

Education in the Age of New Media:

The Evolution of Massive Open Online Courses.

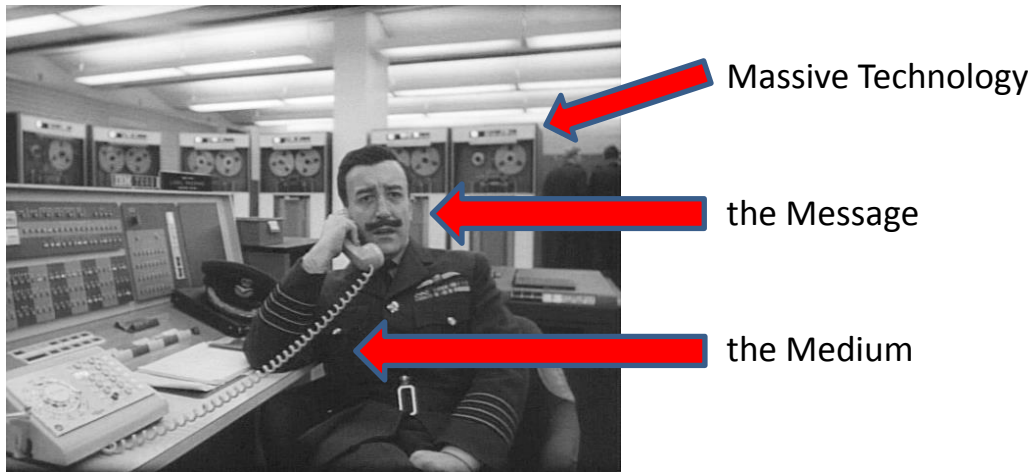
(or: *How I learned to Stop Worrying, and Love the MOOC*)

Christopher J. Barrett,¹ David N. Harpp^{1,2,3}

¹Faculty of Science, ²Office for Science and Society, ³Tomlinson Office for Science Teaching, McGill University, Montreal.

The discussion of Education and the media is as old as our Universities, and its most recent iteration has a great deal in common with its many predecessors. Even just the definition what ‘media’ is has had to adapt, since Gutenberg’s printing press in 1450 enabled the textbook, through radio and voice recording in the 1920s, TV and visual capture in the 1950s, Internet in the 1980s through to current Social Media platforms finally permitting fully global and instantaneous 2-way communication. So ‘New Media’ is in the age of the beholder, and while what we are all beholding now is certainly new, perhaps the adaptation of our University Education to it is far less so. The most visible manifestation of new ‘real-time’ Social Media on our University Campuses is the subject of this paper, and that is a ‘MOOC’, enabled by the edX consortium of Universities.

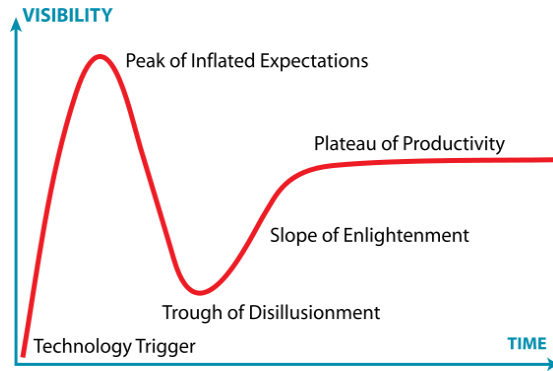
A **MOOC** is a **M**assive, **O**pen, **O**n-line **C**ourse, and **edX** is the open source software that enables this. **edX** also represents the University collective currently developing and using it, including some of Canada’s leading campuses (where the word MOOC was coined [Cormier]). To those apprehensive, suspicious, or outright fearful of such a ‘new’ idea however, it is appropriate to realize how familiar and ingrained most of the aspects of a MOOC have already become to current students and to core teaching methods at large public Universities. So like it or not (and many as yet do not), MOOCs have in essence been evolving on Campus since the 1990s from classroom grassroots, are deeply entrenched already, and are here to stay. The only thing really new here is it’s formalization, visibility, and top-down organizational structure. The impulse of resistance to MOOCs is legitimate and well-founded however, and should not be dismissed lightly- each of the 4 letters in the acronym defines a separate question of concern deserving such resistance, and taken together prompts 2 more questions on the relationship of MOOCs to credit, and to profit. Addressing each of these 6 points of concern will be the format of the rest of this paper. In the process we wish to convey how one tech-hesitant Professor (CJB), with exactly these same concerns for the sanctity of our traditional Universities, learned and evolved over the last decade to embrace what some more experienced teachers developed (DNH), and what now many students and their teachers use, prefer, and defend. Or: *‘How I learned to stop worrying, and love the MOOC’* (or at least accept it).



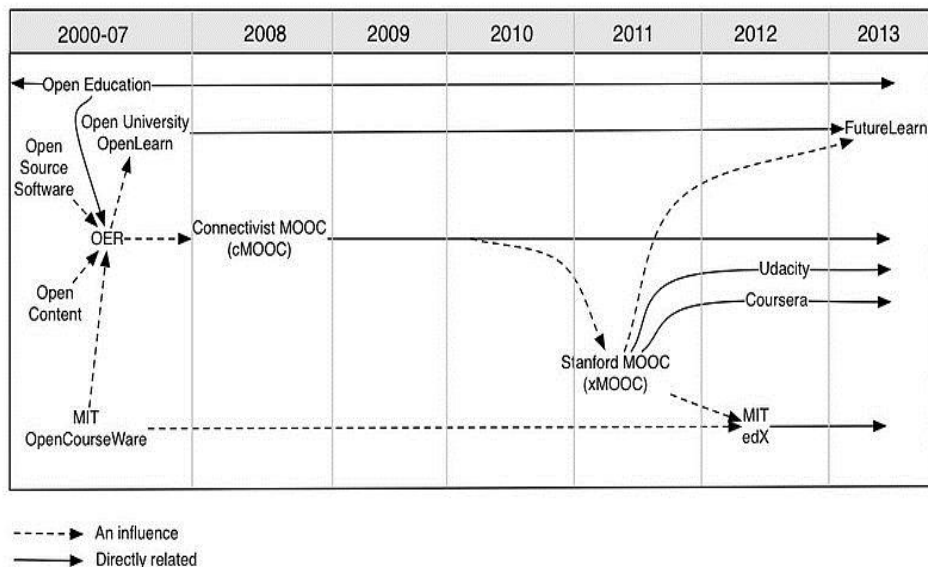
Introductory courses at our large public Universities are already **Massive**. This was not intentional, and no one is claiming this the best way to educate, but with rising enrollment on decreased funding, 1000+ student-classes (often in two or more sections) are now the norm for the first 1-2 years of the most popular or populous programs and courses, from Psychology and Sociology, through Biology, Chemistry, Physics, and Math. We are far, far removed now from the lofty ideal of the Gutenberg era Ox-bridge model of direct small-group seminar style education, and any reasonable practical discussion for public schools has now to focus only on how best to manage this unfortunate reality. Canadian Universities, like large public schools in the US, have just completed a massive hiring wave of new Professors over the past 10-15 years, and for many of us who were part of it, our first experience in campus education was facing a sea of 100s or even 1000s of young eager faces in an amphitheatre, all wondering together how we were going to manage, and make the best of it.

So we turned **Online** to the internet for sharing information between teacher and student, and students and students, and we turned from the blackboard to digital screens for visibility, and efficiency in preparation, delivery, and continuity. With some initial kinks being worked out by all involved, a survival system evolved whereby course information is shared *via* websites almost exclusively, and communication was opened for all to see in parallel, in essence developed by both the students and their Professors grassroots-style classroom by classroom, and now accepted, appreciated, and preferred by both. Perhaps the biggest single advance in online-assisted education came with lecture recordings. Developed independently at first on separate campuses, the software to record the digital images projected on classroom screens could be synched to audio recording from the classroom, and archived online just as each class was finishing, permitting playback for those in the class, and a sense of 'attendance' for those who weren't. Early systems for this in Canada include the COurses OnLine (COOL) digital recording software developed at McGill since 2000 (by DNH and colleagues) [Harpp], which has now grown to encompass ~350 courses at McGill each year, representing 50,000 student-courses per year. (equivalent to 10,000 students taking 5 recorded classes). Exams were (and are) still run traditionally in person, yet it was now (and is) possible for students to do well in a class and receive full credit, yet 'attend' only *via* the internet at their time and place of choice, and never in person if they so choose. Though perhaps tempting, it's a stretch to claim that the internet invented 'cutting class', a time-honoured student tradition since Gutenberg, and in fact class attendance numbers have dropped somewhat depending mainly on the time of the class,

through 13 years of data examination. In the U.S. at the same time in 1999, MIT and Harvard were developing parallel 'OpenCourseWare' videotaped lecture recordings, that eventually merged with other schools' class videotaping efforts to form the core of the open-source non-profit **edX** standardized software platform that McGill and University of Toronto formally joined in 2012, which now includes ~30 other leading schools on 5 continents.

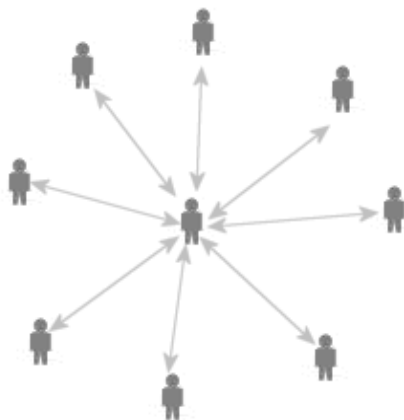


The next key development was perhaps the smallest step, and that was simply making these lectures **Open**. It was up to each professor whether their class recordings were kept closed and private to those registered, or open to anyone on earth with an internet connection. Many of us saw no reason not to share, and share we did, often without realizing it. The students watched from near and afar, and we could track the 100s or even 1000s of lectures viewed each week, in each course. But many more were viewing too, from off-campus, out-of city, and out-of-country, and for some classes, many, many more. MIT had 8,000 students write the final exam to a 'Circuits' MOOC in 2012, but with this representing only 5% of the entire 'class' of 150,000+ who 'took' the class by watching online. A median MOOC enrollment is now 30,000+. MIT has also pledged to make open all of its curriculum by 2015. The potential to reach the third world, and virtually anyone, anywhere with a connection, with free and available current lectures from the world's leading Universities is a universally exciting prospect however, and can be enabled only with MOOCs.

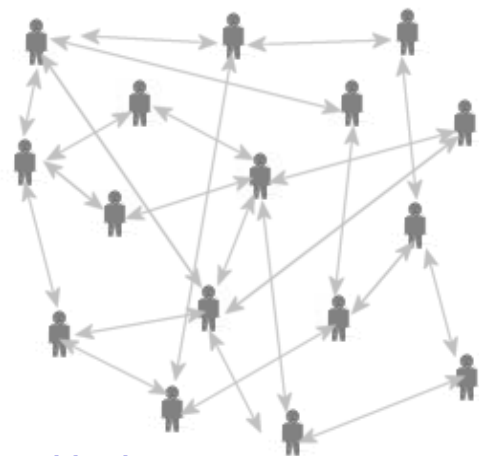


And the examinations for such a ‘Course’ in the new MOOC definition are now no longer the traditional format and structure once easily recognizable. While distance education is far from new, dating back to the World Wars, at least the final assessment of the students’ work was either the on-campus written exam, or a mail-in proxy, still instructor-read and assessed. Those days are now long gone, but again, it was not the technology that prompted or precipitated this change, but instead it permitted management of the 1000-student class problem. Perhaps this is one of modern Academia’s dirty little secrets, but even without the internet, no one is reading what students in introductory classes are writing anymore, and it’s simply because we can’t. At our moderate sized University, for example as typical, 1000 courses will hold final exams each term, and with perhaps only 1 midterm exam, this is 4,000 exams to grade each year, for each of the 250 on average students per course. That’s a million exams at McGill, on 10s of millions of sheets of paper, stretching end to end from Canada to Mexico, with final grading due a few days later. It should be of no surprise to anyone that the only possible management strategy is for the student to code all these ‘answers’ on multiple choice computer-grading cards, never to be looked at by human eyes.

In Education...



this does not scale



this does

Stephen Downes 2012 cc by-nc-sa

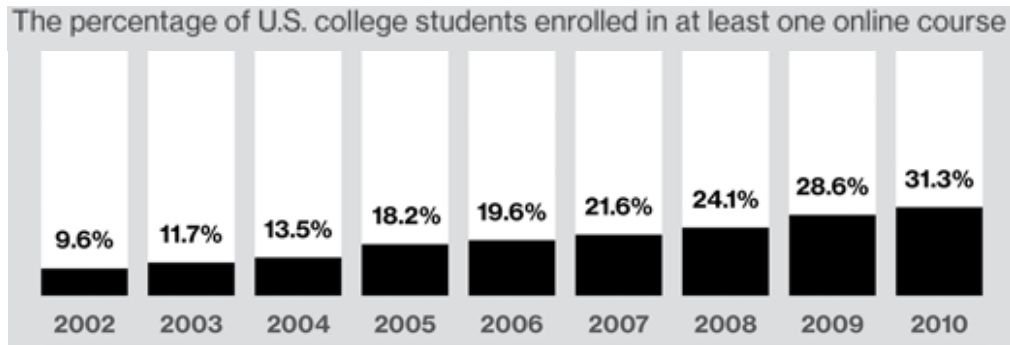
Some of the stickier questions prompted by MOOCs now clearly emerge, such as what a ‘course’ means at all if 50,000 students can ‘take’ it at the same time, or what a ‘University’ now means at all, if it offers credit and entire degrees for such ‘courses’ completed. And now with it clear that the 1000 students in some (or most) classes are writing only computer-graded multiple choice exams, we’re already functioning in the darker areas of concern with distance education, while all still on campus, where a student can be awarded a university degree without ever attending a lecture, conversing with a Professor or their classmates, or having any of their work read or discussed beyond a numerical exam score. The state of our public Universities and their large classes may well indeed be a grave matter for concern, yet is a separate question than that discussed here of using MOOCs, which can be seen from the in-classroom viewpoint as more as assisting this dire situation, rather than causing, aiding or abetting it.

The last two questions to address on the place of MOOCs in our Universities is their relationship to how much **credit**, and how much **profit**. Fortunately however, while these admittedly thorny issues are being addressed by each campus community separately as how best fits each of their models and mandates, it is possible to adopt a cautious initial strategy of avoiding each debate, by not offering any credit outside the existing structure, and adopting a completely non-profit model. This is indeed the edX model, in contrast to many other competing MOOC platforms, and why it is important to mention this along side the MOOC debate: how it is implemented and run, and by whom, can be just as important as the MOOC itself. In keeping with the grassroots ‘developed in the classroom’ evolution of the original MIT and Harvard model, edX is kept comparatively decentralized and top-down resistant, favouring open-source software, and is run non-profit. University Credit is either not given at all for off-campus registrations (a certificate of completion can be given instead), or registration is limited to existing on-campus enrolled students, who can get credit for the MOOC in parallel to existing course structure, using it as an aid to assist large courses. While the for-profit business models are quick to scare brand devaluation as a motive to sign on, these many leading schools are now reporting no drop in on-campus enrollment, and appear comfortable in their commitment to free and open content- joining MIT and Harvard on this pledge now include Berkeley, Cornell, Kyoto, IIT, and Peking, and dozens of other leading Universities.

Initiatives	For profit	Free to access	Certification fee	Institutional credits
eDX	x	✓	✓	x
Coursera	✓	✓	✓	x ✓
Udacity	✓	✓	✓	x ✓
Udemy	✓	x ✓	✓	x ✓
P2PU	x	✓	x	x

Key
 x Not a feature
 ✓ Feature present
 x ✓ Features partially present

So it appears that some of the most time-honoured and protected features of our Universities do not have to be threatened in the processes of implementing MOOCs, and they can remain open, managed by the University community of teachers and students, and free from financial conflict of interest. And to conclude on another note of optimism, we can remember that it is not all University courses for which MOOCs are appropriate and being proposed, often only the large introductory ones. The University can still fulfill its traditional role that Gutenberg and his contemporaries might recognize with the senior upper year classes, still mostly run seminar-style in small groups. Based on attending conversations, and a careful reading of what they write- a ‘MCOC’ in contrast and in balance: Miniscule, Closed, Off-line, and a ‘Course’ in the definition to which we can all agree with and aspire to as educators and students. Until then however, and in preparation and anticipation during our enormous introductory classes, the MOOC might be less to be worried about than is often feared, should probably be accepted as here to stay, and maybe even eventually loved for what it might achieve, if implemented with caution and care.



REFERENCES

- Cormier, D. (2008), *CCK08 - The Distributed Course*. The MOOC Guide, U. PEI Canada.
- Harpp, D.H, Fenster, A.E, and Schwarcz, J.A, *et al.* (2004) *Lecture Retrieval via the Web: Better Than Being There?* Journal of Chemical Education, 81, 688.
- Lewin, T. (2013), *Universities Abroad Join Partnerships on the Web*. New York Times. Retrieved 6 March 2013.
- Waldrop, M. M. (2013), *Massive Open Online Courses, aka MOOCs, Transform Higher Education and Science*. Nature Magazine (March 13).
- Pérez-Peña, R. (2012), *Top Universities Test the Online Appeal of Free*. The New York Times, 18 July.
- Masters, K. (2011), *A Brief Guide to Understanding MOOCs*. The Internet Journal of Medical Education **1** (2).
- Saettler, P. (1968), *A History of Instructional Technology*. McGraw Hill. New York.
- Clark, J. J. (1906), *The Correspondence School—Its Relation to Technical Education and Some of Its Results*. Science 24, 611, 327.