll attend to that in the last 15 minutes.

Mr. Brian Masse (Windsor West, NDP): Why don't we just deal with it now—move the motion and...?

The Chair: It looks as though the mover was okay with delaying it.

Mr. Brian Masse: If Mr. Braid is okay with it, then....

Mr. Peter Braid: I'm okay with the motion, but I think—

Mr. Dan Harris: If we don't have to kick out the witnesses, I'm fine with doing it now.

Mr. Peter Braid: I'm certainly fine with dealing with the motion today, but out of respect for the process and the witnesses who have appeared here, some of whom have travelled from other parts of the country, I think we should deal with this in the last segment of the meeting.

The Chair: Hang on a second. Just to clarify, the mover was okay with it.

We have Mr. Regan and then Mr. Masse.

Mr. Dan Harris: Provided we don't throw out the witnesses, then yes, I'm okay with doing it now.

Hon. Geoff Regan: Mr. Chairman, although I'm going to want to add to that motion that we invite the minister, I wouldn't want us to get into a debate about the motion and miss the opportunity to speak, because that could go on for the rest of the meeting, as you understand. So I would rather we look at this at the end of the meeting for that reason, preferably in an open meeting.

The Chair: Okay.

Mr. Masse.

Mr. Brian Masse: Mr. Regan's suggestion is fine with us. If it's fine with the Conservatives, then we could dispense with this right now and vote and be done with it altogether and move back in. So if you're agreeable, why don't we just do this now and be done with it altogether?

The Chair: And have no more debate on the...?

Mr. Brian Masse: Yes, no more debate, and if we're in favour of it, then great. We'll move on from there.

● (1005)

Mr. Peter Braid: I think we want to have the opportunity to discuss the motion. We haven't done that yet as a committee and we should have the opportunity to do it toward the end.

Mr. Brian Masse: I'm not going to debate it now. If there was agreement from the other side to move forward, that's all I was trying to provide the opportunity for. I don't want to debate it, but if there's no agreement from the other side right now, then we'll figure it out later.

The Chair: We'll go with four more questioners, then, and then we will go back to the motion.

Is that agreed?

Some hon. members: Agreed.

The Chair: Mr. Harris.

Mr. Lee Richardson (Calgary Centre, CPC): Is there even time for this?

The Chair: No, Mr. Richardson. There was for the motion, but not for debate.

Mr. Harris.

Mr. Dan Harris: I apologize, and thank you to everyone for sitting patiently through that.

[*Translation*]

Ms. Beaudry, you mentioned public funding of patents and you said that the quality of citations is greater. Were you talking about five patents or five years? Perhaps you could expand on that.

Ms. Catherine Beaudry: It is not very clear in my graph, but you begin to see a drop in citations after about five patents.

Mr. Dan Harris: You mentioned the importance of public funding. Could you tell us some more about that? What kind of public investment are we talking about? Does it only affect small and medium-sized businesses or universities. In what areas does public funding really help?

Ms. Catherine Beaudry: Public funding has an exponential effect on the number of articles produced and the number of subsequent citations. The bigger the investment, the more students are paid to do the research and the more often large research groups are created, which results in further developments or a broader network. The more people involved, the significantly greater probability of citations. The curve goes down because there is not enough money to pay students. But then the increase you see is more or less exponential. There is a negative spiral when there is not enough money to pay enough students or fund enough research, but then there is a snowball effect when the research is funded.

What I mean, in a nutshell, is that you have to have a minimum amount of money if you want to produce enough quality research.

[*English*]

Mr. Dan Harris: You need to give it a kick start.

Certainly, if we put too much money in, there ends up being waste. I think this touches a larger issue that we have in Canada, not necessarily related to IP but to how, if the supports aren't there, we're starting to fall behind in PhD students and the number of people going for that extra level of education so that they can further their academic careers and get jobs afterwards that are at their skill set and level. Certainly this is worthy of looking at further.

We've heard from several witnesses—one witness in particular—about looking at a situation like Nortel's, in which all the IP was sold off. That's not subject to an Investment Canada review, whereas if Nortel as a company had been sold off with its IP, it would have been.

Do any of you have any comments to make about whether we should be looking at strengthening IP protections in that regard?

Dr. Catherine Beaudry: If you don't have a Canadian company that can make use of these patents, then they might as well be sold to someone who can actually use the patents and create value that will eventually benefit Canadians. If we just stop the selling of these patents and nobody does anything with them, then they're actually wasted for the world.

● (1010)

The Chair: Thank you, Madame Beaudry.

Mr. Dan Harris: We definitely don't want to see that—

The Chair: Now we go on to Mr. Richardson for five minutes.

Mr. Lee Richardson: Thank you, Mr. Chairman.

I'm delighted with this panel today. It and the contributions you make are very encouraging for the future of our country. This is wonderful, particularly the development and commercialization of the products you're speaking about. One of them you talked about today was the BlackBerry. These things are fabulous. We all have them here. They seem to be everywhere.They must have sold millions of them around the world.

Mr. Inwood, your university and some of your graduates must be pretty proud of all that.

Mr. Scott Inwood: RIM has been a bastion of success in the Waterloo region in general and a repository for a number of our technologies over the years.

Mr. Lee Richardson: I wondered if you're starting to feel a little guilty now after Professor Mulcair's economic revelations. Are you concerned that the soaring BlackBerry exports have inflated the Canadian dollar to the detriment of Canadian manufacturing industries?

Mr. Scott Inwood: I haven't looked at it from that perspective. I'll have to take your word for it.

Some hon. members: Oh, oh!

Mr. Brian Masse: I see another type of disease over there.

Mr. Scott Inwood: That's all I had, sir.

The Chair: Is that it Mr. Richardson?

All right, now on to Mr. Masse for five minutes.

Mr. Brian Masse: To our researchers, it would be interesting if we could get a list of Industry Canada-funded foundations that have patent- and innovation-related funds and the results of that, including the amount of money over the last maybe 10 or 20 years. It would be interesting because some of the foundations the Canadian public has been supporting have billions of dollars. It would be interesting to find out the foundations and their status. That has been one of the things that's been missed over the years.

Madame Beaudry, I was curious about your stats survey. Was that based on the census or on other surveys based on the census?

Ms. Catherine Beaudry: Which survey are you talking about?

Mr. Brian Masse: The survey you talked about when doing some of your research.

Dr. Catherine Beaudry: You mean the biotechnology StatsCan survey.

Mr. Brian Masse: Yes.

Dr. Catherine Beaudry: It's considered a survey by Statistics Canada because it has a response rate of over 70%. It was not built as a longitudinal survey, so we have made a lot of effort to follow companies throughout because a company might answer in 1999 and then for some bizarre reason not answer the survey in 2001 and then come back in 2003 or 2005. I call it a quasi longitudinal survey because it's a bit like an emmenthal.

Mr. Brian Masse: Who funds that, because some of the hard data we have in this study—and we had a previous study in 2007—but....

Dr. Catherine Beaudry: The biotech survey is an extremely rich survey, and I lobbied quite a lot of people to try to fund the 2007 survey of biotechnology. We could have had 10 years of looking very deeply into an industry in Canada. Unfortunately, I couldn't help to raise money for the survey. These types of studies allow us to examine how policy and various environments have an effect, because during the study we have done we passed through the crises of 2001 and 2007.

To give you an example, between 2007 and 2009, Quebec lost 20% more firms than it already had lost before, because firms die eventually. Quebec lost 10% of its 1999 cohort of firms by 2007, and then between 2007 and 2009, it lost a further 20%. It's as if Quebec had maintained these firms on artificial respiration. In Ontario or in B.C. the loss of these firms was much more gradual, so they didn't suffer as much in the 2008 financial crisis.

This is the kind of study we can do and it could be richer if we could merge it and look at patents and be able to merge patent with company data. I believe this is what Industry Canada is doing.

● (1015)

Mr. Brian Masse: I agree. Who funded those surveys? What happens if you're not able to continue on?

Dr. Catherine Beaudry: I'm not from Statistics Canada, so I can't actually give you the nitty-gritty of the process, but I believe there were five ministries or agencies that were funding it. Once the biotechnology strategy was abandoned and moved toward more science and technology, there was no longer money to fund those surveys.

I think that's what happened, but I would ask Statistics Canada, if I were you, because I'm not qualified to answer.

Mr. Brian Masse: I think we should probably add StatsCan to the list. Those have been some of the real, hard figures we don't often get in this type of situation.

It has been interesting to hear from the universities about the number of patents we see coming out of Canada and then actually being delivered as products on the floor for Canadians. I come from a manufacturing town. Tool-and-die/mould-making is very successful in Windsor because we actually have the owners living in our community.

I'm curious about this. Do you think that foreign ownership with headquarters in the United States has an impact on the actual delivery of products to market? Does it have an influence? I think it does.

I know the mould-makers and tool-and-die designers. They live in our communities and they make the decisions about where things are going to actually be built. Some of our patents end up going elsewhere.

The Chair: You're at five-and-a-half minutes. We're going to have to stick with only your opinion, Mr. Masse—

Some hon. members: Oh, oh!

Mr. Brian Masse: That's all that's required.

Mr. Dan Harris: Can't we use Mr. Richardson's, sir?

The Chair: —unless, of course, Mr. Albrecht wants to find that out as well.

Mr. Albrecht for five minutes.

Mr. Harold Albrecht (Kitchener—Conestoga, CPC): Thank you, Mr. Chair, that's really not the direction I was planning to take.

I'm not a regular on this committee but I, too, have found this committee very encouraging.

I'm sure that as a representative of the region of Waterloo, along with Mr. Braid, you would expect us to champion the University of Waterloo and some of its achievements. I'm going to refer to that a bit later, but I want to read part of a speech by Dr. Feridun Hamdullahpur, the president of the University of Waterloo, which he gave in Saudi Arabia less than a month ago. He was musing about the balancing of research and academics, instruction and commercialization, and the value of co-op education.

By the way, I'm reading from a PlayBook, which is a great tool developed in the region of Waterloo. I hope you all have one. If not, they're great value, excellent.

This is Dr. Hamdullahpur speaking: In the 1980s, Mike Lazaridis was an undergraduate at Waterloo when he came up with the idea of the Blackberry. Rather than push him to complete his degree, his entrepreneurial minded professors encouraged him to develop the concept commercially. The result: Research in Motion was born and has created 17,000 net new jobs in facilities around the world.

He goes on to acknowledge the current challenges, and then he goes on to say: It is typical of Waterloo's culture that our inventor-owned intellectual property policy allows students and staff to retain the intellectual rights to their inventions. The policy makes the lines between the university, business and industry even more porous and leads to productive partnerships and a solid record of commercialization. More than 75 high-tech spinoffs have been incorporated to commercialize technology developed at the University of Waterloo by our faculty, students, and alumni.

He goes on to talk about the more than 700 high technology enterprises, including Research in Motion, Google Waterloo, OpenText, and so on. Anyway, you get my point.

My question follows along the line of some of the previous questions in terms of the commercialization part. Mr. Inwood, you commented about how the focus is industrial solutions.

I've been present at the University of Waterloo at different times when they've considered partnerships with an industry that comes to the University of Waterloo for help in the research and development of a particular technology—and not necessarily even communications technology. For example, I remember at one point being there when they were doing research on a better light standard that absorbed the impact of crashes, to protect lives. It was counter-intuitive to me to see a university doing that. Another one we recently participated in together was the development of a very lightweight car frame.

I'm wondering if you could highlight some of those examples where the commercialization aspect, as you said, has to be picked up by private industry, but the private industry certainly benefits from the access to the university environment.

If you could highlight one or two examples, that would be great.

● (1020)

Mr. Scott Inwood: Right now, we have a new Institute for nanotechnology and that's a burgeoning area. We've spent quite a bit in creating infrastructure to support those faculty members, and there are innovations coming out constantly in that space. We have one at the moment—a nanoparticle that can encapsulate nutrients and pesticides, and deliver water right to the root of plants. This slow-release technology mitigates some of the problems you have with over-applying fertilizer. Twenty-five per cent of fertilizer runs off into our streams and aquifers and contaminates water.

This kind of innovation could have a big place in the world. Think about trying to feed the world's population and the impact this could have. It's that kind of innovation that we're working on right now. We are trying to position ourselves to license it to a Canadian company that could be a receptor. Or we could be looking at creating a start-up company that could build a Canadian capacity to do that kind of research and implementation. That's an example of a cutting-edge technology that we're working on now, and I'm sure my colleagues in other institutions have similar examples.

At universities, we see a lot of really early stuff, and we can only invest in it so long and hold that place. We really need the private sector to step up and do something with it.

Mr. Harold Albrecht: The accelerator centre and Communitech are great examples of how industry and research departments can come together and provide solutions. I hope we can replicate that across the country. I know we already have, but that model needs to be replicated many times over.

Thank you very much.

The Chair: Thank you, and my thanks to the witnesses.

We will suspend for two minutes.

We'll come back in public and then we'll continue with Mr. Harris.

● _____ (Pause) _____

●

● (1025)

The Chair: Folks, we're back in. We'll go to Mr. Harris first and then to Mr. Regan.

Mrs. Cheryl Gallant: I have a point of order, Mr. Chairman.

Would you please explain to the committee why it is that Mr. Harris's notice of motion does not appear on our agenda for today?

The Chair: When somebody serves notice, they don't have to put in on the agenda. Once they've served it for 48 hours, they can move it at any future meeting.

Mrs. Cheryl Gallant: Okay. So it's 48 hours. Today is the 16th.

The Chair: Today is the 17th.

Mrs. Cheryl Gallant: So it has been 48 hours.

The Chair: Two sleeps is the usual measurement.

Madame LeBlanc.

Ms. Hélène LeBlanc: When a motion is submitted, wouldn't the committee want that motion to show up in the agenda so everybody is on the same page?

The Chair: If there's an indication that the mover wants to move the motion at the meeting, then....

Ms. Hélène LeBlanc: That could be stated and then it would be put on the agenda.

Mr. Peter Braid: I appreciate that point, Madame LeBlanc. I think it would be helpful. If we have a motion that has satisfied the 48 hours' notice, and a member of the committee wants to take up committee time that could be used for asking questions of witnesses, who may have travelled here from across the country, it would be nice to know at the outset of the meeting so we could deal with it.

Ms. Hélène LeBlanc: So you are in agreement, Mr. Braid. If the intention of the mover is to move it that day, it would be nice to have it on the agenda. Then everybody would be cognizant of it.

Mr. Peter Braid: I think that would be ideal, yes.

The Chair: Mr. Harris, did you want to move your motion now, or at least verbalize to it?

Mr. Dan Harris: Yes, thank you.

I move:

> That the Committee immediately call representatives from MacDonald, Dettwiler and Associates Ltd. and Industry Canada to appear on Tuesday, May 29, 2012 to update the Committee on the status of the Radarsat Constellation program.

I believe some hands have been thrown up to speak already, for example, Mr. Regan's.

The Chair: I have Mr. Regan, Mr. Braid, and now Mr. Masse.

And now there's a point of order. Go ahead, Mr. McColeman.

Mr. Phil McColeman: I move that we go in camera at this point.

Mr. Dan Harris: That is out of order.

The Chair: You can't move a motion on a point of order, Mr. McColeman.

Go ahead, Mr. Harris.

Mr. Dan Harris: I certainly do not yield the floor yet.

On the purpose of this motion, there has been a lot in the media. There has been a lot said on both sides. There seems to be agreement among all three parties that the RADARSAT constellation program is a critical one. MDA has announced they will be laying off at least a hundred people.

They've already lost some of their key engineers and scientists. They are some of the really great and bright minds in Canada. When we're having a study on intellectual property, these people are frankly walking, talking intellectual property. If we don't support companies like MDA these people will go to Germany, Japan, and the United States, and all of their knowledge and talent will go with them. That will create a serious brain drain.

It was widely expected that further funding for the RADARSAT constellation program would be in the budget. Lack of funding has caused destabilization in MDA, because the designs have been done and all the work has been done for the first three of the four phases of development. All that's left is the building. MDA needs the contract in order to actually build the satellites.

As we understand it, there have been changes made to the program that could increase the costs: things like the Department of National Defence changing specs, Canada Space Agency changing specs, and the government coming back. It looks like they've been asked to move from having one launch of three satellites, to two separate launches: one with two satellites, and one with one satellite. Of course, launching a satellite into space is no small endeavour. Right there that adds almost $100 million to the cost of the program.

I think it is important for us as the industry committee to hear from both Industry Canada and MDA as to the status of the program. Where are the roadblocks, and what can we do as a committee to get that project moving forward so we don't lose that critical part of our aerospace industry and all the talent that goes with it, as happened with other programs that were lost in the past?

I don't think that's the right direction for us to take. This would be one meeting. Although it wasn't specifically stated that I'd be moving a motion at this meeting, since our next meeting is on the 29th, this is the only meeting at which I'll be able to move this motion.

As a result, I move the motion. I believe Mr. Regan has an amendment that I will find friendly.

● (1030)

The Chair: Mr. Regan.

Hon. Geoff Regan: Thank you very much, Mr. Chairman.

In view of the fact that the minister has the responsibility to answer why this has been delayed, what has happened here in terms of the funding, and why there is no contract, it seems to me that we ought to add him to this study to answer questions about this.

I move that the motion be amended by adding after “Industry Canada” the words “as well as the Minister of Industry”.

The Chair: I think the substance of the motion is there.

Now we'll go to Mr. Braid, and then back to Mr. Masse and Mr. Harris.

Mr. Peter Braid: Thank you, Mr. Chair.

Given that we're dealing with future business, for all intents and purposes, it has always been the practice of this committee and all other committees—including the other committee I happen to sit on that is chaired by a member of the NDP—that future business is dealt with in camera.

Now that I have the floor, I move that we go in camera to deal with this motion.

The Chair: Thank you, Mr. Braid.

It's a dilatory motion, so we can go right to a vote.

Mr. Dan Harris: Can we have a recorded vote, Mr. Chair?

The Chair: Sure.

(Motion agreed to: yeas 6; nays 5)

[*Proceedings continue in camera*]

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