

**FACULTY OF SCIENCE
Meeting of Faculty
Tuesday, 17 November, 2015
Leacock Council Room - L232**

Before the start of the meeting, **Prof. Lauren Human** from the Department of Psychology and **Prof. Graham MacDonald** from the Department of Geography, each gave a short research presentation.

ATTENDANCE: As recorded in the Faculty Appendix Book

DOCUMENTS: S-15-12, S-15-13

Dean Lennox called the meeting to order at 3:00 p.m., and welcomed members. He said the Provost and Vice-Principal (Academic) Christopher Manfredi would be joining the meeting at 3:15 p.m.

1) ADOPTION OF AGENDA

Prof. Bell **moved**, seconded by Prof. Gyakum, that the Agenda be adopted.

The motion carried.

2) MINUTES OF 20 OCTOBER, 2015

S-15-12

Prof. Grütter **moved**, seconded by Prof. Bell, that the Minutes be approved.

The motion carried.

3) BUSINESS ARISING FROM THE MINUTES

There was no business arising from the Minutes.

4) PROVOST AND VICE-PRINCIPAL (Academic) CHRISTOPHER MANFREDI

304.1 Dean Lennox welcomed Provost and Vice-Principal (Academic) Christopher Manfredi to the Faculty of Science meeting.

304.2 Provost/V.-P. Manfredi said that his dual title represented his dual role in McGill's budget/allocation of resources and McGill's academic mission. He would give brief remarks on each.

304.3 Regarding the budget, Provost/V.-P. Manfredi said that he had recently received the budgetary rules for the current year, and the good news was that there were no surprises. The budget previously set should still hold and be very similar to revenue (plus or minus 2%), and there should be no need for major corrections. For the following year, information was very sketchy. The government may wish to cut Québec's overall budget further, which could translate into a \$4-8 M reduction in McGill's budget. However, again, firm information is very sparse. The budget planning process for the following year had just started, and so far there were no major surprises.

304.4 Concerning academic priorities, Provost/V.-P. Manfredi said that he wanted to mention two particular projects he had been focusing on, and about which he had had extensive discussions with Deans. The first project concerned the institution of a School of Public Policy at McGill, an issue in which the Faculty of Science is active. There is a

commitment from a donor for the School, and a Committee in place to organize this. The second project concerned indigenous studies and aboriginal education, fields where little seemed to be happening east of Manitoba. McGill could be a leader in these areas. A report on the status of indigenous studies and aboriginal education at McGill would be released very soon. The three main conclusions were that McGill is very active in these fields, but unfortunately has not publicized its work, and efforts are not well coordinated. A Provost Task Force on Indigenous Studies and Aboriginal Education would be struck. While the University of British Columbia is probably the leader in these fields in Canada, he hoped McGill would be the leader in eastern Canada.

- 304.5** Provost/V.-P. Manfredi then took questions from members.
- 304.6** Regarding plans for the Royal Victoria Hospital, Provost/V.-P. Manfredi said the Principal has a Task Force in operation to see what would be feasible. He himself was on the Task Force, as was Dean Lennox. Strict conditions have been set, including that McGill acquire the site at no cost and that provincial and federal governments make extensive contributions to the cost. McGill could use about two-thirds of the site, and a partner the other third. In the future, the Task Force would be considering academic parameters for use of the site. There were obviously a great many issues to consider. When the Task Force has finished its work, there will be a call for ideas from the community. It was very clear that the site would not be "single-use." Research, teaching, Student Life and Learning could all find homes there. The site must be mixed-use, vibrant, and not empty out at the end of the day, but rather remain active almost 24/7.
- 304.7** In relation to deferred maintenance of McGill's buildings, Provost/V.-P. Manfredi said that plans were well underway for borrowing about \$400 M to address this important issue. Governmental permission had to be obtained, and this process was nearing completion. Unfortunately, the money would have to be paid back out of McGill's budget.
- 304.8** With regard to undergraduate enrolment, Provost/V.-P. Manfredi said that McGill was close to capacity, and that there would be little or no growth, although the mix of students may change. However, growth of the graduate-student population was possible, and this would vary from unit to unit. Furthermore, as well as replacing those who leave, plans were underway to increase the number of academics by 40 or so. Over the last three years, academic salaries had increased significantly, with McGill rising from the bottom third of the U15 to the middle third. However, since McGill faced budget issues, at some point salary increases would come into conflict with academic renewal.
- 304.9** Concerning paying back the \$400 M to be borrowed for deferred maintenance, Provost/V.-P. Manfredi said that he was optimistic that McGill's revenue could be increased in some way through tuition fees, perhaps by providing more online offerings, an area that McGill had far from fully exploited. McGill's revenues were steadily rising, but unfortunately expenses were rising faster.
- 304.10** While it had originally been envisioned that budget savings could be made in the category of administrative and support staff, the current plan was not sustainable. Decisions should not be made in the upper administration on a position-by-position basis, but rather by Deans on mass-salary considerations.
- 304.11** Dean Lennox thanked Provost/V.-P. Manfredi for his clear outlining of important issues at McGill.

5) REPORTS OF COMMITTEES

- Academic Committee

S-15-13

The Academic Committee approved the following on Tuesday, 27 October 2015:

SECTION A: NEW COURSES

(1) **EARTH & PLANETARY SCIENCES**
EPSC 520 Earthquake Physics and Geology **AC-15-13**
3 credits

305.1 Associate Dean Western introduced the new upper-level course in the geology and the physics of earthquakes.

Associate Dean Western **moved**, seconded by Prof. Paquette, that the course be adopted.

The motion carried.

(1A) **Associated Program:**
PHYSICS/EARTH & PLANETARY SCIENCES
- Joint Major in Physics & Geophysics **AC-15-14**

305.2 Associate Dean Western said that the changes replaced some Required courses by Complementary courses, in order to give students more flexibility. As well, EPSC 520 was incorporated into the program.

Associate Dean Western **moved**, seconded by Prof. Grütter, that the changes be approved.

The motion carried.

(2) **COMPUTER SCIENCE**
COMP 551 Applied Machine Learning **AC-15-18**
4 credits

305.3 Associate Dean Western said that the current 600-level course in Machine Learning would be retained as a more-theoretical course, and that COMP 551 would concentrate on the applied aspect, thereby splitting the course content.

Associate Dean Western **moved**, seconded by Prof. Dudek, that the course be adopted.

The motion carried.

SECTION B: COURSE REVISIONS

(1) **PHYSICS**
PHYS 434 Optics **AC-15-15**
Change in description
3 credits

305.4 Associate Dean Western said the change in description reflected updates to the content.

Associate Dean Western **moved**, seconded by Prof. Grütter, that the change be approved.

The motion carried.

(2) **COMPUTER SCIENCE**

COMP 303 Software Design **AC-15-16**
Changes: title, description
3 credits

305.5 Associate Dean Western said the changes represent a move from software development, a very large field, to software design.

Associate Dean Western **moved**, seconded by Prof. Devroye, that the changes be approved.

The motion carried.

COMP 350 Numerical Computing **AC-15-17**
Restriction added
3 credits

305.6 Associate Dean Western said the restriction would prevent students from taking both COMP 350 and MATH 317, Numerical Analysis, since the courses overlapped.

Associate Dean Western **moved**, seconded by Prof. Dudek, that the change be approved.

The motion carried.

(3) MATHEMATICS & STATISTICS
MATH 317 Numerical Analysis **AC-15-17A**
Restriction added
3 credits

305.7 Associate Dean Western said the restriction mirrored that in COMP 350.

Associate Dean Western **moved**, seconded by Prof. Stephens, that the changes be approved.

The motion carried.

SECTION C: PROGRAM CHANGES:
McGILL SCHOOL OF ENVIRONMENT

- Major in Environment, Ecological Determinants of Health (Cellular) **AC-15-20**
- Major in Environment, Ecological Determinants of Health (Population) **AC-15-21**

305.8 Associate Dean Western said new courses had been added to the programs, and retired courses removed. As well, some of the course lists had been reorganized for clarity.

Associate Dean Western **moved**, seconded by Prof. Moore, that the changes be approved.

The motion carried.

SECTION D: OTHER (For Information Only)

(1) McGILL SCHOOL OF ENVIRONMENT
Program Changes:

- B.A. Faculty Program in Environment, Ecological Determinants of Health in Society
- B.Sc. (AgEnvSc) Major in Environment, Ecological Determinants of Health (Cellular)
- B.Sc. (AgEnvSc) Major in Environment, Ecological Determinants of Health (Population)

305.9 Associate Dean Western said the changes were similar in nature to the B.Sc. Major in Environment, above.

(2) MATHEMATICS & STATISTICS

- B.A. Minor Concentration in Statistics (Deletion of Complementary Course)

305.10 Associate Dean Western said COMP 202 was being deleted in the B.A. Minor Concentration in Statistics, because it was not necessary.

(3) CHEMISTRY MINOR COURSE CHANGES

AC-15-22

305.11 Associate Dean Western said the changes reflected changes in prerequisites and restrictions due to course retirements.

(4) COURSES ON DEAN'S MULTIDISCIPLINARY UNDERGRADUATE RESEARCH LIST (DMURL)

AC-15-12

305.12 Associate Dean Western said the courses on the DMURL are reviewed annually. There were no changes this year.

6) DEAN'S BUSINESS

a) Announcements

- Although the Homecoming Weekend is organized centrally (University Advancement), the Faculty of Science has staff dedicated to alumni, and organizes its own events, such as the Faculty breakfast with the Dean. The role of alumni is very important, and alumni like to see and talk to students, and vice-versa. A bicentennial campaign is about to start.
- The Faculty of Science Advisory Board (FAB) consists largely of Science alumni. The Dean will orient the FAB towards a few particular projects, and members of the FAB will develop relationships and try to interest big donors across North America, Europe, and Asia in the projects.
- The Student Award Celebration took place recently at the Faculty Club, with donors having the opportunity to meet recipients of the awards they had created. This event has a wonderful atmosphere, and Dean Lennox said it was the best he had ever attended. Next year, the Faculty will try to tune the event even further. All faculty will be invited as well as the student associations. Donors were also interested in meeting young professors.

306.1 Dean Lennox said it was important to work hard to engage alumni and bring in big gifts. These have transformed the University. For instance, Richard Tomlinson gave \$64 M; the Bellini and Trottier buildings were another result of extremely generous gifts. Dean Lennox will be travelling in both Canada and the U.S. to visit donors and to engage them in McGill's future. He wishes to bring other people along with him to make presentations and to aid in bringing in funds for McGill.

- On December 11, 2015 in McGill's New Residence Hall, Teaching and Learning Services (TLS) will be hosting a full day symposium called *Teaching What's Important: Educating Students for Today & Tomorrow*. There will be a panel discussion with Moderator Dean Lennox, Prof. Elena Bennett, Prof. Ken Dryden, and student, Alan Chen, on the topic *Aspirations for undergraduate education: What's the most important thing for students to learn at McGill?*

- The Faculty of Science Christmas Party will be held on 15 December 2015 in Thomson House in the Ballroom. Faculty and staff were all invited. Dawson Hall staff have been organizing the party.
- The Dean will be sending out a personalized note regarding Centraide. Centraide is an extremely important part of the community, and McGill was the single largest per capita contributor in the previous year. The Centraide targets last year were very impressive, and were actually exceeded. However, the Faculty of Science is lagging behind this year. Anna Cerrone will be selling raffle tickets to benefit Centraide at the end of the current meeting.

b) Budget

306.2 Dean Lennox said it was very important in the budget process for the Faculty to define its needs. The budget process in the Faculty is currently ongoing, and the Dean will be asking various people for their input. The budget should be largely completed by 15 December 2015. Negotiations will take place in January, February 2016.

7) REPORTS OF ASSOCIATE DEANS

a) Associate Dean (Graduate Education) Laura Nilson

307.1 Associate Dean Nilson emphasized that people should feel free to contact her should they have any issues regarding graduate education. Associate Dean Nilson also sits on the Council of Graduate and Postdoctoral Studies, which is the next level of approval after the Faculty level. After the normal business of the Council's last meeting, two items that were discussed related to supervisor's signing off on the oral defences of their students, and whether there should be a maximum stipend for graduate students. If any Faculty members had any issues they wished to be raised at the Council, they could contact her. She will attempt to send out a reminder when a meeting is due to be held.

307.2 Associate Dean Nilson mentioned several communications from GPS:

- The deadline for the Canadian Tri-Council Masters Scholarships is coming up in February 2016
- Some guidelines for transcripts have changed
- The deadline for admitting new Canadian students wishing to start in January 2016 is 1 December 2015.
- Students are required to complete a travel registry on Minerva before travelling on a university-related activity.

307.3 Dean Lennox added that the recent terrorist attack in Paris highlighted the importance of the travel registry, and showed that in implementing the travel registry McGill was taking its responsibilities seriously.

b) Associate Dean (Research) Doina Precup

307.4 Dean Lennox, in the absence of Associate Dean Precup, said the Faculty's CFI process was underway.

307.5 Associate Dean Precup is organizing a CIHR workshop. It will be presented by early December 2015.

c) Associate Dean (Academic) Tamara Western

- 307.6** Associate Dean Western said that as well as following enrolment standards, she was following how well students were doing in the Faculty's courses, in order to correlate the two.
- 307.7** A Sub-Committee of the Academic Committee was looking at how grades had changed over the last seven or eight years.
- 307.8** Associate Dean Western showed data for CEGEP students, Ontario High School students, and high school students from the rest of Canada. The data showed that the grades of students actually registered were significantly higher than the cut-offs for admission. This applied to both the BBL and the PEMC Groups.
- 307.8** Reminders will be sent out to students encouraging them to fill out course evaluations. These were extremely important, and a certain percentage of evaluations had to be filled out in order for the results to be made available. Instructors should aid in encouraging students to fill out course evaluations.

d) Director (Advising Services) Nicole Allard

- 307.9** Director Allard said that in view of the terrorist attack in Paris, it was important for any one who knew of an exchange student who needed assistance, to get in touch with her office.

8) REPORTS ON ACTIONS OF SENATE

- Senate Meeting of 21 October 2015 - Senator Gregory Dudek

Abe Fuks gave a report on academic integrity. Hand full of misconduct allegations each year, mostly plagiarism or falsification.

Investigations have been completed in twenty-three cases and research misconduct was established in fifteen. Actions were taken and the sanctions ranged from reprimand to withdrawal.

There was a report on the consultation document regarding McGill's International strategy.

This document includes a short rather vague SWOT "analysis" (Strengths, Weaknesses, Opportunities, Threats).

Why are we looking internationally: Principal thinks it's not about money, but rather a belief that a richer environment is created by combining perspectives.

There was an advancement report (Marc Weinstein):
https://www.mcgill.ca/senate/files/senate/9_d15-11_university_advancement_annual_report_2014-15_web.pdf

We have "Rich pockets of alumni all over the world."

There is a planned overhaul of web presence.

\$118M in philanthropic commitments in FY15. Lots of the money is targeted to student support.

March 16th, 2016 "giving day" multi-country telethon and fund-raising event. Known to work well at Columbia U (they raised \$11M in one day).

Robert Couvrette, Associate Vice-Principal, Facilities Management and Ancillary Services gave a report touching on many upcoming projects.

Many major construction/renovation projects are underway or being planned including the Green Chemistry CERC, Stewart Biology, Arts Building portico (completion Fall 2015) and parts of the book store. Most significant is the Royal Victoria Hospital Redevelopment – Quebec approved funding of a joint feasibility study with the University in September 2015. A call for tender has begun to engage the management/design team.

Report from the Board of Governors:

Dean Bruce Lennox was appointed through 2020!

There was a divest McGill petition that is under consideration regarding cessation of investment (or liquidation) of fossil fuel enterprises.

308.1

Dean Lennox added that the Faculty of Science would be intimately involved in the plans for the Royal Victoria Hospital site, and as mentioned previously, he was on the Task Force. Laboratories will definitely be a part of the project. The current plans on the Web will be corrected.

- Joint Senate-Board Meeting of 3 November 2015 - Senator Peter Grütter

Topic: Designing a Smart Campus for the 21st Century

Prior to the meeting, Senators, members of the Board of Governors and guests had an opportunity to view physical exhibits demonstrating initiatives and activities related to the theme of a “smart campus”.

The meeting started with three brief presentations touching on the three themes related to the meeting topic:

- Professor Christopher Manfredi, Provost and Vice Principal (Academic), spoke about the smart campus in the context of our physical campus and face-to-face learning.
- Mr. Javeed Singh, a Master's Candidate in the Department of Natural Resource Sciences at the Faculty of Agricultural and Environmental Sciences, spoke about the smart campus in the context of community engagement.
- Professor Gregory Dudek, James McGill Chair and the Director of the McGill School of Computer Science, spoke about the role of technology as it relates to the smart campus.

Following the speaker presentations, Senators and Governors engaged in roundtable discussions on key questions related to the meeting's theme.

THEME 1: TECHNOLOGY

Key ideas regarding the use of technology include the following:

- Creating virtual online groups, communities and labs where students can collaborate with each other, with students from other Universities and around the world (resources from multiple universities may be pooled for such a project);
- Creating an immersive university experience;
- Encouraging productive communication (e.g., text messaging may be used as a means of class participation);
- Building international connections (in order to learn new perspectives, connect with experts in different fields, etc.);
- Designing engaging academic courses (e.g., by using virtual games);
- Supplementing course material using available information (e.g., MOOCs, online videos);

- Professors should be encouraged to learn new practices on how to better engage students and opportunities to gain such skills should be made more accessible;
- A proper balance between face-to-face and technology in courses is required.

THEME 2: PHYSICAL CAMPUS AND FACE TO FACE LEARNING

Key ideas regarding face-to-face learning include the following:

- Use of blended and flipped classrooms (this would allow to use class-time to encourage collaboration between students, allow peer-based teaching, switch from passive lectures, and accommodate diverse learning styles);
- Universities should be a place to acquire knowledge rather than information;
- The added-value of face-to-face learning/instruction and the needs of younger/future generations should be studied in order to adapt accordingly;
- Match traditional and newer tools with teaching objectives and accommodate as many learning styles and needs as possible;
- Incorporate flexibility into the classroom. Provide options to accommodate different teaching methods while retaining tools already considered proven teaching tools (ex. blackboard & chalk);
- Importance of Universal Design for Learning (UDL) as a means to incorporate student autonomy in determining learning preferences (see <https://www.mcgill.ca/osd/policies/universal-design>);
- Desire for active professorial engagement in finding creative solutions around UDL while retaining key academic objectives;
- Role of professor no longer as sole knowledge-holder but a "guide" to make sense of vast amounts of knowledge.

Key ideas regarding our physical space include the following:

- Increase social spaces on campus to promote collaboration, teamwork and interaction;
- Increase dynamic classrooms, i.e. having moveable chairs and tables to allow the room to serve multiple functions (classroom, meetings, group work, etc.);
- Increase the capacity of our physical space by using technology;
- Physical teaching spaces should incorporate principles of Universal Design (UD) and be adaptable to changing & flexible pedagogies.

THEME 3: COMMUNITY ENGAGEMENT

Key ideas regarding community engagement include the following:

- We need to define "communities" and determine the motivation and objectives for community engagement. We need to determine the needs of the communities;
- Open up McGill to the local and global community:
 - MOOCs, Online Learning, Webinars, Podcasts;
 - Open public lectures, projects, courses or contests;
 - Physical campus.
- Information transfer/overload;
- Supportive Campus Environment;
- Need to make use of our campus space more effectively (e.g. multi-use rooms, mobile/transforming furniture, etc.), build an interdisciplinary space and take advantage of the proximity we already have with our city;
- Faculties can become interactive hubs for social and technical innovations - we see them in the future as vendors of expertise service their purposes to a wider network;
- Integrate more practical learning and internships;
- McGill can become a role model on different levels by creating more partnerships based on trust with our city and government to solve major issues (such as climate change);
- Create virtual exhibits (e.g., digitizing our libraries' resources, virtualizing the Redpath Museum, etc.);

- Have a publically accessible list of initiatives already taken at McGill in this area;
- Bring back to the community: Sharing information, communication and mentoring are all essential elements in this process. We need to engage our members with success stories, learn from their expertise and make these resources available to our community (example of sustainability-related projects). Also part of that is using our social media more effectively.
- Identify ways the communities can reach the McGill community to share information, provide feedback; we can have an “Ask McGill” website that allows members of the local and international community to ask members of the McGill community questions regarding numerous subjects (legal, environmental, financial, etc.);
- Challenges:
 - Resources;
 - Physical and Virtual Infrastructure;
 - Community-building;
 - Cultural mindset shift.

9) MEMBERS' QUESTION PERIOD

- 309.1** In response to a student member who asked if he could attend the TLS symposium (Aspirations for undergraduate education: What's the most important thing for students to learn at McGill?) on 11 December 2015, Dean Lennox said the Faculty would look into it.
- 309.2** Dean Lennox subsequently learned that the event is aimed at instructors.

10) OTHER BUSINESS

There being no other business, the meeting adjourned at 4:40 p.m.