Academic Matters

OCUFA'S JOURNAL OF HIGHER EDUCATION
LA REVUE D'ENSEIGNEMENT SUPÉRIEUR D'UAPUO

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Professor 2.0

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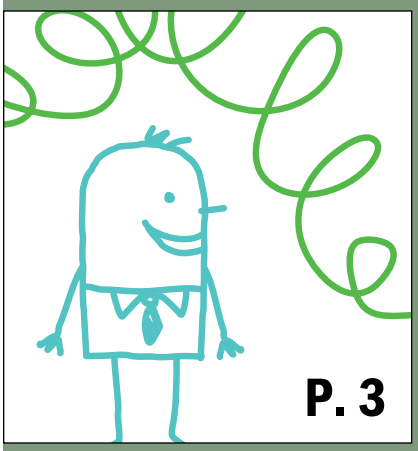

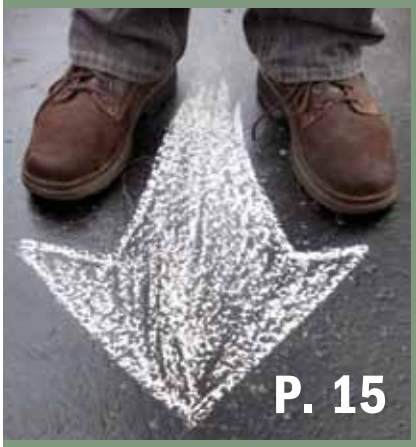

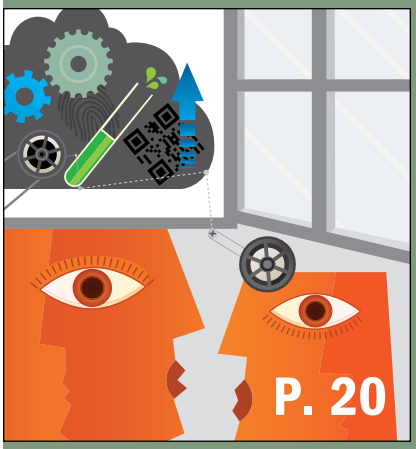

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Academic Matters is published two times a year by OCUFA, and is received by 17,000 professors, academic librarians and others interested in higher education issues across Canada. The journal explores issues of relevance to higher education in Ontario, other provinces in Canada, and globally. It is intended to be a forum for thoughtful and thought-provoking, original and engaging discussion of current trends in post secondary education and consideration of academe's future direction.

Readers are encouraged to contribute their views, ideas and talents. Letters to the editor (maximum 250 words) are welcome and may be edited for length. To provide an article or artwork for Academic Matters, please send your query to Editor-in-Chief Graeme Stewart at gstewart@ocufa.on.ca.

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Lightning over Bloor

By Judith P. Roberston

We had taken our places at the table
For some words after the break, following
On various comings and goings.
And when—twice—the professor said, "hope,"
The celestial fireworks following the verb
Had us rocketing skywards too. I had always suspected
The poet's powerful leanings, but now I reckoned
How few exchanges we had actually come to know
Between pedagogy, providence, and rain.

Imagine a word inciting a rainbow
Of kaleidoscopic color refracting against the sky
With water heaving in at the windows and
Curtains of yellow and indigo opening into
Soft, new smiles on the faces of the persons assembled.

But then, just as quick, lightning hit loud and fast
Taking hold of the sky with furious thunder following
Before funneling its undiminished charge
Into a room full of hunger and purpose.

I prize it, not knowing still whose soul at the sound released,
May yet unfold. The seminar emptied fast upon the storm,
Dispersing, anxious and radiant,
At eight-thirty in the evening onto Bloor.

Challenges, Opportunities, and New Expectations

Sidneyeve Matrix

The learning curve for connected teaching and research can be dauntingly vertical. What inspires a professor to adopt the new technologies in their work? For Sidneyeve Matrix, it is her students.

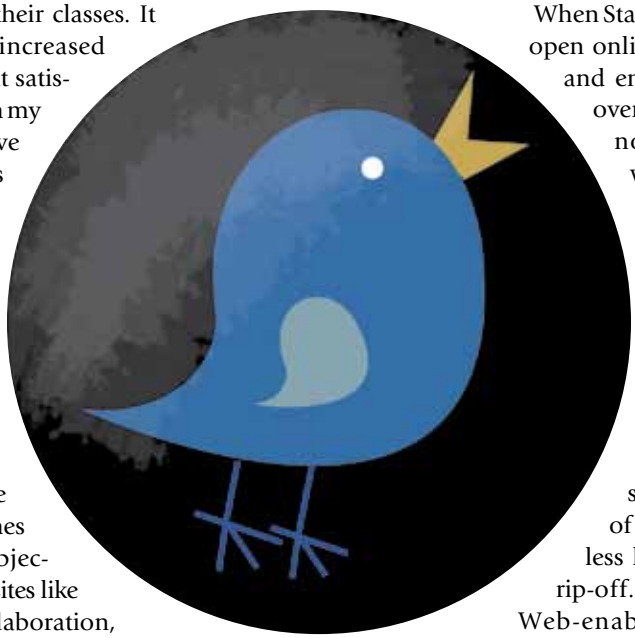
La courbe d'apprentissage pour l'enseignement et la recherche connectés peut être étonnamment verticale. Qu'est-ce qui inspire un professeur à adopter les nouvelles technologies dans son travail? Pour Sidneyeve Matrix, ce sont ses étudiants.

Last term, having received a request from the campus Disability Services Office, I asked my lecture class of 700 students for volunteers to take notes. After the lecture, I opened an email from a student offering to share his lecture recordings. Seated somewhere near the front of the auditorium, calmly and carefully capturing and redistributing my lectures without permission, the student had generously and unself-consciously offered up his digital lecture bootlegs. I was dumbstruck, and not for the first time, by this active, self-directed, peer-to-peer production of grassroots learning objects. My next thought was, I can do him one better. I can and should produce high-quality lecture podcasts and publish them using iTunesU, so all students have this remedial support. And, if I'm being honest, so that I'd have the chance to edit some of those awkward um's and ah's, offhand quips, and asides. I became a podcasting prof, monitoring download numbers with some satisfaction—knowing it was

What's undeniable is that even though digital divides exist, today's students expect to see some technology used in their classes.

a quality product. Soon after, I followed my students onto Facebook, where they had created a course group with four members, and was inspired to design a resource-rich page with which 1,500 students eventually engaged. Next, I wandered onto YouTube with lecture coursecasts, experimented with voice-enhanced digital flashcards, developed a smartphone app—in essence I digitalized, socialized, and mobilized my teaching by following my students' high-tech first steps.

There's a torrent of research demonstrating the costs and benefits of using social, mobile, and digital technology enhancements to teach; yet it's inconclusive whether these result in higher student outcomes. Of course, there are multiple bottom lines to consider. What's undeniable is that even though digital divides exist, today's students expect to see some technology used in their classes. It follows that we can expect increased engagement and higher student satisfaction when profs power-up. In my experience, exceedingly positive end-of-term student surveys and reviews in my ed-tech enhanced courses document a beneficial halo effect. I'm in goodcompany. Surveys show that the vast majority of higher ed faculty in North America are blending digital technology into their courses in small and large ways, whether it be encouraging students to use mobile tools such as smartphones or laptops to meet learning objectives, finding ways to use social sites like Twitter or Diigo to enable collaboration, assigning blogging and online group work, or integrating multimedia content from YouTube to keep courses interesting and relevant. In fact, a survey of profs in 2011 about their social media use for professional purposes found over 90 per cent of respondents used these tools in class and for their personal career development. We're long past the tipping point for teaching with technology.

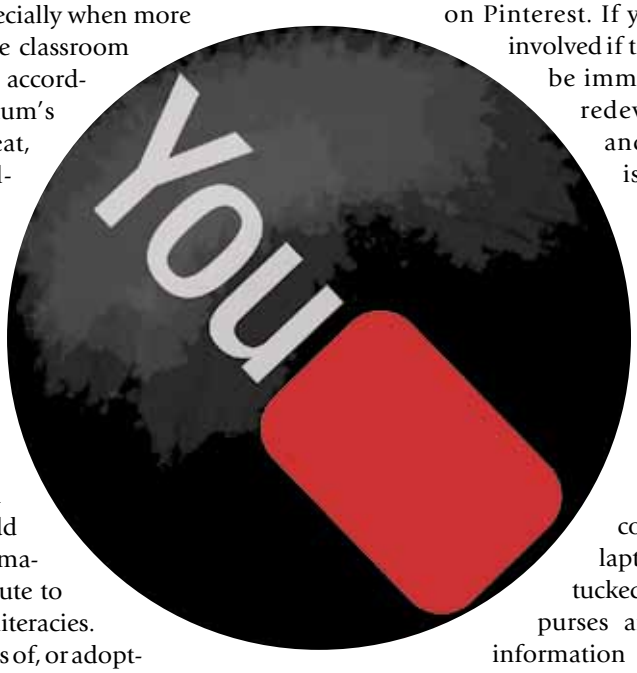


Whether nudged by inventive students toting lecture-recording gadgets and frequenting note-sharing websites, or motivated by digital natives' expectations for tech-heavy classes, or convinced by tech-forward peers demonstrating the benefits of connected teaching, the digitalization of the professoriate is well underway. And it's not just about what goes on inside classrooms, online and off. Increasingly, faculty from across the disciplines are venturing into the realms of social, mobile, and Web 2.0 technologies to experiment with digital tools for research and professionalization. Online portfolios are multiplying. Professors from biology to classics, from business to film, are busy growing their technical fluency and digital literacy, often in a do-it-yourself fashion, while expanding their personal learning networks to share, debate, and troubleshoot all things ed-tech. Digital immigrants though we may be, the ranks of podcasting, facebooking, tweeting, webinaring, skyping and blogging scholars are expanding rapidly. The result is a series of productive disruptions to well-established traditions on campus, something *The Chronicle of Higher Education* refers to as the "unbundling of the university".

When Stanford University offers massively open online courses (MOOCs) in science and engineering, in one case drawing over 150,000 participants, people take notice. When the Khan Academy wins significant Microsoft funding, posts 3,000 instructional videos online, and attracts massive traffic, stories proliferate about the future of self-directed, online, informal e-learning. When Apple announces the imminent death of the textbook, courtesy of much-cheaper iPad eBooks, the blogosphere starts to buzz about the future of publishing, the impact of bookless libraries, and the great textbook rip-off. These and other tech-fueled, Web-enabled, productive disruptions inspire and provoke debates about next-generation teaching and learning, scholarly publishing, and knowledge mobilization. Critics ask, what's the value of having students attend a lecture in real time if essentially the same material is covered by world-renowned professors on professional-quality video courtesy of free services at TED-Ed or YouTube Education? Why require students to purchase and memorize textbook chapters when the world's knowledge is just a Google search away? Why pay enormous fees to learn from faculty in an accredited university program, when MITx offers free online courseware with options for students to get peer-to-peer and professor feedback, assessment and earn branded certificates of achievement? What is the return on investment for students (and perhaps their parents)

opting to earn their credentials at a bricks-and-mortar university when they could join the 30,000 others enrolled at the London School of Business and Finance in their Global MBA program—delivered online via a Facebook app?

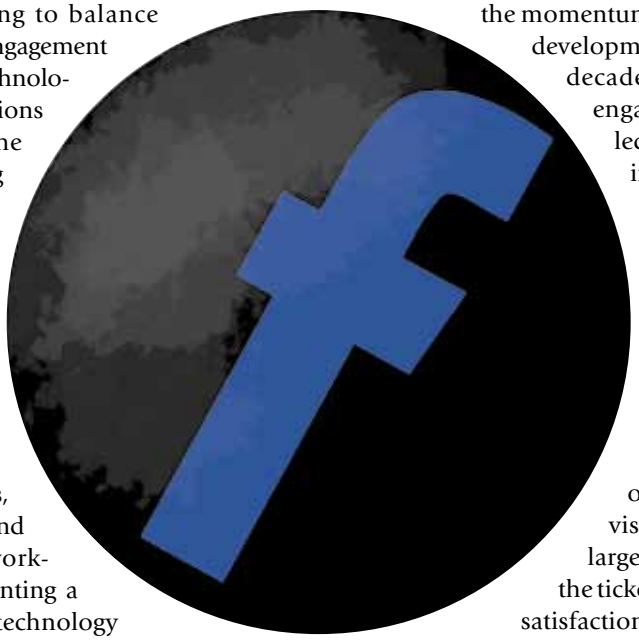
With the spread of educational resources online from grade school to high school to higher ed comes a set of new expectations regarding faculty roles, responsibilities, and research. To this end, scholars and skeptics alike seem to agree that in the age of the social Web, we must find ways to make knowledge more open, accessible, and agile. Self-published eBooks and academic blogs, open access journals, and new mechanisms for measuring and assessing scholarly impact that account for online influence, are examples of a trend toward new modes of research creation, communication, and collaboration. Making scholarly production more publicly accessible matters, especially when more learning takes place outside the classroom infrastructure than ever before, according to the New Media Consortium's 2012 Horizon Project retreat, where 100 distinguished intellectuals from around the world gathered to discuss the rapidly evolving educational ecosystem. Horizon Project participants pointed to what they called a key megatrend; namely, openness—the need for scholars to produce more open content, open data, and credible open access research from universities seeking to add value to a global culture of information abundance and to contribute to the development of new media literacies.



When it comes to awareness of, or adopting, social and mobile media tools for our teaching and research, and for professional networking and publishing, academics are divided—though not by generation. Surveys show that tenured profs are just as likely to adopt new technologies, from coursecasting to app development to blogging, as are their junior colleagues. So, too, when it comes to the design, development, and deployment of blended, hybrid, or online courses, senior faculty and junior faculty are both stepping up and opting in to the digital pain of mastering new software and the resource stretch required to acquire new computer hardware. From the sciences to the arts and humanities, whether techies, luddites, or newbies, many profs are bravely venturing into the world of webcasts and Moodle forums, Skyping and screen-grabbing, curating multimedia resources, donning wireless mics to narrate Powerpoint presentations, configuring digital textbook chapters and online quizzes, and even doing some code wrangling or Twitter hashtagging, Instagramming or pinning on Pinterest. If you were to ask most of those involved if they ever imagined they would be immersed in technical design and redevelopment of their research and teaching methods, my guess is you'll hear a lot of "no's". The velocity of innovation with regard to the digitalization of campus culture and scholarly output is dizzying, and so too are the accelerating expectations for faculty to be always-on, connected, available to respond to email queries and provide instant feedback, 24/7.

As more faculty take mobile computing tools to work—lugging laptops, tablets, and smartphones tucked into briefcases and backpacks, purses and pockets, shifting portable information from our offices to our classrooms, from meetings and conferences to home—so, too, do we keep our work hats on, extending our accessibility to peers, administrators, and students. The acceptable

window of time for email replies is shrinking, as more people adopt handheld computers (iOS, Android, and BlackBerry devices) that enable texting, BBMing, and mobile status updating in real time. Marketing studies indicate that more than 70 per cent of social Web users expect an instant reply to inquiries sent to friends and brands via Twitter and Facebook. Students, too, seem to want their profs on speed-dial, preferring instant, real-time connectivity and micro-messaging to the ancient ritual of office hours. Of course, the benefits of data portability and mobile connectivity are bundled with amazing costs: a potential loss of privacy and downtime, the habit of being compulsively connected, tethered to our digital gizmos and gadgets, driven by the pressure to keep up with the flow of information and stay connected to our networks—akin to what my students call FOMO, or fear of missing out. That said, learning to balance media-use habits and modes of engagement with mobile communications technologies, while managing the expectations of others, is becoming part of the required skill set of a working professional. To help their management team develop this work-life balance, Volkswagen recently earned news headlines when the company blocked email servers on weekends to protect (and encourage) employees' downtime.



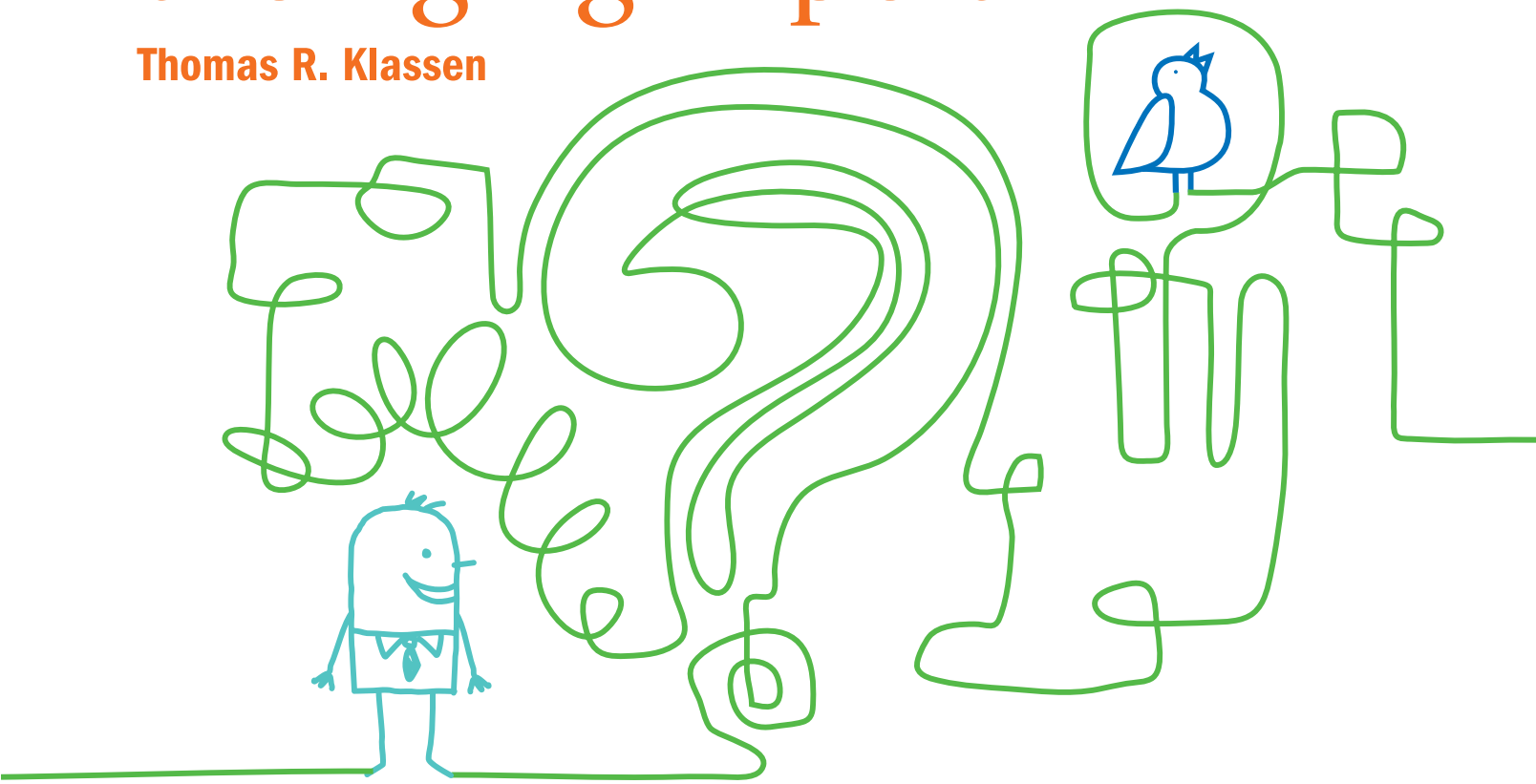
Back on campus in lecture theatres and department hallways, at conferences, in staff meetings and professional development workshops, higher ed faculty representing a range of positions along the technology adoption continuum admit they are painfully short of time. The learning curve for mastering some educational technologies and social platforms can feel stunningly vertical at times, and institutional training and support is often limited or lacking altogether. Still, each week a new tech trend, Web tool, startup, or mobile gadget bursts onto the scene, and we issue a collective sigh: how to keep up with the pace of change? With our students? With our fields of specialization? With administrative expectations to do more with less?

It's remarkable, considering the challenges and costs of engaging with digital, social, and mobile technologies (all of which come on top of expectations for productivity and innovation in research, teaching and service roles), that faculty technology acceptance and adoption rates continue to rise. It is the case that some faculty remain steadfastly technology adverse, perhaps deeply threatened by high-tech innovation, disruption and change, fearful of being displaced by Wikipedia and YouTube. Others may cite concerns that the quality of education is compromised by computers or that students cannot learn while isolated at their screens instead of being physically present in classrooms. Some will also argue that educational technology use supports the 'adjunctification' of the faculty or our replacement by robots. Still others are concerned that intellectual property is at risk when courses go online because of frictionless sharing, and related concerns, some serious and noteworthy, others painfully misinformed–evidence of sustained disengagement from and ignorance of the momentum of change and technological development in higher ed over the last decade. In order for professors to engage in podcasting or online lectures or tweeting, or supporting their colleagues who opt to publish in open source journals or participate in online conferences, they must see real benefits and an immediate, significant return on investment. Perhaps for some profs evidence of increased student satisfaction and engagement will win them over. Perhaps building a more visible online presence and a larger personal learning network is the ticket. It could be that the personal satisfaction of lifelong learning and the constant challenges of digital creativity are reward enough to motivate curious faculty to plug in, power up, and help code next-generation teaching and learning environments for higher ed. For me, the greatest source of inspiration driving my technological development has always been the students—the way they hack a carefully planned course, improving and innovating, demonstrating shortcuts and asking clever questions, finding loopholes and thinking outside the box, nudging me back to the screen to revision. They teach me what connected teaching and learning can be. AM

Sidneyeve Matrix is an assistant professor in the Department of Media and Film at Queen's University.

Upgrade Anxiety and the Aging Expert

Thomas R. Klassen



Some senior faculty members believe they won't be able to upgrade from Professor 1.0 to Professor 2.0. Fortunately, there is no one route everyone must follow.

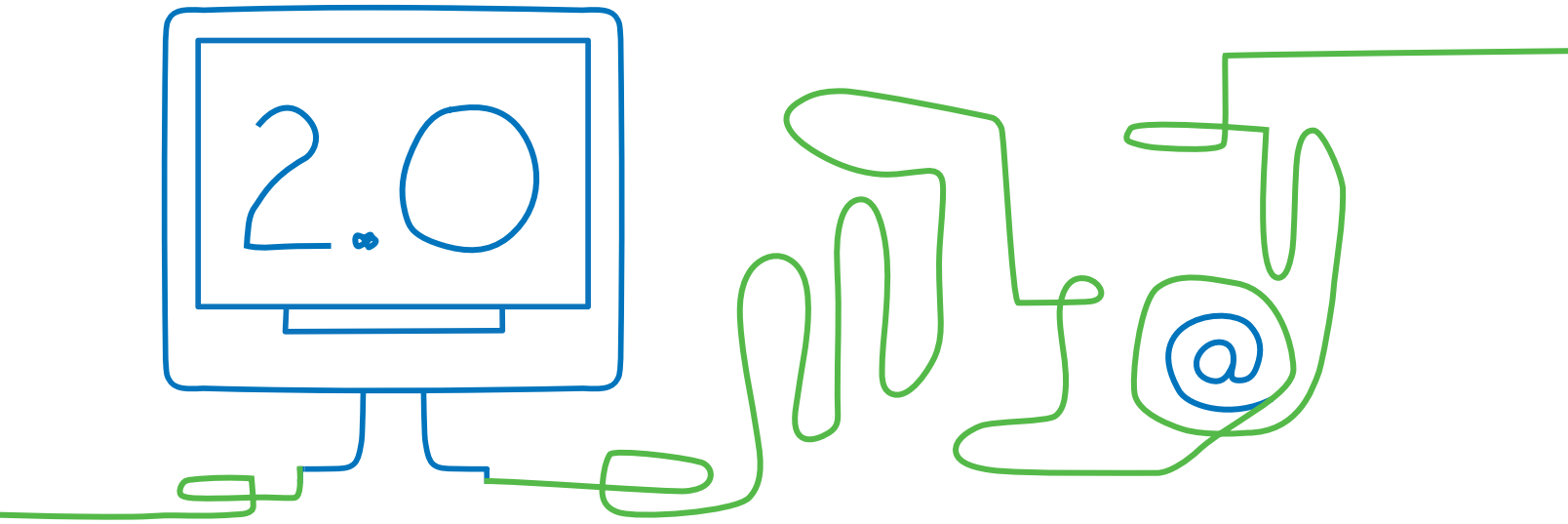
Certains professeurs chevronnés croient qu'ils seront incapables de passer de Professeur 1.0 à Professeur 2.0. Heureusement, aucune solution n'est absolue pour tous.

By definition university professors are experts in their fields. Given the laws of the universe, however, professors are also aging experts. Not experts on aging, but, rather, humans who are aging. As Yeats wrote in his poem on getting older, *Sailing to Byzantium*, we are all "fastened to a dying animal."

Growing older increases knowledge and experience while—one hopes—gaining wisdom. Few faculty members would willingly return to their graduate student days defending dissertations and preparing for job interviews.

Nevertheless, with increasing age comes the fear of being left behind. Science, by its very nature, advances, and increasingly, faculty members are expected to be Professor 2.0. For much of the technology involved in research and teaching has changed dramatically in the past few decades. This is not to say that the fundamental characteristics of research and teaching—passion, creativity, determination, and critical analysis—are different, but many of the means to express these have surely been transformed.

In my office I have boxes of photocopied articles used for my doctoral dissertation, which I completed in 1995. I will never open the boxes again, as the articles—and much more—are now available on-line. I can access the electronic versions



of the articles from anywhere at any time and use them in more creative and comprehensive ways than I ever could as white, letter-sized pages with black printing held together by a staple.

The electronic articles I've collected to replace those in the boxes have migrated from hard-disk, to hard drive, to CD, to USB. They currently reside in the "cloud."

In another box I have overhead transparencies used for my teaching up until 1999.

My most recently completed collection of boxes contains the collections of required readings I prepared for my students, for them to buy when they started a course. But as of last year, students in all my courses can access these readings electronically from the university library, or, in some cases, from public sources.

So far, I've been unable to discard the nearly one dozen boxes of material in my office, as I feel a sentimental attachment to these relics from a bygone era. Fortunately, because of technological change there has been little need. Fewer and fewer books and journals arrive for my bookshelves (as most publications are now electronic), delaying the need to toss the old to make more room for the new.

In the less than two decades since I received my doctorate, critical aspects of teaching technology have changed. Blackboard, Moodle, Powerpoint, and related technologies are part of the teaching process for many faculty, and many students expect them to be part of their university experience. Ratemyprofessor.com, blogs, and other means provide students with a degree of knowledge (and perceptions) about professors and their performance not available in the past.

The technological shift is not without its harms, as it can easily entail a loss of reflective reading, in-depth contextual reading, and opportunities for undergraduate seminar discussions. Increasingly, older faculty colleagues are the only ones who can recall a time before the current technology. This does not mean they wish to turn back the clock, but they are often the ones better able to advocate that technology not displace the core elements of the teacher-student relationship.

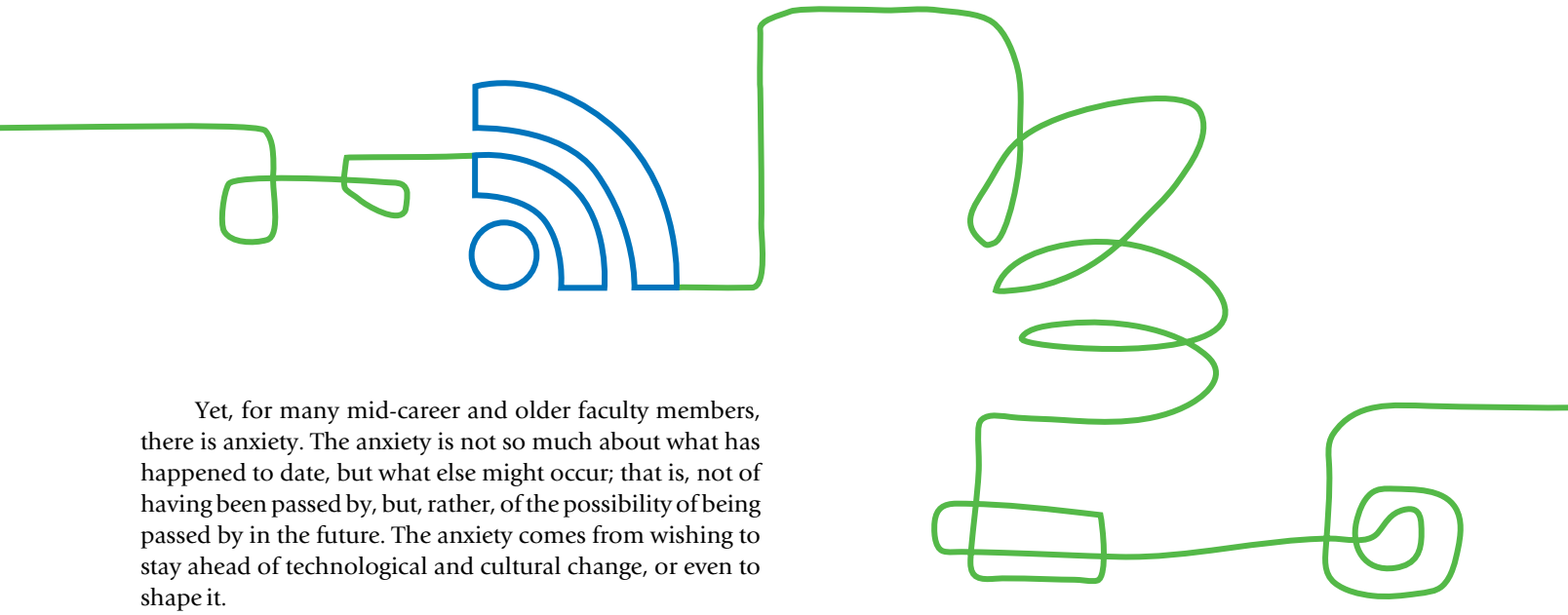
Electronic personal research assistants, such as Zotero, and other related software, are now standard in research. Slowly, but inexorably, printed books and journals have been complemented, and are being supplanted, by electronic versions. Powerpoint, for better or worse, is the default means to present ideas and findings, whether in a classroom or scholarly conference.

For the aging expert, the advancements in knowledge and changes in technology of the past several decades are generally welcome. In many cases, it was the hard work and cutting-edge research of professors that developed these technologies.

Information and communication technology have resulted in a democratization of knowledge, as colleagues at smaller institutions now have the same, or at least similar, access to scholarly information and databases.

Information and communication technology have resulted in a democratization of knowledge, as colleagues at smaller institutions now have the same, or at least similar, access to scholarly information and databases. The same applies to students. Personally, I love searching for books in library stacks, but I also appreciate being able to browse for an item from my computer at 2:00 a.m.

Collaboration is easier with colleagues far and wide, resulting in richer research initiatives.



Yet, for many mid-career and older faculty members, there is anxiety. The anxiety is not so much about what has happened to date, but what else might occur; that is, not of having been passed by, but, rather, of the possibility of being passed by in the future. The anxiety comes from wishing to stay ahead of technological and cultural change, or even to shape it.

Anxiety can be good as it inspires change. I recorded and posted audio lectures on the Web more than a decade ago. Earlier this year, I began to experiment with posting lectures on YouTube. Truth be told, I had not really wanted to record audio or video, but I felt that not doing so was limiting what I saw as my teaching duties and, more generally, limiting how I saw myself as an educator. The widespread availability of the technology and my students' obvious enthusiasm for it forced my hand.

On the other hand, anxiety can be stressful. Students in my fourth-year political science course use more intricate Powerpoint presentations than I can produce. My MBA students can find more up-to-date data than I can, while seamlessly integrating video, graphics, and text into multimedia presentations. I fear I'm falling further and further behind in what should be a field I'm expert in. Fortunately, teaching is to some measure an art, and one that has a broad range. University faculty are blessed (and, arguably, those with several decades of experience even more so) in that they have a measure of control of their work. They can decide on their research interests and methodologies, and—to some degree—on their teaching duties.

Faculty members—regardless of age—who are drawn to multimedia lectures suitable for large audiences can often teach introductory courses. Those with the skills for Web-based courses or distance education courses can in some cases offer these types of learning formats. Those whose skills and interests are suited to smaller, seminar-style formats still often have the chance to teach in this manner.

Christopher Plummer's Academy Award at age 82 provides solace that age is little related to performance, and that skills honed during a lifetime can infuse the technology. However, Mr. Plummer's success also suggests that older faculty members should not necessarily expect to play Romeo. They do, and should, select those roles that fit with their expertise and interest.

Older faculty members usually have decades of institutional experience and, if they wish, can wield considerable influence in an academic department. My own experience is that it is often the older members of my department who respond to calls for assistance and advice and who are no less involved and committed to their academic activities than younger colleagues. Not surprisingly, decades of teaching, research, and service result in their having a much stronger bond to the academy than their younger colleagues.

The elimination of mandatory retirement in most Canadian universities over the past five years has had positive impacts on older faculty members. Previously, when reaching age 65 meant an automatic dismissal from employment, there was often little motivation to start new research projects, teaching initiatives, or other activities once a professor was within a few years of 65. This has now changed, and, not surprisingly, more professors are working past age 65.

According to the *CAUT Almanac*, the number of professors employed full time beyond age 64 more than tripled between 2001 and 2009 to 5.1 per cent (6.3 per cent of males and 2.9 per cent of females). In fact, the number of full-time professors age 70 and older equals that of those under 30. Both make up 0.7 per cent of all full-time university teachers.

Mid-career and older faculty members do find themselves in a quandary with regard to compensation. Most universities have a progress-through-the-ranks or a seniority scheme that results in those with long tenure earning more than younger, newly hired colleagues. This can result in such questions as: What is Senior Professor X doing this year to earn 50 per cent more than Junior Professor Y? Shouldn't Senior Professor X be 50 per cent more productive this year than Junior Professor Y?

These compensation schemes, however, are not productivity schemes. The progress-through-the-ranks system in academia is a means to provide—assuming satisfactory performance—a pay scheme in a profession where, most likely, the job you start with (teaching, research, and university service) is the one you finish with. There is little opportunity

for the kind of advancement, in pay and responsibility, found in most other occupations.

Moreover, there should be little intergenerational conflict, as most junior colleagues will eventually reach the same salary levels of their older counterparts.

With the Baby Boom generation beginning to reach retirement age, many more faculty members than ever before will be reaching 65 in the next two decades. Consequently, at least three reforms to established practices and arrangements are required.

First, many universities are not taking advantage of the skills possessed by younger and older professors respectively. Nor are younger and older faculty members taking advantage of each others' skills, either. Mentoring programs for junior faculty are rare, and mentoring for older faculty is unknown. But much can be gained by ensuring that newer faculty and more experienced faculty interact with one another. Less experienced faculty can learn the many unwritten conventions of academia, from dealing with students' grade concerns to getting manuscripts accepted for publication. Older faculty members, if they wish, can learn how to use the latest teaching technology from their younger colleagues. Such shared learning occurs best in informal arrangements at the departmental level.

Second, the retirement process is often abrupt, causing undue stress to all involved, including students. Greater flexibility in retirement patterns, such as phased retirement, is a benefit for administrators, colleagues, and students. Most collective agreements have some provisions for a stepped retirement, but these are often inflexible, either not allowing faculty members to increase their workload after it has been decreased or placing arbitrary limits on course loads.

The third reform is ensuring that retired faculty members, if they wish, can continue to be involved in the academy. There are few institutional or informal mechanisms to promote and sustain this. In East Asian universities, it is not uncommon at the start of the academic term to have a reception for retired faculty, so they can meet new colleagues and incoming students. This is a small gesture, but one that serves to remind, and bind, the old and new in the mission of teaching and learning.

The above suggestions are by no means exhaustive, but do show how individual faculty members, departments, faculty associations, and institutions can each play a role.

The anxiety felt by mid-career and more senior professors is rooted in believing they may not have the knowledge or tools to adapt, to continue to contribute. For many individuals this feeling is the incentive to keep learning and innovating: to upgrade from Professor 1.0 to, perhaps not 2.0, but to Professor 1.1, or 1.4, or 1.7.

Indeed, academia must have a range of professors from 1.0 to 2.0. The student body is diverse and heterogeneous, as is scientific inquiry. We may all be "sailing to Byzantium", but, fortunately, there is no one route we must all follow. AM

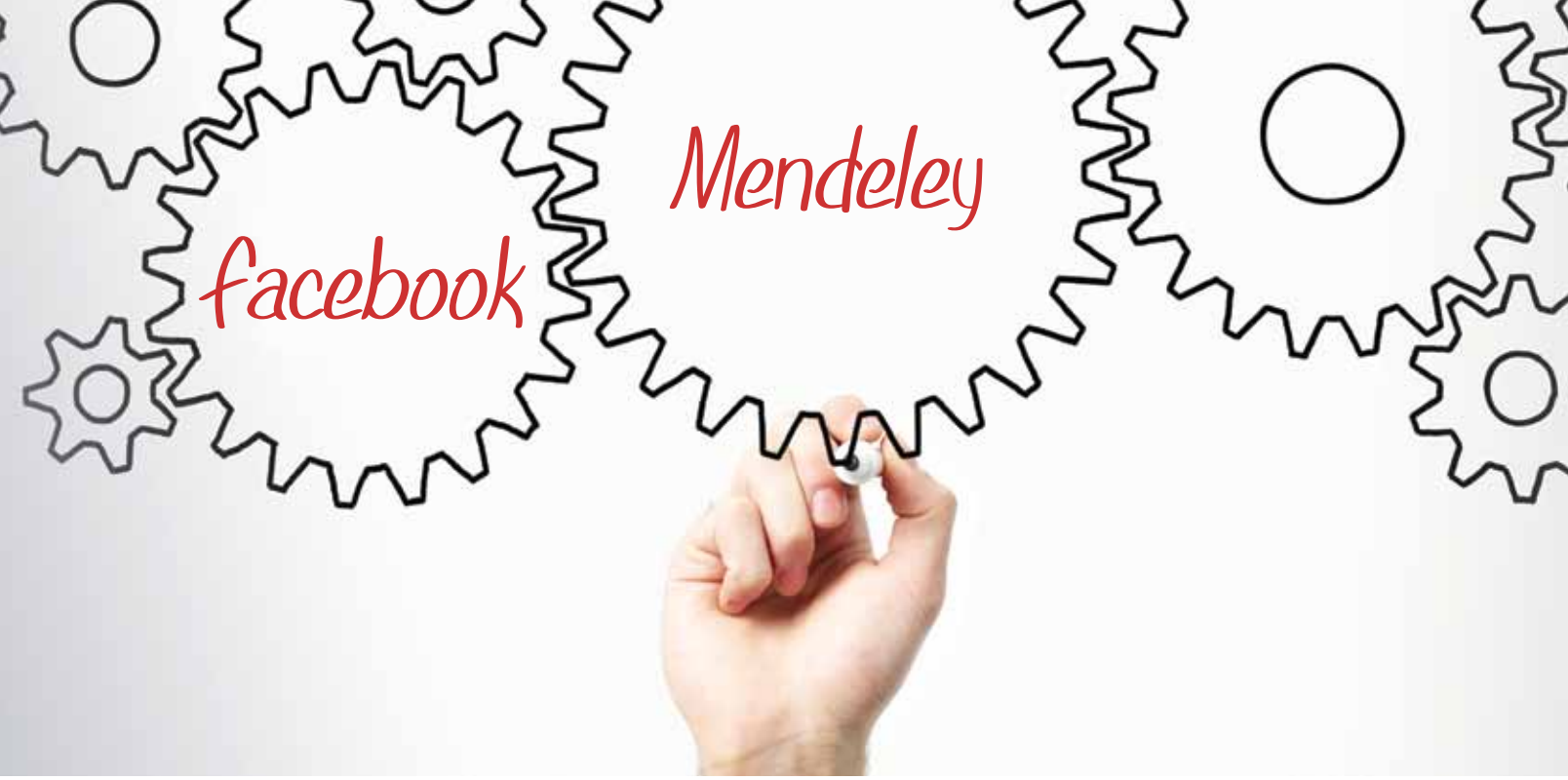
Thomas R. Klassen is an associate professor in the Department of Political Science, and School of Public Policy and Administration, at York University. He teaches courses on the politics of aging and has written extensively on retirement.

The Professor as Mass Communicator?

Andy Miah

In Britain, reports Andy Miah, funders are demanding social engagement, while students expect a 2.0 learning environment. Meanwhile, many faculty are using new technology to promote themselves and their work beyond the Ivory Tower. What does this all mean for the future of the profession?

En Grande-Bretagne, rapporte Andy Miah, les bailleurs de fonds exigent un engagement social, alors que les étudiants s'attendent à un environnement d'apprentissage 2.0. Entre-temps, de nombreux professeurs recourent à la nouvelle technologie pour se promouvoir et pour faire la promotion de leur travail au-delà de la tour d'ivoire. Que signifie tout cela pour l'avenir de la profession?



While much about being a university professor has remained unchanged for centuries, the way today's academics research, teach, and fulfil administrative duties has changed dramatically, as a result of technological change and a cultural shift in what the public expects of academia.

In the United Kingdom, these changes are about to hit home for academics as the government's Research Excellence Framework for assessing the value of research will now include a new component called "impact", which requires professors to show how their research makes a direct contribution to society beyond academia. This requirement may return scholars to the position of public intellectuals, but will it last, or, rather, will academics be able to remain in their ivory towers? In a system that has always been a work in progress, it is doubtful that it will matter in the long term. But, for now, British academics are trying to figure out how to back up their claims about the "impact" of their research.

The expectation for researchers to have a presence beyond academia coincides with another shift that is making social impact now possible, for many researchers, and this is the rise of social media. These new, virtual environments are not just characterized by popular, personalized platforms like Facebook and Twitter, although I will come to these. Rather, social media encompasses the entire architecture of the scholarly Web today, best known as Web 2.0, which is a new way of organizing digital media content. While computing transformed scholarship in many ways before the rise of social media platforms, the average end-user experience, even for a novice, has altered considerably within just the last five years.

One of the early entrants to the scholarly Web 2.0 was Google Scholar, which began in 2004. (By the way, a recent addition to Google Scholar is 'author profiles'. If you haven't created yours yet, now would be a good time.) In under a decade, Google Scholar has had a dramatic impact on the credibility of online search outside of library systems, affecting both researchers and students alike. As well, Wikipedia, launched in 2001, has become the go-to place for first-level research inquiries for a range of purposes.

While some academics loathe the abuse of the Internet by students for research, with Wikipedia being a primary culprit, PhD students today are children of the social media generation, and many of them operate in very different ways from their supervisors. The important point to convey to students is its value as a starting point for research, not an end point. And, for their part, academic skeptics seeking visibility would be well advised to monitor and edit Wikipedia entries that are close to their interests. It also helps to be cited in relevant Wikipedia entries.

These platforms are front-runners of the social media explosion in academia, but many of the more traditional academic spaces have quickly caught up to them. Some of the key tools to help academics take their work further today include Academia, Mendeley, Zotero, and LinkedIn, each of which demonstrate how being an academic in a digital era has been transformed by technology. For example, if an academic wants to build a reading list about "social media", then rather than doing a library search or even a journal search, they can study the public reference databases in Mendeley of colleagues who have expertise in the area. The beauty of such platforms is that they make sharing expertise easier, thus helping to foster relationships and make research more efficient. They are available at no cost, and they shift research from the private to the public domain. Colleagues of mine can see a list of everything

The beauty of such platforms is that they make sharing expertise easier, thus helping to foster relationships and make research more efficient.

I have ever read on my account and, in time, this may even help future historians understand how ideas have influenced the development of intellectual thought.

Other future innovations in research suggest the rise of "citizen science", a form of research partnership whereby academics work with teams of community enthusiasts to help undertake large-scale research projects. For instance, an environmental enthusiast may devote part of their personal computer's processing resources to boost large-scale climate-modelling programmes or help NASA classify planets using a simple Web-based interface. Citizen science may radically transform timescales for knowledge creation. Citizen-based evaluations of research have already taken place. It seems there are a lot of non-university scientists out there, and universities have yet to realize how they may nurture their interests and build relationships that can advance research ambitions. Future alumni associations may be better off asking their members to engage with citizen science projects than asking them to donate money for large grants.

Closely allied to this is the growing pressure for publicly funded research to be published in open access journals. Arguably, if the public are also part of the research process, this pressure becomes overwhelming, and there is already evidence that the value of publishing in such journals is growing. In April, the Wellcome Trust announced it will do more to push researchers to publish in open access journals. The problem today is that, still, too many new web-based journals do not really understand that being on the Internet isn't enough to ensure that their journals are 'open access' or even indexed by relevant lists. There remains a credibility gap and a concern about conflicts of interest, but these will diminish. Already, some open access journals have among the highest impact factors in their subject area and this is motivating academics.

It is not just online media that has changed the professor's role today. In recent years, the traditional media landscape has also changed for academics. Many scholars now are creating their own websites to showcase their work and even publish pre-prints of their journal articles and lecture notes. Others are using their mobile phone cameras to create podcasts that can be uploaded directly to the Internet. While the motivation for such activity is more intrinsic than instrumental, the value of public communication and engagement in academia has skyrocketed in the last 20 years. Sadly, it is also true to say that universities generally, along with academic publishers, are terrible at promoting the work of professors. I've become convinced that it will soon be necessary for all successful academics to have agents that publicize their accomplishments.

Today, funding councils also expect to see some assurance of public engagement by a professor in grant applications, to ensure there is an attempt to inform the wider society about what is happening at the cutting edge of research. The consequences of this are hard to foresee, but it may lead to a kind of Hollywood star system for higher education or, at least, the cultivation of academic celebrity that some would wish to resist. Yet, it may be a sign of the times that professors market themselves as commodities and that universities boost their reputation on these star players. In the UK, the recently launched, private university, the New College of the Humanities is one such institution and may be a new economic model for universities in Britain, where the expansion of fees means that universities are treated increasingly as private businesses. Boasting a faculty membership of esteemed professors, all of whom have a financial stake in the institution, this new university may be a game changer for the British higher education system, but it remains deeply controversial. At the same time, the Occupy Movement in Britain has led to the creation of Tent City University, a free university programme with courses, public lectures and events. As a result of all these changes, universities are being forced to reconsider their role within civic life and so, too, are the academics working there. There is even a Twitter University in Sweden, where all lectures are delivered by tweets.

Alongside these developments is the greater presence of professors in the media. Today's professor may be tomorrow's television expert, talking head, or presenter, speaking on the latest scientific breakthrough or moral dilemma that confronts society. While many academics may not have signed up to a life as a professor in order to pursue a media career, there are fewer better ways to promote one's work. Of course, the terms of this engagement vary. Some academics write for newspapers, some do a lot of radio work, while others focus on television. In addition to this, a new career path of academic communicator has also arisen, creating a new breed of professor. With a background in an academic science, a professor who becomes a television presenter has joined the growing profession of science communicator.

Expectations from students are also changing. Gone are the overhead projectors with their plastic acetates. Students are beginning to expect content delivered digitally and even directly to their mobile devices. They also expect their lecturers to use social media platforms and to be immediately available for consultation, which presents its own unique challenges. The delivery of teaching is also changing. PowerPoint may finally have had its day, as new platforms like Prezi.com and mind-mapping software are changing how content is delivered and experienced.

It is not all just about the latest technology, however. There is still a place for blackboards in classrooms, as indeed there is a place for traditional implements, pencils, pens, and paper. If there is one thing I have learned over the last ten years about the use of new technology in education, it is that the combination of old and new methods makes for the best model. The other thing I have learned, however, is that the technology universities pay for within their Virtual Learning Environment budgets is usually far inferior to what is freely available online.

There is still a lot that professors must do to be fully operational within the 2.0 era. We have yet to embrace, for example, new ways of organizing subject interest communities. The traditional academic association, with its annual fees and conferences and poster sessions, remains commonplace still. Yet, whether it will continue to have authority or relevance in a more fluid academic era, only time will tell. In my area of work, the relatively stable boundaries around disciplines are still deeply unsatisfactory when trying to conduct research across subjects and the STEM vs non-STEM (Science, Technology, Engineering, and Mathematics) division calls for the need for more Renaissance-style thinking within higher education.

In closing, it is important to remember what remains the same. The professorial responsibility to create original insights that enlighten humanity and that arise from a rigorous and scholarly method is a good place to start. The goals of teaching remain largely the same: to nurture in students the capacity for independent, critical thought and perhaps even a desire to continue learning throughout their lives. I also believe the aspirations students have for their Professors remain, for the most part, unchanged, as well. Students will continue to seek out inspiring teachers. Technology alone is unlikely to ensure this, although it may make a lot of average teachers seem a lot better than they are! AM

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Becoming Prof 2.0

Melonie Fullick

Who ends up on the path to becoming a professor? What kind of academic world will they find at the end of it?

Qui sont ceux qui se retrouvent sur la voie menant au professorat? Quel type de milieu universitaire trouveront les professeurs au bout de cette voie?

In October 2010, "So You Want to Get a PhD in the Humanities" was posted on YouTube and began to circulate rapidly through various social media networks, such as Facebook and Twitter. The video, a simple animation, features a starry-eyed undergraduate student who has come to ask her professor for a letter of reference for a graduate school application. When asked why she wants a PhD, the student answers, "I want to become a college professor." Instead of receiving encouragement, the hapless student is warned off bluntly and repeatedly: "You do know that less than half of PhDs get a tenure-track position?" The undeterred undergrad eventually receives the promise of a letter, believing herself to be on the way to living "the Life of the Mind" (and ignoring her prof's sighs of despair).

This video was a popular permutation of a theme that has been manifest in various media sources over the past several years. The corpus of criticism includes articles from *The Economist*, commentary in numerous blogs, opinion columns from academics such as William Pannapacker, and larger "movements" like the New Faculty Majority (in the United States) that highlight the working conditions of contract professors. These critiques have emerged partly from, or have been complemented by, nightmarish coverage of the various higher education policies being implemented in the United States and the United Kingdom.

The humanities in particular are a subject of constant debate and evaluation, standing in, not as a realistic example of educational failure, but as a cipher for the "useless" PhD that leads nowhere other than to a steady diet of ramen. Yet "So You Want to Get a PhD in the Humanities" was soon followed by multiple spin-off versions, morphing into a popular meme that included parodies of political science, physics, chemical engineering, and psychology, as well as law and business. These videos' lesson was that humanities students are not the only ones wandering mistakenly along what they believe is a straight and narrow road to a meaningful (and lucrative) career.

So, with this general unraveling of expectations, what role does a PhD still play in training the professors of the future? What is the current context in which preparation

Students' success in the PhD is a necessary but not sufficient condition for becoming a professor, for success is dependent on many interrelated factors, some of which are beyond the student's control.

for the professoriate takes place, including the various effects of political and economic changes on graduate education and on the academic job market? To answer these questions, we need to understand that the purpose and productivity of the university has come under increasing scrutiny over the past 30 years or so, as conservative political movements have gained strength, and various recessions have gouged out government coffers. We also have to understand such trends as: the constriction and stratification of the academic job market; internationalization and marketization of education; student consumerism; rapid development of new technologies and the evolving needs of an expanding student population. These developments have changed the demands made on university faculty, as has the tendency towards managerial governance in universities, which places an emphasis on accountability, efficiency, and quality control. Who ends up on the path to becoming a professor, and what kind of academic world lies at the end of it?

The journey leading to a faculty career has retained its basic institutionalized form for around a century, with only a few changes over the past decades. One important development is that there is now less chance than ever that a master's level education will be a sufficient credential for an academic job. The PhD is all but mandatory as a qualification for faculty in Canada, except in cases where a candidate brings significant professional expertise relevant to the academic discipline in question. It's therefore important to ask what this "first hurdle"—graduate education—looks like in practice, and whether Canadian PhDs find themselves competing on an even footing with scholars educated elsewhere.

Students' success in the PhD is a necessary but not sufficient condition for becoming a professor, for success is dependent on many interrelated factors, some of which are beyond the student's control. The same demographic factors that affect undergraduate accessibility will have "echo effects" at the graduate level, since a bachelor's degree is only the initial hurdle. This means that stratification of the student body begins well before the first PhD class. Parental education and socioeconomic status are still strong contributing factors to undergraduate performance. Performance can also be affected by family crisis, health issues, depression and anxiety, and students' outside work commitments undertaken to meet educational costs. Entry into a PhD program is primarily conditional on grades from the bachelor's and master's degrees, so serious disruptions to these can create a discouraging barrier.

Simply not being well informed about the requirements (and opportunities) for graduate school can also be a factor that determines who attends and who does not. Students may not be aware of the importance of grades, not only for entrance into graduate programs but also for eligibility for the large merit-based scholarships available from the federal and provincial governments, for example. Students need early mentoring in preparation for these applications, especially since success builds on success and since one scholarship often leads to more funding later on. For students from low-income and/or non-academic backgrounds this is crucial information and required support, and it's all too easy for them to slip through the metaphorical cracks for lack of attention.

All this is to say that privilege still plays a significant role in student "outcomes"—possibly a larger role than it has since the post-war expansion of post-secondary systems around the world began almost 70 years ago. Always an elite profession, academe expanded and diversified in the post-World War Two era, particularly during the 1960s and 1970s, as enrolments increased and system-building occurred throughout Canada (and around the world). During a period of unprecedented social mobility, both the professoriate and the student body began to change. Yet with the economic shifts of the past 40 years, the open door to academic advance-

ment has begun to swing shut. Cultural capital, closely tied to economic advantage, has become once again one of the most significant factors in students' academic success, so deeply enmeshed with other contingencies that it's hard to figure out exactly how it works, But we do know that merely counting the number of books on a household's shelves is no measure of the complicated inter-relationships between economic, academic, and social privileges.

All these factors will contribute to a student's decision to pursue a PhD, as well as to her or his perception of the purpose of the degree and how one acquires it. But research from the United States shows that a serious information gap persists when students are selecting and entering a PhD program. On the one hand, doctoral programs may aim to recruit the best students whether or not those students are a good "fit" for the program (or for a particular supervisor). There may also be recruitment quotas or funding issues involved. On the other hand, a prospective student is often making a decision based on the prestige of a program or the reputation of a particular faculty member, rather than whether or not the program best suits her or his needs.

The information gap at the point of enrolment also contributes to doctoral student attrition. The high rate of PhD attrition is a long-term phenomenon that's received relatively little attention, but many factors can contribute: depression and other mental health issues; isolation from peers and faculty; financial difficulties; problems with supervision; and the elusive "lack of fit" with the program or the institution. Canada's PhD attrition rates are not included in the results of the Survey of Earned Doctorates or other available reports, but institutional reports seem to point to a 40-50 per cent dropout rate depending on area of study, similar to the United States.

The culture of graduate education often contributes to students' problems. Meritocracy, the notion that achievements are determined by individual merit rather than by a complex of factors (some of which are beyond our personal control), is a concept that is crucial to academic culture and the operational logic of academe itself. Because students internalize the idea that their success is dependent on this narrow notion of merit, they often blame themselves if they "fail" to perform adequately during the PhD. They might be reluctant to speak out about their problems, since usually no one else is doing so, and they might feel they are revealing personal inadequacies, rather than bringing to light systemic flaws.

Students in many doctoral programs are socialized to "translate" academic success as gaining a tenure-track job, with an emphasis on research. But these kinds of careers are now harder to find, because of the highly competitive market for tenured positions. During the doctoral process it's more likely than ever that students will experience stress and anxiety as a result of increasing pressure from new standards of professionalization. There is an upward drift of credentialism, and this affects the professional expectations of PhD students. The list of accomplishments necessary to find desirable academic jobs is intimidating, and students who want to succeed in this way require a high level of awareness, self-discipline and autonomy, or a very proactive mentor figure—and preferably a combination of these advantages.

What *does* work at the graduate level is provision of the information students need to make appropriate academic and career decisions. Students need clear explanations of institutional processes and of their own responsibilities and rights during the doctoral program. Social and academic integration, both with other students and with faculty, is important because it helps students learn the tacit (cultural and social) knowledge required for success in the university. Students also require structure and support, as well as mentorship, either from a supervisor or from other faculty or professional figures. This can include: help with publishing and networking; involving students in research projects; assistance with scholarship applications; academic and moral support through personal difficulties; and attending conferences and events. While mentorship is still one of the most crucial aspects of graduate education, competition for faculty attention and support has increased with enrolment, affecting the kinds of training that doctoral students receive.

The current job market for tenure-track academic positions is notoriously difficult, for reasons that are structural, political-economic, and cultural. While Canadian universities have been expanding steadily since the 1950s, in recent decades universities have relied more heavily on part-time and contract faculty as a means of increasing enrolment without incurring the cost of hiring additional tenured professors. The CAUT reports that about 35 per cent of universities' academic staff are either part-time, temporary, or both. In spite of tenured faculty retirements, formerly tenure-track spots are often being replaced with multiple part-time contract positions. Additionally, some older faculty are

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only "semi-retired", and a recent trend is that they are now teaching more courses on contract, courses that were formerly taught by PhD students and recent graduates.

When they are teaching multiple courses (often at different universities) with relatively low pay and few or no benefits, it's much harder for young scholars to engage in the research work that would help them to advance their own careers. Teaching is less valued than research in the academic economy, so it pays less and also tends to count for less on an academic CV. The problem is also a gendered one, since under-valued teaching work is "feminized", and the proportion of women in Canada's temporary and part-time academic workforce is above 60 per cent.

Many PhD students are rightly concerned about the availability of academic jobs and about the proportion of PhD candidates finding full-time, permanent positions. But while anecdotal evidence abounds, actual numbers are harder to find. How many Canadian PhD graduates end up on the tenure track five or ten years out from graduation? It's possible that the long-term shortage of positions (in comparison to applications) has led to a logjam. When new graduates begin the search for a tenure-track position, they're competing not only against those who graduated within the previous several years and remain without tenured positions, but also against those who may already have a tenure-track or tenured position at another university and have decided to move (for whatever reason).

The market for tenure-track positions is also an increasingly international one. To some extent this has always been the case; but now more than ever the elite stratum of scholars has opportunities to travel to the best institutions both for the PhD and for academic work later on. The flip-side of this mobility is the instability that comes with the process of developing an academic career. Searching for tenure often means uprooting yourself and your family, because only so many positions are available at a university near one's chosen location. Sometimes difficult decisions must be made to focus on the priorities of just one family member. It means one must also assume that job security will still exist in the years to come, and that the five-to-six-year tenure process will have a positive outcome.

Many early-career academics now choose a post-doctoral fellowship as the first step after their PhD. The post-doc allows for further professional development before entering the academic job market. But post-docs, too, are becoming more competitive as more grads apply, and they also cost, since there is a large gap between the average salaries of those who enter the job market immediately and those with post-doctoral positions.

Because of these systemic difficulties, relatively few PhD graduates tend to find a permanent faculty position (in the short term). Just as a master's degree is no longer enough for a professorial position, it's also rare to meet anyone who has a tenure-track job lined up immediately after their PhD; and hiring ABD doctoral candidates seems to be more or less a thing of the past.

Critics often ask whether we are over-producing PhDs. But this question is usually posed in relation to the number of PhD graduates who cannot find decent faculty jobs. If we assume that PhD enrolments must somehow reflect the needs of the academic job market, then there has always been a mismatch between enrolment and demand. However, if couched in terms of developing "human capital" for the "knowledge economy", increased enrolment numbers make more sense. But little is being done to bridge the gap between quantitative policy goals (simply increasing the number of PhD graduates in comparison to the OECD average, for example) and the qualitative factors affecting students' understanding of the purpose of the PhD.

Are the graduates who opt for the academic job market ready to deal with the everyday reality of professorial work?

How will they handle the technologies of quality control and time management, the committee work, the politics of departments and institutions, and the "soft skills" needed to deal with students and colleagues in appropriate ways, as well as the ethical comportment we reasonably expect of scholars? If many graduate students do not find tenure-track positions, how do we ensure that all students have ample opportunities to make appropriate decisions about their careers, as well as having access to mentorship and skills that will help them formulate goals and work towards those goals?

Breaking the silence about the problems students encounter during the PhD years would also help to humanize the academic workplace and make it more inclusive and supportive, potentially reducing the likelihood of PhD students leaving their programs. Some scholars have produced research suggesting that exit interviews should be mandatory for all students, whether they complete their programs or not. This would provide valuable feedback about program changes and would help build the relationships that allow universities to follow alumni over the long term, learning from their career paths about the possibilities for current and future students.

The changes to the university that most affect aspiring professors are merely local manifestations of larger phenomena that can be seen across economies around the globe, whereby the nature of careers and employment has shifted towards competitive contingency. Increasing reliance on education as a credential by larger proportions of the population ironically shows up the ways in which education has not historically been the only factor in "success".

Thus there is no guarantee of upward mobility, even with that highest of educational attainments, the PhD. Ultimately this represents not only a change to the perception of doctoral education but also to our understanding of the benefits of education in general, and its role in the assumed social contract; namely "Educate yourself, work hard, and you'll get ahead". Earning a PhD is still one way to achieve this, but the academic profession itself is no longer an epitome of its realization since the old arrangement has begun to break down. *Caveat emptor* is a warning that now applies to education as to other "goods", but the fact that it must be made explicit tells us something about the nature of the times. Education is more of a risk, even as it becomes more of a necessity.

Harbingers of doom aside, the university *will* change and will most likely survive. PhD education remains at the core of academic training but has become a focus of contemporary anxiety, partly because education is the way we try to control (and change) the future—and the culture of academe is at the heart of control over education. How we negotiate the tension between control and innovation is one factor that will determine the scope of future academic careers and the nature of the university itself. AM

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The Massive Open Online Professor

Stephen Carson and Jan Philipp Schmidt

The new open and social technologies may allow academics to have their cake and eat it, too. A professor can be a sage on a huge stage and remain the guide close at the student's side.

Les nouvelles technologies ouvertes et sociales peuvent permettre aux universitaires d'avoir le beurre et l'argent du beurre. Un professeur peut être un sage sur un énorme podium tout en continuant d'être un guide aux côtés de l'étudiant.

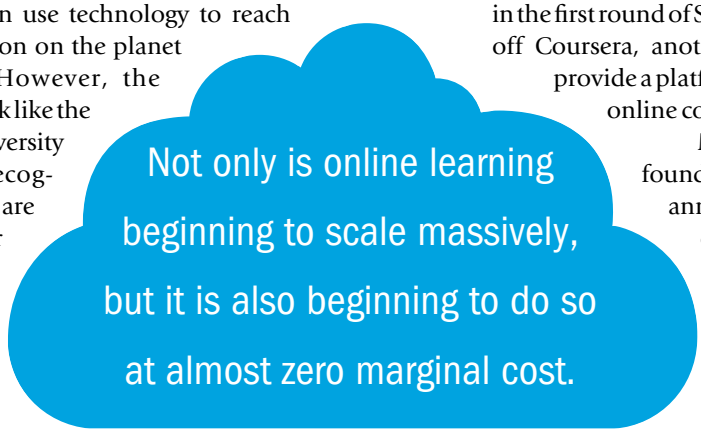
The challenges faced by higher education around the world are daunting and cannot be met by the traditional institution-based education system. For the current model to meet the needs of future generations, we would need to build and fund thousands of new universities. And yet the past ten years have demonstrated that there is another way. Scalable education on the web is increasingly possible, largely through the use of commodity software that is easy to use and available freely or at low cost to anyone.

Consider: Stanford and MIT recently started offering free online courses, and both universities enrolled more than 100,000 users. In one Stanford course, on artificial intelligence, 25,000 users completed all required homework assignments and received a certificate for their participation.

Not only is online learning beginning to scale massively, but it is also beginning to do so at almost zero marginal cost. The expense of adding an additional student in a campus setting remains relatively stable. In online learning, however, the cost of adding one more user is often so close to zero that

it can be ignored. Even the issue that seems to resist low-cost scaling the most—meaningful assessment, certification and recognition of learning—is starting to change. The Stanford artificial intelligence course offered certificates for those who completed the course work. MIT announced it will set up a separate organization, called MITx, to offer certificates for online learners. The Mozilla Foundation, the MacArthur Foundation, Peer 2 Peer University, and others are hard at work on developing a system of portable online "badges" that would help learners to demonstrate and share evidence of what they have learned in informal or formal settings.

We are approaching a tipping point where education and educators can use technology to reach almost every person on the planet inexpensively. However, the result may not look like the conventional university experience we recognize today. These are exciting times for educators, but it remains to be seen how these developments will change the structure of education, influence the purpose of institutions, and shape the role of the professor. These developments may feel threatening, but they also offer exciting opportunities to reach a much larger and broader audience with our lectures, to spend more time advising and mentoring students, and to improve the overall learning experience for all.



Massive Open Online Courses

Innovative professors at many universities have been experimenting with technology to scale the lecture experience. Often their experiments started in response to increasing numbers of on-campus students. For example, Virginia Tech Professor John Boyer uses virtual office hours, pre-recorded lecture snippets, and Twitter to teach a face-to-face "World Regions" course to 3,000 students. Once a week, he fills the largest lecture hall on campus, but the rest of the course takes place online. It quickly became obvious that the model he developed with his colleague Katie Pritchard could also accommodate thousands of additional online users, who log in to view the lectures or post questions during office hours.

While Boyer's real passion remains the classroom experience, others are moving their entire courses online. The term "massive open online course", or MOOC (coined by Dave Cormier and Bryan Alexander) is sometimes used to describe these types of courses, because they: take place online; are open in the sense that participation is typically free of charge and learning materials can be modified, re-used, and distributed to others; and reach massive communities of tens of thousands of learners.

MOOCs are a relatively new phenomenon, but they recently captured public attention when Stanford University launched a set of free online courses. Sebastian Thrun, one of the pioneers at Stanford, created the artificial intelligence course that attracted over 160,000 users (though only 25,000 finished the course). Inspired by this success he founded Udacity, a for-profit start-up that will use a similar model for online instruction, with the goal of making an entire computer science course available at no cost. Thrun's Stanford colleagues Daphne Koller and Andrew Ng also participated in the first round of Stanford MOOCs and subsequently spun off Coursera, another for-profit start-up, which aims to provide a platform for other universities to host similar online courses.

MIT, open education pioneer and founder of the OpenCourseWare movement, announced in December 2011 the creation of MITx as an open and non-profit alternative to for-profits like Udacity and Coursera. MITx is currently offering its first course, "Circuits and Electronics", which attracted large numbers of users, and is developing an open-source platform that anyone will be free to use. A number of other universities, including Harvard University and Georgia Tech, are paying close attention and developing their own massive, open, and online strategies.

A quick review of the key characteristics these MOOCs share will help us better understand what opportunities they offer to universities and professors.

Instruction is based on openly available content and resources

Open content lies at the core of these massive online courses. Typically, a series of video lectures, with short quizzes built in, make up the bulk of the instruction for users. This is good news for traditional universities, who already have vast amounts of high-quality teaching materials ready to share online. And because knowledge-generation will continue to take place at universities, especially those that do advanced research, there will always be a need to update and revise materials. Since 2002, more than 250 universities in the OpenCourseWare movement have been publishing their academic materials openly on the Web and have shared materials from more than 15,000 courses in a wide range of disciplines and languages. These institutions are well positioned to add online-only courses to their open course work projects.

A number of online services already allow free hosting and streaming of instructional videos. Since the materials are openly licensed, the need for sophisticated access management is obviated, and the materials can thus be made freely available.

Interactions are largely peer-to-peer

There are not enough subject matter experts to meet the needs of learners, and education systems worldwide are straining to find enough qualified teachers. MOOCs recognize this fact by setting up informal Q&A systems that allow participants to engage with each other. In some cases where peer-to-peer interactions are not directly supported within an online course, informal learning communities can emerge spontaneously on separate platforms.

Peer-to-peer does not necessarily mean all learners are at the same level, however. Many models attempt to harness the knowledge of more advanced learners to support beginners, and offer medals or badges to learners in recognition of their advancement. One of the key areas of exploration is how best to structure online interactions to facilitate interactions between beginner learners and advanced learners. Peer-to-peer interactions also generate new content to support future learning. Well-curated records of the most frequently asked questions and the best answers to those questions can be mined by new learners.

Systems to support peer-to-peer learning on the Web are widely available at very low cost or without charge. A range of Q&A systems can be self-hosted; open education projects, including OpenStudy and P2PU, provide platforms for such interaction; and Google groups, Yahoo groups, Ning sites, and Moodle installations can also be used to structure peer-to-peer interaction.

Assessments and grading are handled automatically

Meaningful assessment of learning remains a challenge for MOOCs. That is one reason why most of the very large courses so far have focused on content areas that allow computable exercises. For example, in cases where students are expected to submit software programs, the quality of the work can be automatically evaluated by testing for expected outputs and measuring completion time. Other assessments commonly used in MOOCs are small, multiple-choice quizzes embedded in the video lectures that allow users to test comprehension before moving on to the next lecture.

As learning takes place online, data that captures learner activity will increasingly be used as a proxy for learning. Time on site, number of posts, and word counts of responses represent the most basic and earliest of these learning analytics, but over time open education systems will grow more adept at drawing evidence of learning out of the actions learners take in interacting with each other online. It will likely be a long time before automated quizzes and learning analytics can provide a sophisticated assessment of problem-solving and integrated skills-application abilities. Both sophisticated learning analytics approaches, as well as crowd-sourcing of peer-review, show promise but have not been tested on a large scale.

In the meantime, some MOOCs are considering including more traditional assessments to supplement learning analytics. These include tests taken though testing services with physical locations around the world or assessments of online portfolios by subject matter experts.

Learning is recognized, but not in traditional ways

While there are already some efforts underway to bridge the gap between informal learning communities to university credit, it may be a while until standard academic credit for open education learning is the norm—or it may never happen at all. Open education projects are hard at work designing alternative types of recognition. Peer 2 Peer U and the Mozilla Foundation have been collaborating on the development of an 'open badges' architecture, a system that will allow any open education program to offer badges recognizing learning accomplishments. These badges will be displayable on personal Web pages and will link back to the sites that issued them and to the materials the learners developed in earning the badge. Winners of the recent Digital Media and Learning competition are currently developing a wide range of applications that will use the badges infrastructure.

Many programs are experimenting with awarding non-credit certificates, a model used by many of the MOOCs. It is, however, an open question what weight these certificates will carry in the job market. Another model that seems to hold promise in this regard is the development and management of online learning portfolios. By posting the actual work done in learning—computer programs, web pages, essays and other direct evidence of learning—students can skip the degrees and certificates that signify learning and share their knowledge and skills directly with potential employers.

The technologies supporting such recognition systems are straightforward and available. Traditional institutions may have a role in offering certificates and other recognitions that would be viewed as legitimate in the labour market.

What will it be like to learn with these new approaches?

The learning will be more persistent, with content, peer relationships, and metrics extending well beyond the construct of a 'course' and spanning our current notions of institutions. Web technologies are rapidly dismantling many of the fundamental constraints that have governed higher education. Interactions in these new learning systems will not be limited by the confines of the traditional one-semester course. Learners will be able to "flash back" to introductory level courses for review, and "flash forward" to advanced level subjects to see how basic concepts are applied. In a project learning model, learners can be given an advanced challenge and work backward into prerequisite knowledge as needed, rather than slogging through the basics to get to problems that really interest them.

Through the peer-to-peer relationships built into these systems, learners may remain engaged with one another over the span of many years, instead of the fourteen weeks of a traditional course; learning metrics regarding peer support and collaborative skills can be assessed continuously across courses in open education systems; and learners build up networks of experts who they can return to for help in specific areas like statistics methods or writing.

Expertise will be earned and maintained through ongoing lifelong education, not conferred once and good for life. Open learning systems offer the possibility for the kind of continuous lifelong learning that will be necessary as the pace of technological and scientific knowledge development increases. Like athletes, learners will not just learn once, but will maintain a level of performance ability in their chosen field through ongoing study and participation in learning communities.

What is the role of the institution and the professor?

Interaction with subject-matter experts remains one of the non-commodity aspects of new open educational models like MOOCs and represents a clear opportunity for traditional institutions and professors. As universities and academics begin to recognize the opportunities for dramatically scaling up educational opportunity, they will look for ways to make their subject-matter expertise available in different ways. At the same time, they face competition from informal experts who may not work as professors but who have the required knowledge to help others learn.

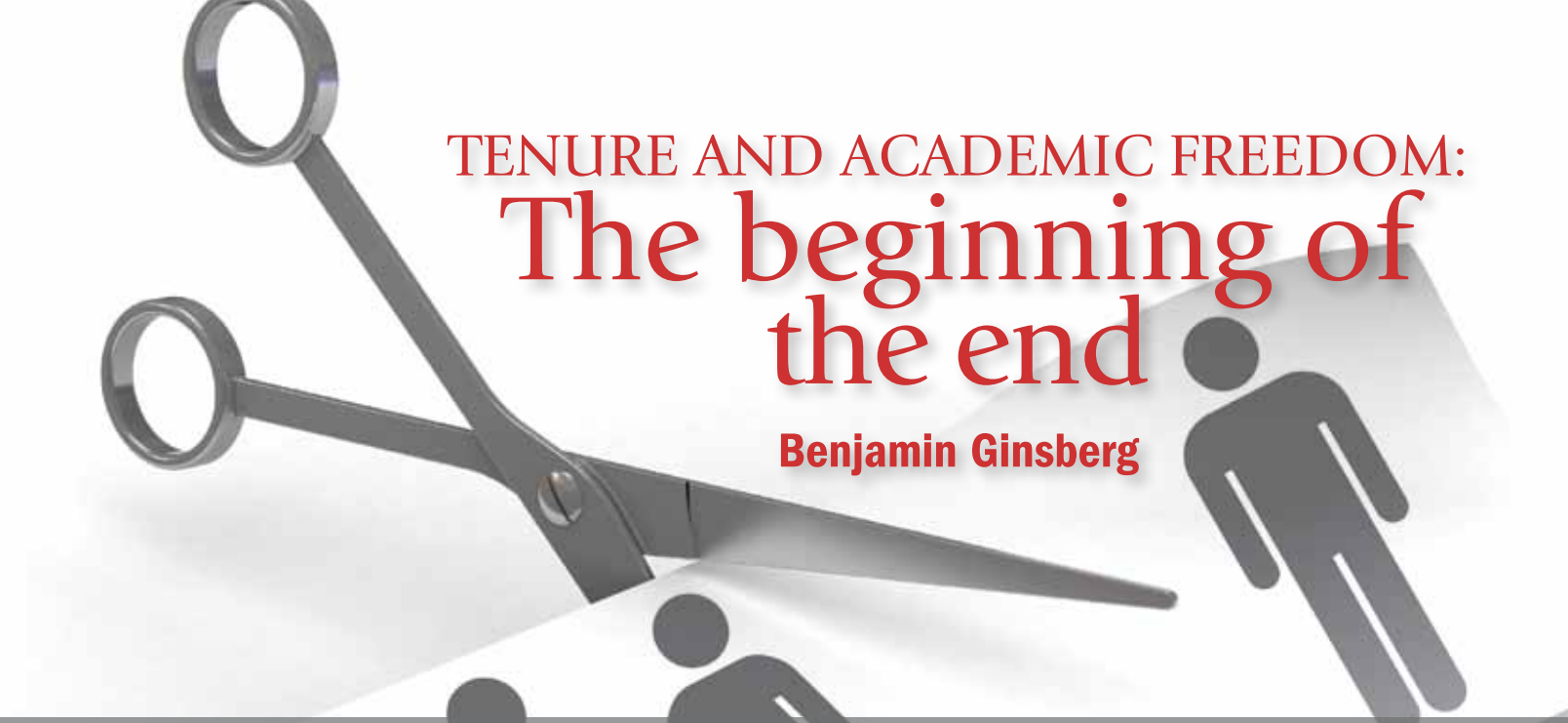
Subject-matter experts still play an important role in MOOCs, but this role is likely to be very different from that of the traditional professor. Sebastian Thrun commented in the *Chronicle of Higher Education* on his experience of reaching 160,000 students that, " having done this, I can't teach at Stanford again. I feel like there's a red pill and a blue pill, and you can take the blue pill and go back to your classroom and lecture to your 20 students. But I've taken the red pill, and I've seen Wonderland."

One of the benefits of having an audience of tens of thousands of students is that it draws in other contributors who may not be willing to address a room full of a few hundred students. Professor Boyer was able to bring Burmese democracy leader and Nobel Peace Prize winner, Aung San Suu Kyi, into his lecture via a Skype call. Joi Ito invited a string of experts to participate in the Digital Journalism course he offered on Peer 2 Peer U to informal learners and registered students from KEIO University.

The backing of prestigious institutions is clearly a factor in attracting large numbers of students. Brand recognition is likely to remain a differentiating factor, but MOOCs also offer opportunities for professors at smaller institutions to establish themselves as great instructors. Jim Groom at the University of Mary Washington has been able to attract thousands of students (and a number of other institutions) to participate in a digital storytelling course he designed and teaches with a number of collaborators.

Not all professors will be excited by Thrun's vision of Wonderland, but MOOCs may offer opportunities for academics to have their educational cake and eat it, too, by being the sage on a huge stage while also being a guide who remains closely by the student's side—through the power of open and social technologies. AM

Jan Philipp Schmidt is the co-founder and Executive Director of P2PU, an online open higher learning community. Stephen Carson is the External Relations Director for MIT OpenCourseWare.



TENURE AND ACADEMIC FREEDOM: The beginning of the end

Benjamin Ginsberg

In the absence of academic freedom, administrators will control universities. This direction, argues Benjamin Ginsberg, is where higher education in North American is heading, signaling a "long winter of retreat" for faculty.

En l'absence de liberté universitaire, les administrateurs garderont les universités sous leur contrôle. Cette orientation, soutient Benjamin Ginsberg, représente l'avenir des études supérieures en Amérique du Nord, ce qui laisse présager un « interminable hiver de repli » pour les professeurs.

Since the Second World War, Canadian and American universities have offered faculty members tenure, the promise of lifetime employment to those who complete a six-to-ten-year probation period. During this time, professors' teaching, writing, and research are scrutinized by their colleagues to determine whether or not a tenured appointment is merited.

The tenure system arose during a period when qualified faculty were in short supply and, for many years, served as an important non-pecuniary tool for faculty recruitment. At the same time, tenure helped to bolster the academic freedom without which research universities in particular run the risk of being crippled by administrators and other functionaries committed to defending established corporate interests and familiar modes of thought.

Today, of course, the tenure system is under attack in both Canada and the U.S. and may well disappear during the next few decades. In both countries, less than 30 per cent of college and university instructors are currently tenured or on the tenure track. A growing number of college teachers are part-time "adjuncts," hired by the course or on a short contract. Some commentators, of course, welcome the collapse of the tenure system, saying tenure provides job security for indolent and incompetent professors who spend their afternoons sipping sherry at the faculty club. College administrators frequently claim that faculty tenure prevents them from adapting the curriculum more effectively to accommodate changes in the economy and to the patterns of student demand. No doubt, there is some truth to these criticisms. There are lazy and incompetent tenured professors who drone their way through the same lectures year after year after year. Yet, tenure, especially at research universities, is difficult to achieve. Promotion to tenure requires a substantial record of research and publication, as well as evidence of an ongoing commitment to research. Tenure also requires evidence of teaching ability and a willingness to devote time to graduate and undergraduate students. Often, tenure cases involve heated struggles among various faculty factions over the quality of a professor's work. Mistakes are made in the process. Generally, however, those who achieve tenure are excellent, or at least promising, scholars and teachers whose commitment to their work does not end when they acquire job security.

Put simply, without tenure there is no academic freedom.

In virtually every field of inquiry, it is the tenured faculty at research universities who produce the books, papers, reports, inventions, and studies that drive the Canadian and American economies and make higher education one of their nations' leading export industries. I do not believe that millions of foreign students come to America and Canada because our professors are known to be lazy and incompetent. For most professors, tenure is not a license to retire. It is, instead, an opportunity to work on intellectually exciting projects without the pressure to abandon important lines of inquiry simply because no immediate conclusion or pecuniary return is in sight. And the charge that tenured faculty are hidebound and unwilling to adapt their teaching and research to the emergence of new areas of pedagogy and inquiry seems to miss a very important point. New fields emerge precisely because tenured or tenure-track professors create them.

There is No Academic Freedom Without Tenure

Tenure is the chief guarantor of the intellectual freedom that makes it possible for faculty members to pursue new ideas and to teach concepts in the sciences and humanities that fly in the face of conventional wisdom. Put simply, without tenure there is no academic freedom. Where the faculty lacks the protection of tenure, university administrators are free to interfere in the classroom and in the laboratory—and they do so with alacrity. Where they can, administrators will interfere with even the most meritorious academic research, publication, and communication if their results challenge the interests of important donors and constituencies or threaten administrators' own interests. Two recent cases at the University of Toronto, a distinguished research university, generated a great deal of commentary and are familiar to many. In one case, Dr. Nancy Olivieri, a well-known academic physician, raised questions about the safety of a drug marketed by the Apotex Pharmaceutical Co., based on her clinical research. A major source of funding for the University of Toronto, Apotex terminated support for the portion of the project she was working on. University administrators were critical of Olivieri, and were accused of failing to protect her academic freedom. An independent inquiry later found that Olivieri's actions had been completely warranted by her ethical duties as a physician.

A second case involving administrators at the University of Toronto concerned Dr. David Healy, an academic psychiatrist who had been hired to head the university's Centre for Addiction and Mental Health. Shortly before Healy arrived on the campus from his university appointment in Wales, it was revealed that Healy had published research critical of the drug Prozac, marketed by Eli Lilly & Co., one of the school's important corporate funders. Healy was one of the first researchers to suggest that Prozac might be associated with an increased risk of patient suicide, a finding that subsequent research has supported. In an email to Healy "unhiring" him, the university said, "While you are held in high regard as a scholar...we do not feel your approach is compatible with the goals for development of the academic and clinical resource that we have." In other words, the drug company might cut off funding for the school.

Administrative interference is, of course, not limited to research. Where they can, administrators will interfere in the classroom as well. A typical case is that of Steven Aird, a biology professor at Norfolk State University in Virginia. Aird was denied tenure and dismissed despite outstanding performance evaluations and support from many students because campus administrators thought he had embarrassed them and the college by failing too many students. Contrary to college policy, which apparently called for passing students regardless of performance, Aird had the temerity to fail students who did not attend classes. The dean who dismissed Aird wrote that students' failure to succeed was the fault of the professor. In other words, with better grades, these students would have "succeeded." Indeed, they would have overcome the obstacle of never having attended class. In the realm of higher education administration, words and actions are often confused.

Administrators are especially likely to interfere in the classroom if they are concerned that the views of donors and important college constituencies are not being treated with proper respect. In some instances, administrators will even organize classes or alter the content of existing courses to please important interests. One recent case involved Hunter College, part of the City University of New York. Faculty there discovered that the school's administrators had worked with the International Anti-Counterfeiting Coalition (IACC), a consortium of companies concerned with the spread of low-cost knockoffs of their products, to create a course that would function as part of the IACC's ongoing publicity campaign. The mission of the "course" was the creation of an IACC-sponsored Website and the development of an advertising campaign aimed at college-age students. The administration drafted an untenured faculty member to lead the class. Why were Hunter administrators so interested in helping the IACC? It seems that the CEO of one of the IACC member companies was a Hunter alumnus and major donor.

And, where they can, administrators will work diligently to suppress faculty criticism. One particularly amusing example recently came to light at the State University of New York at Fredonia. Stephen Kershnar, a philosophy professor, had been turned down for promotion by the college's president. The president conceded that Kershnar's teaching and publication record were adequate for promotion. However,

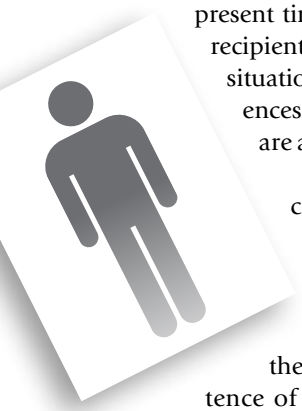
he objected to Kershnar's public criticisms of college policies in ways that he said impugned the school's reputation. Subsequently, according to press accounts, the president offered to promote Kershnar if he refrained from criticizing the college for one year. A spokesperson for the school said it was "absolutely" incorrect to characterize the president's offer as an attempt to limit dissent.

Or, take the experience of the "Phantom Professor," the name used by a blogger who wrote about students' use of illegal drugs, crime on campus, student stress, the campus social hierarchy, and administrative shortcomings at Southern Methodist University in Dallas, Texas. University officials decided that the anonymous blogger was Elaine Liner, a well-regarded adjunct writing instructor on the Dallas campus. What did campus administrators do when faced with a bit of criticism? It almost goes without saying that they fired the suspected phantom.

Perhaps we should be relieved that the Phantom Professor only lost her job. At the Autonomous University of Sinaloa in Mexico, a professor, Florencio Posadas Segura, who recently criticized his rector in a campus radio broadcast was told that university authorities had ordered him banned from the station. Segura was also told, "Be careful what you say because a car could run you over."

Freeway Flyers

It seems unlikely that the tenure system will ever recover. Except at the most elite academic levels, the promise of tenure is hardly needed these days to recruit professors. Though the oversupply varies from field to field, in virtually every academic area, graduate programs have, for years, produced many more PhDs than could be absorbed by Canadian and American colleges and universities. At the present time, nearly one-fourth of each year's degree recipients are unable to find jobs in their fields. The situation is worse in the humanities and social sciences, but even in the sciences too many new PhDs are applying for too few positions.



The reasons for this overproduction are complex. They include myopic behavior on the part of the professoriate, the end of mandatory retirement, and the effects of well-intentioned but misguided government financial aid policies. Whatever the causes, though, the consequence is the existence of a large and ever-growing reserve army of unemployed or marginally employed PhDs who are available to staff courses in almost every conceivable field for far less than the minimum wage. Bright, energetic, and well-trained young PhDs often have no choice but to teach courses for minuscule salaries. Some adjuncts, known as "freeway flyers," simultaneously teach courses at several different schools, hoping to make ends meet.

University administrators, more and more, turn to this growing pool of adjuncts to staff courses. Adjuncts are inexpensive, can be hired as needed—often at the last minute—and can be discarded at the end of the term if their courses no longer comport with administrative plans. Adjuncts do not require laboratories, offices, telephones, computers, or support services. Unlike the tenured faculty, adjuncts do not play any real role in university governance. And adjuncts possess no claims to academic freedom. If administrators are even the least bit annoyed by the views expressed by an adjunct, whether inside or outside the classroom, they can simply refrain from hiring that individual again. Like the "Phantom Professor," adjuncts who are not rehired disappear from the university without a trace.

This shift to contingent faculty, by the way, has not led to lower tuition costs for students and parents. Instead, the use of less-expensive faculty has allowed universities to employ more administrators and to pay them more. The same American schools that pay adjuncts $2,500 per course with no benefits, pay seven-figure salaries—as much as $1 million or more in the U.S.—to their presidents and six-figure salaries to many administrators as well. I would submit to financially hard-pressed parents that they receive far more value from the impoverished adjuncts that actually teach their children than from the well-heeled presidents who nominally manage the schools their children attend. The $2,500 adjunct prepares lectures, demonstrations, and discussions. She meets with students and corrects papers and exams. She may offer advice and counseling to students. But some million-dollar presidents, when not attending meetings, leading administrative retreats, looking for better jobs, or perfecting their strategic plans, actually do very little. One president found time to earn a commercial pilot's license and to become quite proficient at Mandarin Chinese. These are very impressive accomplishments, indeed, but also suggest that he had far too much spare time. Generally speaking, a million-dollar president could be kidnapped by space aliens, and it would be weeks or even months before his or her absence from campus was noticed. Indeed, if the same space aliens also took all the well-paid deanlettes and deanlings, their absence would also have little effect upon the university. It would simply be assumed that they were all away on retreat. The disappearance of the contingent faculty, on the other hand, would have a real impact upon students' lives.

No one would argue that tenure systems produce perfect results. Professors who do not merit tenure are sometimes promoted. Promising professors receive tenure and fail to live up to the potential they seemed to manifest. Nevertheless, without tenure there will be no academic freedom. And without academic freedom universities would be controlled by their administrators, and intellectual life would suffer. This is, unfortunately, the direction in which Canadian and American academic life is moving. The faculty, as Stanley Aronowitz has noted, is experiencing a "long winter of retreat." AM

Benjamin Ginsberg is a professor of Political Science at Johns Hopkins University and author of Fall of the Faculty, *published by Oxford University Press.*

Humour Matters

Steve Penfold

My professorial 'Eureka!' moment

I REMEMBER the exact moment when I realized that I really am a professor. It wasn't when I got hired, that's for sure. I assumed that was a clerical error, so I spent six months waiting for an "Oops, we're sorry" email ("We meant to hire that smart guy named Fenhold"). It wasn't when I showed up to start the job either. It took me at least a year to stop glancing around before I entered my office, figuring that if someone saw me, I would get accused of breaking in.

In class, I kept waiting for my students to get up and leave, heading straight to the registrar to demand a refund. And do you imagine I settled in after tenure? No way. I carried that letter everywhere, thinking I lived in a dictatorship and could be asked for my papers at any time. My delusions got pretty grand, but I'll spare you all the gory details. Just call me Imposter 2.0.

No, my professorial eureka came quite recently, on a Tuesday afternoon when I arrived very late for class. It was one of those days: my kids were impossible, the subway was delayed, I forgot my lecture notes, my old computer took forever to boot up, and then my printer wouldn't work.

I was getting really stressed: arriving late for class is pretty bad stuff. Every two days, some provincial politician is accusing professors of not teaching enough, as though when I'm not in class I just sit around smoking a pipe and drinking martinis. (How tough is it for them to figure out that class time is just one part of the job? I mean, how many hours a week do they actually spend in the legislature?) In fact, I work a lot of hours, but it is nonetheless true that there are relatively few times in my week when I actually have to be somewhere on time.

Well, by the time I left my office, class had already begun, and I still had to make it all the way across campus. This is more treacherous than it sounds. The University of Toronto's campus is vast, and my route to lecture is bisected by Queen's Park, an urban green space in back of the provincial legislature. It's a nice feature for a downtown campus. On a normal day, people jog, stroll the pathways, sit on benches under old-growth trees, and mostly ignore the wartime monuments. Quite beautiful, actually.

Personally, though, I never set foot it in. The place is riddled with semi-domesticated squirrels, whose behavior—no doubt the result of years spent eating cellophane and cigarette butts—has become unpredictable. They approach humans without fear, gleefully join you on the benches for lunch, and crowd the pathways, leaning back on their haunches with their front paws out, inviting donations of food and spare change. I once saw a grey one climb right up a person. No kidding: she was trying to take a picture of her friend, and she stood so still the squirrel got confused. The photographer was startled, to be sure, but I was hysterical, having just realized that squirrels, like undergraduates, can turn on us at any time.

Suffice it to say, I usually take the long way around. But I was already so late, I ran straight across the park, bounding over the squirrels, dodging the joggers, and backtracking around the occasional mud puddle. By the time I staggered up the stairs and into the building I was almost twenty minutes late. It's a fifty-minute class, so it was starting to seem a bit pointless. Surely everyone would have just left by now? But I was carried forward by desperate momentum, so I dashed down the hall and sprinted into class.

The students were all just sitting there. Waiting. I was shocked, even thrilled. "Holy crap," I thought, "I must be a professor." I still carry that tenure letter around, though. Just in case. AM

Steve Penfold is Academic Matters' *humour columnist. He moonlights as an Associate Professor of History at the University of Toronto.*

Editorial Matters

Graeme Stewart

THE FUTURE, they say, is a foreign country. When it comes to higher education, the future might as well be a different planet.

Huge technological, economic, and cultural shifts are changing what it means to be a university, and what it means to be a university professor. While the scale of the transformation is known, the results are not; the future has yet to afford us with a reliable crystal ball. We live in uncertain times, and this uncertainty pervades all aspects of higher education. What will professor 2.0 look like? Will we like the way he or she or (if we indulge our sci-fi imaginations) 'it' looks?

Some general shapes, at least, are beginning to emerge. The Internet is opening up new possibilities for open learning on a huge scale. As noted by contributors Jan Philipp Schmidt and Stephen Carson, massively open online courses (MOOCs) have the potential to connect a single professor with tens of thousands of students, all at a low cost. Social media provides myriad new ways to connect with students, as described by Sidneyeve Matrix. But do we lose something with all of this media-enhanced learning? In a flurry of tweets, 'likes', podcasts, and blogs, we might be overlooking the central relationship at the heart of all learning—the face-to-face connection between a student and teacher. Change is happening so fast, and on so many different fronts, that it is hard to catch your breath and take a good look around.

Technological change is also altering what it means to be an expert. Professors, after all, are supposed to be the definitive experts in their fields. But in an era of networked information, knowledge is no longer the exclusive preserve of the sage. As David Weinberger notes in his book "Too Big to Know", the smartest person in the room may in fact be the room itself—the web of relationships that connects distributed nodes of knowledge and makes meaning through the act of connection. On the other hand, the network may be the new site of knowledge, but it may not provide users with any greater wisdom. Or, to paraphrase the great punk rock lyricist Greg Graffin—now a lecturer at Cornell, no less—in such a wealth of information, why are we so poor?

More troubling, the new economic imperatives of higher education in the age of austerity mean that managerialism may continue to spread, something the Benjamin Ginsberg warns will compromise the integrity of the academy. As public resources dwindle, what we now understand as higher education may wither in the face of calls for greater 'efficiency' and 'productivity'. We may well need to do more with less, but the danger is that we lose our collective academic souls in the process.

All of this upheaval can be unsettling for academics, young and old. Melonie Fullick's contribution to this issue captures this sense of anxiety as she surveys the uncertain prospects for those preparing to enter the academic profession. And yet, as Thomas Klassen points out, we need not all immediately become digital wizards and conduct our teaching and research exclusively on social media. Rather, there is room in the academy for a variety of different skills, for different kinds of experts, and different approaches to technology. The MOOC need not displace the intimate seminar, and 'professor 2.0' need not eclipse the more traditional model. Perhaps we need to use the best of both to carry higher education into an uncertain future.

On a personal note, this issue marks my first as Editor of *Academic Matters.* I have taken over the controls from founding editor Mark Rosenfeld, who has moved on to become Executive Director of the Ontario Confederation of University Faculty Associations (OCUFA), our publisher. Mark took this magazine from an exciting idea to an impressive journal of insight and ideas on academe, and I am both awed at the size of his accomplishment and grateful for his legacy of leadership. He leaves big shoes to fill, and I will try to wear them as well as he did.

In the coming months, I hope you will take the time to connect with *Academic Matters* and let us know how we are doing. Leave a comment on our new website (www.academicmatters.ca). Follow us on Twitter (@academicmatters). Send us an email. However you do it, we want to know what you're thinking about, what is important to you, and how we can make the magazine better. AM

Graeme Stewart is the Editor-in-Chief of Academic Matters, *Communications Manager for the Ontario Confederation of University Faculty Associations, and a PhD student at the University of Toronto.*

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