

Dr. Gary Kachanoski, President and Vice-Chancellor

Address to the Board of Trade

Nov. 16, 2016

Good afternoon everyone. I want to begin by thanking the Board of Trade for the invitation to speak with you about how Memorial University – your university – through collaboration and innovation is living up to its motto, *Launch forth into the deep*, and is fulfilling its mandate and special obligation to the people of this province.

Before I begin I would like to acknowledge Ms. Iris Petten, chair of our Board of Regents, our chancellor, Dr. Susan Dyer-Knight, and many other members of our Board of Regents and senior leadership team.

As defined by the *Memorial University Act*, Memorial has an obligation to provide access to a university education for the people of this province.

Our Teaching and Learning Framework highlights our aspirations for our students, articulates the vision, core values and principles of our teaching and learning, and describes the characteristics of a vibrant teaching and learning community at Memorial.

The framework's foundation statement places students and student learning at the centre of everything we do. It acknowledges explicitly that our social contract to educate our students is at the core of all our activities including research and scholarship, and public engagement. And it is

through this student focus, that we set our priorities and fulfill our mandate as a nationally competitive, public teaching-research university.

So we appreciate all of your support at the Board of Trade for our students – co-op students work placements with business and industry partners (many here in the room today), experiential learning opportunities, your Board of Trade Connector program for our international students and graduates, and of course the two-week externships program.

It is rewarding to see the confidence that so many of you have in our students, and to see the importance of Memorial and its students, in both the board's Population Growth Strategy research document and its 2016 provincial pre-budget submission.

In a June 2014 article in *The Telegram*, then-Board of Trade chair Sharon Horan asked a great question, "If students are coming to Newfoundland and Labrador to pursue post-secondary education, how can we make sure they stay here, create new and innovative enterprises, and raise families here?"

This is, of course, a question of significant interest to Memorial and to our province, and we are very pleased that Memorial and the Board of Trade are starting to explore how we can collaborate to maximize our impact on areas of interest to the Board of Trade – labour force development, population growth opportunities, innovation and enterprise development, and I will explore that a little here today.

Provincial demographics certainly frame the problem. Twenty years ago, there were approximately 12,000 provincial high school graduates per year. Ten years ago it was just over 6,000, and today there are just over 4,000. And it is expected to continue to decline 10-15 per cent in 10 years and more in rural areas.

Despite these demographics, our overall enrolment has remained stable, with significant demand/growth in our professional undergraduate programs (e.g., business, social work, pharmacy, medicine) and in graduate programs.

And of course, a key aspect is that now over 30 per cent of our students are originally from outside the province or Canada. With some targeted program growth, our undergraduate enrolment is expected to remain stable or increase slightly over the next five years.

For example, based on student demand and labour force needs we continue with our eight-year plan to double the Faculty of Engineering and Applied Science (we are in the middle of that expansion), with a projected increase of 500 new co-op undergrad engineering students.

The big story, however, is overall graduate student enrolment. Over the past ten years, we have seen a tremendous increase in the number of graduate students to a total of almost 3,800.

Of particular note is our number of PhD students, up nine per cent just this past year, and rising from 300 in 2004 to now more than 840, directly reflecting our upward research trajectory and research intensity. Our enrolment plan is to continue to increase graduate enrolment by another 1,200 grad students by 2020, with an emphasis on PhD students.

To put this graduate student growth in perspective, in 2004 our undergraduate students to graduate student ratio was 7:1. Today it is 4:1 and will move to 3:1 with our Enrolment Plan. This directly aligns with Memorial's new Strategic Research Intensity Plan and goals to significantly accelerate the generation of scholarly outcomes and intellectual property, including enhancing our focus on innovation and enterprise development.

For your interest and a benchmark – public research intensive universities driving innovation in the USA typically have ratios between 4:1 and 3:1.

And private university research and innovation powerhouses like MIT and Stanford are exactly the opposite and have significantly more graduate students than undergraduates (approximately 1.5 grad: 1 undergrad) with a clear emphasis on PhDs (1Phd : 1 undergraduate).

The 2012 Conference Board of Canada's Innovation Report Card gives Canada a "D" for innovation, and appropriately a "D" in PhD education relative to other OECD countries, and we were slightly below the Canadian average for number of PhD graduates. (Note: this doesn't reflect our recent trajectory.) So the Canadian average is a D and we were below the average.

The Conference Board of Canada, and many others, emphasize that talented people with advanced graduate education, particularly at the PhD level, are the underpinning of innovation and, through that, economic diversification.

In today's globally connected world, innovation occurs where new ideas are generated, and new ideas are the foundation of graduate research degrees.

And we should have no illusions. We are in a global competition for these talented people with great ideas. We are fighting with every other jurisdiction in Canada and beyond for brain power, and we need to have what it takes to attract and retain it, here.

It is a challenge that Memorial is responding to strategically. For example, we have just completed a Strategic Internationalization Plan to better coordinate and advance the university's international efforts, including the attraction and support of international students, particularly graduate and PhD students.

In addition to student recruitment demands, over the next 5-10 years we can also reasonably expect a faculty turn-over rate of approximately 30-40 per cent. So we'll also be looking to hire, and we need to have what it takes to attract and retain the highest quality faculty. From Memorial's perspective that challenge is directly related to research capacity on the ground here, and the development and operation of 21st century teaching and R&D infrastructure.

As I have said many times, addressing our aging infrastructure, particularly on our St. John's Campus, is our highest priority. More than half of our buildings are 40 years or older, some more than 50 years old. And even with significant repairs or renovations, they can no longer meet the needs of a 21st century university.

After significant work and extensive consultation and evaluation, we have completed a multi-year infrastructure plan that will be updated yearly.

Given fiscal constraints, and working very closely with our provincial and federal government partners, we have committed to being part of the solution for funding our significant infrastructure deficit.

Through efficiency reviews, re-allocations of existing budgets, flat-lining operating budgets, capitalization of value in under-utilized infrastructure, and new revenue generation, we have committed to funding \$200 million for our core science facility and another \$100 million for other infrastructure renewal, all outlined in detail in our infrastructure plan.

While much still needs to be done, in just the past six months the federal government has committed significant infrastructure support for Memorial including the Battery Facility redevelopment, our MI's new marine base in Holyrood, our Animal Resource Centre, and of course, the tremendous announcement this past June of almost \$100 million for our highest priority, the core science building – which, by the way, we expect to be putting out for re-tendering in the next three weeks or so. The construction of this facility will create nearly 1,440 direct and indirect person years of employment and approximately \$94 million in labour income.

I want to express our thanks to the Honourable Judy Foote, Minister of Public Services and Procurement and all members of the federal government's Newfoundland and Labrador caucus for their support of Memorial. It really is making a difference.

I want to emphasize that our focus on increased research intensity, growth in PhD and graduate level education, and securing appropriate infrastructure for a 21st century university is related directly to meeting the

needs for research and development in the province, and ensuring we have the talent here to support innovation and economic diversification.

We are now rated 19th nationally in terms of our external sponsored research funding, and second in terms of relative research growth over the past 15 years in the comprehensive medical-doctoral category. And with our Strategic Research Intensity Plan, we hope to double again our research impact over the next five years.

Our Research Strategy Framework defines research themes that cut across academic units and address significant opportunities and challenges that make sense for this province, and for which Memorial is particularly well-positioned to build nationally and internationally recognized research capacity.

For example, we recognize this province's unique strategic importance as the eastern coastal gateway to Canada's Northern and Arctic regions. The vast, resource-rich expanse of cold ocean and the near Arctic that has shaped the history, culture and economy of Newfoundland and Labrador for centuries, is also quite appropriately reflected in a significant proportion (more than 40 per cent of all) of our R&D activities, activities that together define our overarching COASTS initiative (Cold Ocean and Arctic Science, Technology, and Society).

Discovery research helps us to understand fundamental aspects of cold ocean and Arctic science. Technology builds on that base to address specific challenges and take advantage of opportunities. And finally, sustainable society development ties it together and reflects the strength

and diversity of all of our peoples, cultures and communities – and with particular relevance for us, sustainable Northern and Arctic coastal communities.

Memorial University has forged world-leading expertise in the environmental, social, economic and technological issues and opportunities impacting Arctic and Northern coastal communities, and is carrying out collaborative research and teaching and learning initiatives with our Northern and Arctic communities.

For example, building on significant increased investments in our Labrador Institute in Happy Valley/Goose Bay, the Faculties of Social Work and Education have developed undergraduate programs in partnership with the Nunatsiavut Government, tailored to the needs of Inuit communities in Labrador and delivered 100 per cent in Labrador.

The Faculty of Medicine is a world-leader in rural and remote health care and won national funding to deliver residency training in Nunavut.

And our Marine Institute has also partnered with Nunavut Arctic College, delivering the training that is creating a sustainable fishery in Nunavut, and facilitating partnerships between Nunavut and Labrador.

Our Marine Institute is Canada's most distinguished comprehensive marine *polytechnique*, providing education, training, and R&D support for ocean industries. Every year it secures almost \$1 from industry and external sources for every \$1 of public investment.

To meet the growing demand and the shifting challenges and opportunities presented by the marine, offshore and ocean technology sectors, MI has been developing the Holyrood Marine Base. The first phase opened in

2010 and includes facilities that house the Centre for Applied Ocean Technology, ocean technology small business incubation space, as well as areas for research, training and support.

Phase II development of the Holyrood Marine Base is now getting underway and will increase its capacity exponentially. Construction of a breakwater and marginal wharf, an underwater technology test-bed, and a new ocean-front building will allow Memorial to undertake critical at-sea, in-water and sub-sea education, training, research and innovation.

The base will also be the cornerstone of a new Cold Ocean Research and Innovation Park in the Town of Holyrood.

In engineering, Memorial is leading many cold ocean and Arctic-related initiatives in collaboration with industry partners including the establishment of a significant number of industry sponsor research chairs and:

- a Harsh Environment Technology Centre, jointly with the American Bureau of Shipping;
- Suncor Energy Offshore R&D Centre;
- and the Centre for Arctic Resource Development based at C-CORE our independent, world-leading cold ocean engineering R&D corporation.

Just last year, C-CORE celebrated its 40th anniversary, and its \$10 million LOOK/North program was renewed by the federal government as a National Centre of Excellence for Commercialization and Research in the North and Arctic. It supports safe and sustainable northern resource

development by validating and commercializing satellite and other remote sensing and monitoring technologies for use in these challenging and sensitive environments.

Building on our world class strengths in our Faculty of Science and our Ocean Science Centre, we secured funding through national competitions to establish the \$20 million Cold Ocean Deep Sea Research facility. And just last month \$4.5 million was awarded for an innovative research collaboration with the aquaculture industry, to use functional genomics to develop new therapeutic feed formulations for farmed salmon that will reduce the rate of infection and strengthen competitiveness in the seafood market.

Cutting edge research like this, coupled with the Marine Institute's aquaculture training and applied R&D has helped the aquaculture sector grow steadily, so that today it now produces approximately \$300 million in economic value and employs nearly 2,000 people, many of those cross-educated by our science faculty and the Marine Institute, and many coming from rural communities across the province.

And of course, earlier this fall, we celebrated an investment in an historic partnership between Memorial, Dalhousie and the University of Prince Edward Island for the creation of the Ocean Frontier Institute, an over \$230 million dollar initiative, including a \$94 million investment from the national Canada First Research Excellence Fund competition, the largest award in the country.

Focused on the Northwest Atlantic, and Canada's Arctic Gateway, the Ocean Frontier Institute will be the North Atlantic's first transnational research organization and one of the world's most significant ocean science research collaborations with national and international industry partners, and four of the top five ocean institutes in the world.

A major component of OFI is the creation of 147 new positions for graduate students and post-doc fellows here, with many more expected to be attracted to our university because of our leadership in such an exciting and ambitious initiative.

This landmark investment is one that truly moves Memorial from world class to world leader in research strengths directly related to our COASTS initiative.

Our COASTS-related expertise is logically centred around the marine environment, but other challenges facing our province are also being addressed, issues like food security and sustainable agriculture.

With most (90 per cent or so) of our non-regulatory food and agricultural inputs coming from outside the province, we are in a particularly vulnerable position. So we certainly applaud a provincial goal to significantly increase (two times or double) our food self-sufficiency. Achieving this important goal will require significant research, development, innovation and investment.

Memorial has never had a school of agriculture, but over the past five years we have significantly expanded agriculture and agri-foods related research

capacity at our Grenfell Campus in Corner Brook with new faculty, state-of-the-art research infrastructure and equipment, and just last fall approval of Memorial's first explicit agriculture academic program , the MSc in Boreal Ecosystems and Agricultural Science. In its first year it already has 17 graduate students working on a variety of research projects related to our agriculture and agri-foods needs.

Combined with our other new grad program in the Environmental Policy Institute, Grenfell Campus is now building graduate student and international student enrolment for the first time, and attracting post-doc fellows and researchers who are living and building their careers and lives on the west coast of Newfoundland.

Finally, I can't resist mentioning a tremendous achievement by Memorial students directly related to both our COASTS initiative and food security and sufficiency. Our Enactus Memorial student team, who competing as Team Canada just a month or so ago, were once again crowned world champions. To put this into context – 1,700 university campuses competing for 36 national teams, and one world champion – Memorial University. We couldn't be more proud.

And this isn't a one-time success. This was their eighth national championship in 11 years. They were world champions in 2008 in Singapore.

There is an obvious culture of leadership, innovation, action and accomplishment with our Enactus Memorial students who together from

many faculties are running 13 different community projects, including their new initiative this year Project SucSeed, a project that in one year developed and then manufactured an affordable hydroponic system that addresses food insecurity in remote and isolated northern communities by enabling people to grow fresh produce in their homes, schools or communities while simultaneously creating manufacturing jobs in our province for youth at risk.

Joining us today are three Enactus team members – Laura Collis, Meaghan Meadus and Emily Bland, our Enactus team president.

Enactus Memorial exemplifies our efforts to support a culture of student innovation and entrepreneurship at Memorial, efforts that we know must be expanded to resonate throughout the entire university.

There have been many reports/initiatives on the state of innovation in Canada, and also here in our province.

The report, *Innovation Canada: A Call to Action*, provides a range of recommendations on the role of universities in supporting innovation. It also summarizes, in this diagram, the relationship between universities and commercial businesses in the R&D continuum, with the often-identified, “innovation and commercialization valley of death.”

It highlights that the universities primary impact is: First, through education of talented people (and transfer of knowledge and know how); and second, to create new knowledge, identify possible intellectual property and make that IP available for commercialization in the private sector.

It also highlights the important role of knowledge mobilization through collaboration and partnerships, university tech transfer offices, and accelerators and incubators and other such institutions in trying to bridge the gap.

We know that we have so much more to do in this area, and recently we've taken a number of important steps to advance that goal. And we are committed to doing much more.

We certainly believe that public engagement at Memorial supports regional and provincial innovation. The Office of Public Engagement and the Harris Centre at Memorial are primary connectors for knowledge mobilization linking our researchers with groups all over Newfoundland and Labrador supporting active community engagement through the research process.

In many cases, research is conducted in response to a community's request based on their local needs or challenges and is used for practical purposes at the end of the process.

A great example is the recent collaboration between the Harris Centre and the Community Foundation of Newfoundland and Labrador on the Vital Signs project, an annual cross-provincial check-up on the vitality of our communities on key quality of life issues such as housing, the economy, health and education. A copy of the third annual report is available here today.

An important aspect of our plans is the development of the Battery Facility as a public engagement platform for creating all types of innovation, collaboration, and partnerships. The Battery redevelopment is proceeding on-budget. The graduate student residence is completed and is full with

grad students with a waiting list. We expect to award the tender for the rest of the property renovations within weeks for completion of Phase 1.

Several key outreach units will subsequently be moving there, including the Gardiner Centre for Business Development, the Harris Centre and the Office of Public Engagement, and the Genesis Centre, Memorial's award winning business incubator for technology starts-ups.

Since its establishment nearly two decades ago, our Genesis Centre has helped more than 150 start-ups raise more than \$90 million in private investments.

And as outlined in Memorial's new Technology Transfer and Commercialization Strategy, our goal is to establish one of the most progressive technology transfer and commercialization environments in the country for all forms of intellectual property arising from knowledge creation and artistic creation.

We want to at least double or triple the number of successful start-ups knocking on the Genesis Centre's door. Key to this will be fostering entrepreneurship at all levels – from our undergraduate students through to the start-up companies within the Genesis Centre.

That is why we are excited about the new partnership between the Faculty of Business Administration and Faculty of Engineering and Applied Science, which have created the Memorial Centre for Entrepreneurship, a student-oriented centre focused on strengthening innovation,

entrepreneurship and technology commercialization.

Social innovation also remains a high priority at Memorial through new exciting initiatives like the Centre for Social Enterprise recently launched by the faculties of Business Administration and Social Work, the Nexus Centre for Collaborative Research in our Faculty of Humanities and Social Sciences, and the Harris Centre's emerging Social Innovation and Civic Engagement programming.

I hope you get the sense that we are committed to building and creating an innovative learning and research environment to foster continued success of our students, staff and faculty, and through that, continue to have a tremendous positive impact on the social, cultural and economic development of our great province, and fulfill our special obligation to the people of this province.

To close, I thought I would recount what the people of Newfoundland and Labrador think about whether Memorial is doing a good job. A 2014 Corporate Research Associates poll, conducted for the Association of Atlantic Universities, indicated that:

- 93 per cent of people asked think Memorial is doing a good job of meeting the needs of the community in terms of the quality of education we provide.
- 87 per cent believe the university is doing a good of meeting the needs of the business community in terms of providing a well-prepared workforce.
- And 84 per cent believe we are catalyst for economic development.

These positive opinions about Memorial are 20 percentage points higher than Maritime public opinion about any other Maritime university, including our sister research-intensive university in Nova Scotia.

Ladies and gentlemen, there is so much to celebrate at Memorial as our students, faculty and staff continue to amaze us with their leadership and achievement that distinguishes them at a national and international level. I simply do not have the time today to do them justice. A number of those accomplishments and stories are highlighted in our newest on-line President's Report, out just this week.

We've brought along brochures with some highpoints that you'll find on your table. I invite each of you to take one with you when you leave, and I encourage you to learn more about the wonderful accomplishments at your university. Thank you