Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility

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Explanatory Note

During my time as a Fellow at the Korea National Open University (KNOU) in September 2012 media and web coverage of Massive Open Online Courses (MOOCs) was intense. Since one of the requirements of the fellowship was a research paper, exploring the phenomenon of MOOCs seemed an appropriate topic. This essay had to be submitted to KNOU on 25 September 2012 but the MOOCs story is still evolving rapidly. I shall continue to follow it.

'What is new is not true, and what is true is not new'. Hans Eysenck on Freudianism

Abstract

MOOCs (Massive Open Online Courses) are the educational buzzword of 2012. Media frenzy surrounds them and commercial interests have moved in. Sober analysis is overwhelmed by apocalyptic predictions that ignore the history of earlier educational technology fads. The paper describes the short history of MOOCs and sets them in the wider context of the evolution of educational technology and open/distance learning. While the hype about MOOCs presaging a revolution in higher education has focussed on their scale, the real revolution is that universities with scarcity at the heart of their business models are embracing openness. We explore the paradoxes that permeate the MOOCs movement and explode some myths enlisted in its support. The competition inherent in the gadarene rush to offer MOOCs will create a sea change by obliging participating institutions to revisit their missions and focus on teaching quality and students as never before. It could also create a welcome deflationary trend in the costs of higher education.

Introduction

MOOCs (Massive Open Online Courses) are the educational buzzword of 2012. New trends in higher education are poorly reported in the international press until elite institutions in the United States adopt them, so there has been frenzied reporting on MOOCs in 2012. We begin by tracing the five-year development of MOOCs before taking a longer historical perspective on the introduction of new educational technologies.

MOOCs have already bifurcated into two types of course, which are known as cMOOCs and xMOOCs. They are so distinct in pedagogy that it is confusing to designate them by the same term (Hill, 2012). Here we focus particularly on the more recent xMOOCs that dominated the news in 2012 and we note the diverging approaches already apparent within this group (Armstrong, 2012). After reviewing completion rates in early xMOOC courses we look at the business model in play and point up some of its ambiguities. Although xMOOCs dominate the news, we also look at smaller-scale eLearning partnerships involving more modest institutions that are at least making money and getting students to degrees. We end the descriptive section with a short commentary on MOOCs platforms.

In the final part of the paper we bring together, under the headings of quality and completion rates, certification, pedagogy and purpose, some of the myths about xMOOCs and the paradoxes that must be resolved. Finally we look at the hopeful possibilities that xMOOCs will open up as the current contradictions are addressed.

Methodological note

Studying MOOCs is a challenge for four reasons. The first course carrying the name MOOC was offered in 2008, so this is new phenomenon. Second, the pedagogical style of the early courses, which we shall call cMOOCs, was based on a philosophy of connectivism and networking. This is quite distinct from the xMOOCs now being developed by elite US institutions that follow a more behaviourist approach. Third, the few academic studies of MOOCs are about the earlier offerings because there has been no time for systematic research on the crop of 2012 xMOOCs. Analysis of the latter has to be based on a large volume of press articles and blogs. Fourth, commentary on MOOCs includes thinly disguised promotional material by commercial interests (e.g. Koller, 2012) and articles by practitioners whose perspective is their own MOOC courses.

What is a MOOC?

Even during the week that this paper was being written the Wikipedia definition of MOOCs evolved.

On 2012-09-16 Wikipedia defined a MOOC as 'a course where the participants are distributed and course materials are also dispersed across the web', adding that 'this is possible only if the course is open, and works significantly better if the course is large. The course is not a gathering, but rather a way of connecting distributed instructors and learners across a common topic or field of discourse' (Wikipedia, 2012a).

By 2012-09-20 the definition had become: 'a MOOC is a type of online course aimed at large-scale participation and open access via the web. MOOCs are a recent development in the area of distance education, and a progression of the kind of open education ideals suggested by open educational resources. Though the design of and participation in a MOOC may be similar to college or university courses, MOOCs typically do not offer credits awarded to paying students at schools. However, assessment of learning may be done for certification' (Wikipedia, 2012b).

Because of emerging nature of the concept and the different interests at work, both Wikipedia entries carried the disclaimer that: *'this article appears to be written like an advertisement. Please help improve it by rewriting promotional content from a neutral point of view and removing any inappropriate external links'* (Wikipedia, 2012a,b).

We shall describe the short history of MOOCs since the term emerged in 2007, although many courses around the world exhibited some of these characteristics much earlier.

The term MOOC originated in Canada. Dave Cormier and Bryan Alexander coined the acronym to describe an open online course at the University of Manitoba designed by George Siemens and Stephen Downes. The course, *Connectivism and Connective Knowledge,* was presented to 25 fee-paying students on campus and 2,300 other students from the general public who took the online class free of charge (Wikipedia, 2012a).

The title itself evokes the aim of the course, which was to follow Ivan Illich's injunction that an educational system should 'provide all who want to learn with access to available resources at any time in their lives; empower all who want to share what they know to find those who want to learn it from them; and, finally furnish all who want to present an issue to the public with the

opportunity to make their challenge known' (Illich, 1971). In this spirit 'all the course content was available through RSS feeds, and learners could participate with their choice of tools: threaded discussions in Moodle, blog posts, Second Life and synchronous online meetings' (Wikipedia, 2012a).

We quote Illich to emphasise that the xMOOCs attracting media attention today, which are 'at the intersection of Wall Street and Silicon Valley' (Caulfield, 2012), appear to have scant relation to those pioneering approaches. The earlier tradition of what Siemens (2012) calls cMOOCs continues (see Cormier, 2010) but the focus of attention has moved to xMOOCs that are far from Illich's ideals. Surprisingly perhaps, those who coined the term MOOCs and continue to lead much Web discussion about them draw little attention to this change. Downes (2012) comments wistfully: 'I was not surprised at all that once (the MOOC format) proved successful it would be adopted by the Ivy League (who would receive credit for its 'discovery') because this follows a well-established pattern in our field'. Perhaps the originators of cMOOCs believe that with time the movement will be drawn back to some of their methods and philosophy and indeed, the Massachusetts Institute of Technology (MIT) is beginning, timidly, to enrich its xMOOCs in this way.

No doubt the delayed reaction of the first movers is partly because the new wave of xMOOCs is so recent. Early in 2012 Stanford University offered a free, chunked course on *Artificial Intelligence* online and 58,000 people signed up. One of the faculty members involved, Sebastian Thrun, went on to found Udacity, a commercial start-up that helps other universities to offer xMOOCs (Meyer, 2012). MIT (2011) announced MITx at the end of 2011 for a launch in spring 2012. MITx has now morphed into edX with the addition of Harvard and UC Berkeley (edX, 2012). Since then similar initiatives from other well known US universities have come thick and fast. There seems to be a herd instinct at work as universities observe their peers joining the xMOOCs bandwagon and jump on for fear of being left behind. At this writing Coursera, another for-profit xMOOC start-up, already claims nearly 1.4m registrations and will offer 200 courses in late 2012 with 33 partner institutions, of which the large majority are in the US (Lewin, 2012a; DeSantis, 2012).

Armstrong (2012) has made a useful comparison of the MITx programme and the courses that Coursera has offered with 13 'top-tier' universities in the US and abroad. After interviewing

some of the players and enrolling in a Coursera course himself, he considers that these two approaches to the expansion of online learning are significantly different in purpose. MIT's venture is rooted in a strategy, going back 15 years, of using online learning to improve and change its teaching on campus. The launch of MIT Open Courseware in 2001 was part of this policy and it is significant that L. Rafael Reif, who as provost oversaw the creation of MITx, has recently been appointed president of MIT.

Referring to the work of Christensen (1997) on innovation, Armstrong suggests that MIT considers online learning to be a disruptive technology and is using MITx as a 'skunkworks' to master it in order to learn how to educate more effectively its on-campus students.

Stanford University is using a similarly considered approach. Although Stanford's president talks breathlessly about a 'digital tsunami threatening to sweep aside conventional university education' (Boxall, 2012), John Mitchell, the vice-provost responsible for online learning, rather echoes the MIT approach: 'I think everyone agrees there's something very exciting going on here. So how do we as a university participate in that? What can we learn about teaching and learning through experimenting with different forms of technology? So I think we're going to treat this as an intellectual question and an academic investigation in some sense' (Weissmann, 2012). Elsewhere he observed: 'we really want to see what works. We've started out in one direction with Coursera – which is a great company and it's great working with them – but it's not clear that the current mode of producing courses is where we're going to end up in five years' (Lewin, 2012a).

Armstrong observes that some Coursera institutions are marching to a different drummer from MIT. For them, MOOCs are a sideline rather than core business. Provosts at two of the institutions said that they were not providing any pedagogical help for faculty in the preparation of the courses. 'In fact', comments Armstrong, 'they looked confused at the question'. His conclusion that 'Coursera clearly was a low priority venture for both' was backed by his experience of taking one of the courses. He reported that 'the pedagogy, however, did not live up to the Coursera pledge of sound pedagogical foundations… The course is basically a typical college lecture, chunked into roughly 15-minute segments… There is one weekly problem set designed to measure algorithmic rather than conceptual learning. Answers to the set are either multiple choice or a single number which is typed in… the students learn little when they get

their assignments back except the grade'. In summary, says Armstrong, 'it seems pretty obvious that no one who had any working knowledge of research in pedagogy was deeply involved in the creation of the course'.

Coursera leaves the design of the courses up to the individual institutions within broad guidelines. Clearly they will improve over time although, according to Young (2012), their motivation for improvement is fear of loss of revenue rather than serving students better. He notes, 'college officials, for their part, seem more motivated by fear than by the promise of riches. "Most of us are thinking that this could be a loss of revenue source if we don't learn how to do it well," says Mr Rodriquez, of the University of Virginia. "These are high-quality potential substitutes for some of what universities do"'. The president of the University of Virginia almost lost her job because the trustees did not think she was moving into online provision rapidly enough (DeSantis, 2012).

Non-starts, dropouts, completers and cheats: early results

At the time of writing institutions offering the new wave of xMOOCs are reacting to the results of the first offerings. Both MIT and Coursera have had to defend the tremendous attrition rates in their courses. In MIT's course 6.002x, *Circuits and Electronics*, there were 155,000 registrations. They came from 160 countries, with the US, India and the UK accounting for the majority of the traffic and Columbia, Spain, Pakistan, Canada, Brazil, Greece and Mexico rounding out the top ten. Of these 155,000 learners, 23,000 tried the first problem set, 9,000 passed the mid-term and 7,157 passed the course as a whole. 340 students, including a 15-year-old Mongolian, got a perfect score on the final exam, qualified by Anant Agrawal, who heads what has now become the edX initiative, as 'very hard'. Commenting in *MIT news* (Hardesty, 2012), Agrawal noted that while the rate of attrition may seem high, 'If you look at the number in absolute terms, it's as many students as might take the course in 40 years at MIT'.

Consistent with its strategy of using its online ventures to improve teaching generally, MIT is following up on this prototype in several ways. In response to student demand MIT left the 6.002x website up at the end of the course. A group of 6.002x students have created their own version of the follow-up course, 6.003, *Signals and Systems*, using material from MIT's OpenCourseware site. Students also wrote their own programmes (e.g. an online text viewer for mobile devices) to augment the MITx platform and MIT made these available through the course

wiki. MIT is also making easier for students to 'customise the course content' by extending homework and exam deadlines. An interesting footnote was research on the course which showed that students much preferred 'shaky hand drawings that took shape as the professor lectured' to polished PowerPoint slides.

The press has given Coursera a rougher ride than MIT. Wukman (2012) reports that 'some classes were so rife with instances of alleged plagiarism that professors have been forced to plead with their students to stop plagiarizing'. Part of the problem, according to one student (Gibbs, 2012), is the peer grading process that Coursera deploys in an attempt to handle scale.

The figures that are available indicate similar patterns of dropout in the Coursera and MIT courses. Patterson reports that only 7% of the 50,000 students who took his Coursera-UC Berkeley course in *Software Engineering* passed (Meyer, 2012).

Can xMOOCs make money?

Is the fad for xMOOCs sustainable? Under a Freedom of Information Act request the *Chronicle of Higher Education* obtained a copy of one of the agreements between Coursera and a partner institution. Young (2012) notes that Coursera 'isn't yet sure how it will bring in revenue. In this respect it is following a common approach of Silicon Valley start-ups: build fast and worry about money later'. The build-up is indeed very fast. It is remarkable that university administrations, normally in thrall to cautious lawyers, are signing up with the xMOOC companies so quickly.

Part of the reason is that the contract (e.g. with Coursera) is simple and flexible. Coursera claims no intellectual property rights to the courses, believing that the institutions should control the content completely. The universities are not bound to work exclusively with Coursera, although Coursera's founders are not concerned that their partners will decide to go into business on their own or jump to another proprietary provider.

Where will the money come from? At the end of the Coursera partnership agreement a section on *Possible Company Monetization Strategies* lists eight potential business models. They are:

- Certification (students pay for a badge or certificate)
- Secure assessments (students pay to have their examinations invigilated (proctored))
- Employee recruitment (companies pay for access to student performance records)

- Applicant screening (employers/universities pay for access to records to screen applicants)
- Human tutoring or assignment marking (for which students pay)
- Selling the MOOC platform to enterprises to use in their own training courses
- Sponsorships (3rd party sponsors of courses)
- Tuition fees.

Of these options, certification and employee recruitment are under the most active consideration according to Young. But the striking feature about this list is that the organisation least likely to make money is the partner university. Already, for example, xMOOC institutions stung by the prevalence of plagiarism are signing up with Pearson VUE, a subsidiary of the Pearson conglomerate, to use its worldwide network of testing centres (Kolowich, 2012a). The two options over which the universities have most control, certification and tuition fees, both present problems. In the case of certification, one of the many paradoxes of xMOOCs is that most participating institutions have a self-denying ordinance not to award credit for these courses – although the decision of Colorado State University's Global Campus and some European institutions to award credit may well break this taboo (Lewin, 2012b).

As regards tuition fees there are huge challenges of principle and practice. Is a MOOC still 'open' if you have to pay for it? Quite apart from the logistical nightmare of collecting fees in the 160+ countries where learners are registering for xMOOCs, it seems certain that even a nominal fee would reduce interest dramatically.

If and when money does come in, the company will get the vast majority of the cash flow with the institutions getting 6-15% of the revenue and 20% of gross profits. An official from a partner institution joked: 'I suspect the margins that they are asking for is a result of throwing darts over at Coursera!' (Young, 2012).

In a blog post recalling the way that the monetization of YouTube and Facebook has worsened user experience with those platforms, Justin (2012) suggests that while xMOOCs 'monetization models may look different from YouTube or Facebook… one common theme is that monetization always impacts the user experience'.

Although the revenue streams for universities are unclear, publishers believe that MOOCs can help them make money by reaching new readers and selling more books (Howard, 2012).

Paradoxically, this would appear to be particularly true of 'open' presses where books can be downloaded for free. Athabasca University Press (2012), a publisher of prize-winning academic books, has established the curious fact that 'putting a scholar's book on the web to be read for free increases both sales and citation impact'. However, most university presses are not open presses so they may forgo this potential source of revenue as well.

Modest MOOCs that work

Against this background we note another framework for public-private partnerships in online learning that has developed with little fanfare but already yields revenue for the partners and degrees for the students. This is the Academic Partnerships (AP) programme launched in 2008 by Best Associates, a merchant bank based in Dallas, Texas (Academic Partnerships, 2012a). So far, although it has global ambitions, AP works with some 20 public universities in the US (e.g. University of Arkansas at Jonesboro, University of Texas at Arlington, Lamar University). These institutions may be less prestigious than those flocking to the Coursera and Udacity platforms, but at least they have found a way of making money and achieving good degree graduation rates.

AP partners with these universities to convert their traditional degree programmes into an online format, recruit qualified students and support enrolled students through graduation (Academic Partnerships, 2012b). According to the AP website: 'Several AP partner universities have already been able to freeze tuition and give faculty raises due to the success of their online programmes… AP attributes this success in programme growth to close collaboration with faculty and administrative leadership and effective recruiting techniques that are designed to take public universities' degrees to scale. Additionally, AP's retention strategies have resulted in graduation rates that consistently meet or exceed the performance of the same programmes on campus. Similarly, students have passed licensure examinations in both education and health science programmes at rates comparable to or better than on-campus students… The online students recruited by AP comprise as much as 30 per cent of partner universities' total enrolment' (Academic Partnerships, 2012a).

In this arrangement the institutions set the tuition fees, of which the commercial partner takes about 70% for providing the services of course conversion, student recruitment and support, and technology platforms (Learning Management System, Customer Relationship Management System and Enrolment System.) Student numbers in AP programmes are in the thousands rather

than the tens of thousands (e.g. around 4,000 at UT Arlington and Lamar respectively). However, as noted, most of these students obtain degrees and professional recognition at rates at least as good as their on-campus counterparts.

Platforms

At the heart of MOOCs are the platforms that enable the various operations involved in offering a MOOC to be done effectively. Siemens (2011) has described the race to create effective platforms in various fields. He notes (Siemens, 2012) that 'MOOCs are really a platform' and that the platforms for the two types of MOOC that we described at the beginning of the paper are substantially different because they serve different purposes. In Siemens' words: 'our cMOOC model emphasises creation, creativity, autonomy and social networking learning. The Coursera model emphasises a more traditional learning approach through video presentations and short quizzes and testing. Put another way, cMOOCs focus on knowledge creation and generation whereas xMOOCs focus on knowledge duplication'. He notes that in time the xMOOCs 'may well address the "drill and grill" instructional methods that are receiving some criticism' (Siemens, 2012).

Partly because they are so different, and partly because they exist behind proprietary walls, we shall make only general comments about MOOC platforms. A fundamental question is whether proprietary MOOC platforms will gradually give way to open source solutions. This seems to be happening in the closely related domain of Learning Management Systems (Virtual Learning Environments) where the open source Moodle (moodle.org) platform is becoming the industry standard rather than earlier proprietary systems such as Blackboard (Blackboard, 2012).

Developing a MOOC platform, at least for xMOOCs, would appear to be a much simpler task than creating systems such as those required by the large open universities. When the UK Open University (250,000 students) became the largest user of Moodle in 2007 it made a major investment in order the incorporate the many sub-systems required for the effective operation of this large global institution (Sclater, 2008). An xMOOC platform requires fewer sub-systems but must, of course, be designed to handle very high volumes and inputs from all over the world. However, whereas universities own and operate multiple Moodle installations, the administrative components of MOOCs (especially if they begin to make extensive use of Learning Analytics (Siemens, 2010)) are too complex for a teaching unit in a university to operate without huge

resources. For this reason most universities might eventually opt for cloud-hosted MOOC services with control over data releases through contracts with for-profit service providers.

As it is wont to do when a new trend appears, Google has now jumped into this space. In September 2012 it released Course Builder, open-source xMOOCs software as 'an experimental first step' (the codes are available for modification without restriction although they will run in the Google App eco-system exclusively). It had been tested earlier in Google's own xMOOC, *Power Searching,* which attracted 155,000 learners, of which 20,000 completed. Google is in touch with some of the universities involved in xMOOCs, although the institutions are more close-mouthed about this collaboration. Google research director Peter Norvig commented: 'it's a confusing or an exciting time… I think schools are experimenting and they don't quite yet know what they want to do' (Azevedo, 2012).

It will be interesting to watch the use of xMOOC platforms evolve. For the moment most participating institutions are happy to let a commercial partner bear the costs of building the platform and keeping it running. However, were universities to make xMOOCs such an important component of their work that the effective offering of xMOOCs became mission critical; they might be tempted to bring the platform 'in-house' in an open source cloud format. edX has announced its intention to make its platform open source.

MOOCs in perspective

To dwell on the earlier fads and disappointments that technology has generated in education would be pedantic. Innovators like to believe that theirs is the real revolution. But technology has been about to transform education for a long time. In 1841 the 'inventor of the blackboard was ranked among the best contributors to learning and science, if not among the greatest benefactors to mankind'. A century later, in 1940, the motion picture was hailed the most revolutionary instrument introduced into education since the printing press. Television was the educational revolution in 1957. In 1962 it was programmed learning and in 1967 computers. Each was labelled the most important development since Gutenberg's printing press.

Since 2000 there have been countless claims that Internet and communications technologies (ICT) could revolutionise the format and delivery of education, not least because they absorb all those previous innovations. We noted earlier, for instance, that xMOOC learners preferred

teachers to scrawl formulae on the modern equivalent of a blackboard rather than presenting them on slides.

In my addresses as a KNOU Fellow (Daniel & Uvalić-Trumbić, 2012a; Daniel, 2012a,b,c) I have argued that modern ICT, what my former Open University colleague Marc Eisenstadt named the 'knowledge media', are qualitatively different from previous technological aids to education. That is because they lend themselves naturally to the manipulation of symbols (words, numbers, formulae, images) that are the heart of education, as well as providing, through the Internet, a wonderful vehicle for the distribution and sharing of educational material at low cost. But while the potential of ICT to improve and extend education while cutting its cost is not in doubt, the results so far have generally been disappointing (Daniel, 2012b, Toyama, 2011). We should bear the reasons for these disappointments in mind in trying to ensure that MOOCs contribute to these goals for improving education and are not just another flash in educational technology's pan.

We would not expect the current extensive commentary on xMOOCs in the US to consider events before the dotcom frenzy of 1999-2000, still less earlier developments outside North America such as the many open universities around the world. It is surprising, however, that little reference is made to the unhappy experience of some elite US schools with online learning in the mid-2000s.

The Internet burst into the public consciousness in the dotcom frenzy at the turn of the millennium. The dotcom frenzy alerted universities to new opportunities for opening up to the world, but some got carried away into ill-fated ventures.

These have been well documented in Taylor Walsh's recent book *Unlocking the Gates* (Walsh, 2011), in which she records how universities such as Columbia, Chicago, the London School of Economics, Oxford, Yale and Stanford thought they could make useful additional income by offering non-credit courses online. In the event they and their partners lost money before ventures like Fathom and AllLearn were ignominiously shuttered. The Allearn website, which is still up, explains that the platform and course catalogue were undergoing revision for a re-launch in 2006. It states: 'AllLearn offers over fifty online courses from Oxford, Stanford, and Yale Universities. Courses are available to anyone — anywhere and at any time. Expert online instructors help you to

explore fully the readings and lectures and share in lively discussions with your classmates'. There is also an analysis of what went wrong (University Business, 2008).

The Fathom website has been taken down. The site simply refers inquiries to the Centre for Digital Research and Scholarship at Columbia University.

At that time some other universities were already taking a different route. From the late 1990s MIT had experimented with putting materials associated with its credit courses on the web for free. This was announced as the MIT OpenCourseware project in 2002. Later the same year, at a UNESCO Forum on the Impact of Open Courseware for Higher Education in Developing Countries, the term Open Educational Resources was coined as a generic term for such developments (Daniel, 2012d).

As a description of developments in the mid-2000s the subtitle to Walsh's book, *How and why leading universities are opening up access to their courses,* is somewhat misleading. The Fathom and Allearn ventures only offered non-credit courses (which was a main reason for their failure) and MIT was simply letting people look at materials supporting its courses. Millions did and still do, but MIT explicitly did not offer interaction with its faculty, still less the possibility of obtaining an MIT credential. There was plenty of criticism of MIT from distance learning providers for this somewhat patronising approach. No doubt this criticism, coupled with MIT's long-term strategic planning for online learning mentioned earlier, led to the current xMOOC developments through MITx and edX.

Before leaving Walsh's book it is worth recalling a quote in its final pages, from former Princeton President Harold Shapiro, that is somewhat ironic now that Princeton is signing up with Coursera. Shapiro expressed scepticism at the traditional university's capacity to expand seamlessly into other areas. He pointed out that in deciding where to focus institutional resources, a university must consider what will support its public mission. 'But you also have to ask yourself, where do we have the talent? You can't just turn around tomorrow and say 'maybe we should start doing something different' – you have to accumulate the talent first' (Walsh p. 257).

Myths and paradoxes

In his book *Harmonizing Global Education: from Genghis Khan to Facebook*, Baggaley (2011) argues that the quality and pedagogy of much current online education is poor because its practitioners have not taken the trouble to learn the lessons from research on earlier educational technologies. He suggests that Asian countries may now do online education better than the West because in many Asian countries online and earlier technologies co-exist, allowing transfer of knowhow from one to the other.

Baggaley has summarised some key results of that earlier research and we shall not attempt to repeat them here. Instead we shall try to build on the commentaries of others, notably Bates (2012) and Touve (2012) by highlighting some of the myths and paradoxes that surround xMOOCs. This will lead us to end on a positive note by exploring the interesting possibilities that emerge once xMOOCs providers come down to earth and resolve the contradictions that currently bedevil them.

Quality and completion rates

Several of the myths and paradoxes in the xMOOC universe relate to quality and pedagogy. A first myth is that university brand is a surrogate for teaching quality. It isn't. The so-called elite universities that are rushing into xMOOCs gained their reputations in research. Nothing suggests that they are particularly talented in teaching, especially teaching online. A related paradox is that these same institutions once opposed the accreditation of the University of Phoenix, claiming that online teaching was inherently of low quality. Although Phoenix has engaged in dodgy business practices, it is likely that because it operates as a teaching-learning system the quality of its instruction is objectively better than the new wave of online xMOOCs. Certainly Phoenix's completion rates, while nothing to boast about, are much higher: at between 30-35% for associate and bachelor's degrees and 60% for master's degrees (University of Phoenix, 2012).

Most countries around the world have quality assurance agencies for higher education. One of the criteria quality auditors and assessors take seriously is the rate of course and degree completion, partly to ensure value for the investment of public funds and partly to protect students from poor practice. Improving retention and completion has been a special concern for distance learning institutions and open universities. They take the view that students seek not

merely access, but access to success, which the institution should do everything to facilitate while maintaining standards.

Against this background the current xMOOC completion rates of 10% or less would be considered disastrous anywhere else. In the xMOOCs' defence, however, it must be said that these first offerings probably attracted a high proportion of the merely curious and tourists from other institutions checking what the fuss was about. As the number of xMOOCs multiplies they will likely draw a more purposeful clientele. It remains, however, that because xMOOCs universities measure their institutional standing by the numbers who fail to gain admission to their campuses, they will be cavalier about high wastage and failure rates. This has been called the Passchendaele approach, after the World War I battle in which tens of thousands of soldiers were thrown at the front and died fighting for a few metres of land.

Attitudes to completion rates create a sharp distinction between the xMOOCs providers and other distance learning institutions, both public and for profit. For reasons that are a combination of ideals of student service, consumer legislation and supervision by regulatory bodies, these other institutions invest heavily in retention strategies. International guidelines about distance education and much national legislation were stimulated by Jessica Mitford's classic piece in the *Atlantic Monthly* in 1970: *Let us now appraise famous writers* – an entertaining and instructive read for anyone new to the field.

Certification

This brings us to the central paradox in xMOOCs that Touve (2012) explores. The fundamental contradiction is that currently, for most xMOOC institutions, success in the course exam (called 'very hard' by MIT's Agrawal (Hardesty, 2012)), does not lead to credit, but to a certificate. The consequence, as Touve stresses, is that what decides whether or not a student can obtain a degree is determined not by their mastery of the courses, but by the admissions process to the university. This is an untenable nonsense. To give but one example, the UK Open University, which has no academic admission requirements, has awarded over a million highly regarded degrees to its students. Entry to the Open University is easy; exit with a degree is difficult.

Elite institutions, of course, usually define their quality by the numbers of applicants that they exclude, not by the teaching that happens on campus after admission. My late Athabasca University colleague Dan Coldeway called this the principle of 'good little piggies in, make good

bacon out'. It is a venerable academic tradition but hardly seems fit for the 21st century, not least for institutions that have suddenly discovered a mission to open up to the world. The best long-term hope for ending this dire contradiction is learning analytics, which are stealing up on higher education in an inexorable way. Learning analytics are 'the use of data and models to predict student progress and performance, and the ability to act on that information' (Siemens, 2010). They hold out the promise that individuals will eventually be able to have a complete record of what they have learned and mastered at the level of concepts and skills. Some MOOC institutions claim to be using learning analytics. Perhaps they should be careful what they wish for, because the widespread use of learning analytics would make it intellectually reprehensible to make recognition of mastery conditional on unrelated processes.

In reality it may not matter if the xMOOC providers' taboo on awarding credit stays in place, because holders of MOOCs certificates can trade them for credit elsewhere. Unfortunately in the US this is an expensive process. Kolowich (2012b), using the example of the University of Maryland, has shown that 'students can expect to spend a minimum of $1,300 to convert the learning picked up in an xMOOC into three college credits. That is, of course, in addition to the hours and effort they sink into actually taking the xMOOC'. However, outside the US, where many xMOOC students are, there are more attractive possibilities. For over 30 years Athabasca University has offered a Bachelor's degree with no residency requirement (i.e. students do not have to take any courses from Athabasca, the award can be made entirely on the basis of credit accumulation). Athabasca is also contemplating putting together a 'Best First Year Online' constructed entirely from open courseware (Pannekoek, 2012).

In the wider world the new OERu, which is a consortium of 18 established and accredited universities from five continents, has been created precisely to serve learners who are acquiring skills and knowledge by alternative routes (Hill, 2012; OERu, 2012; WikiEducator, 2011; Taylor, 2011). Even it the xMOOC universities lift the taboo on credit it will be years, if ever, before they can offer a whole degree on line, so xMOOC students seeking degrees would do well seek other paths such as those mentioned.

Finally, dare we point out that xMOOCs certificates offer juicy opportunities to degree and accreditation mill rackets? *Caveat emptor* should be the motto for anyone dealing with xMOOC

certificates. They may want to dust off the excellent booklet that CHEA (2009) produced on this topic.

Pedagogy

Earlier we quoted Armstrong's (2012) conclusion that the Coursera course he took was innocent of any pedagogical input. Indeed, outside their schools of education, pedagogy is not a familiar word on the xMOOC campuses. It is a myth that professors distinguished by their research output are competent to create online courses without help. Bates has long argued that expecting individual faculty to develop online courses alongside their classroom offerings, which he calls the 'Lone Ranger' approach, is unlikely to produce courses of quality (Bates and Sangra, 2011). Good distance teaching calls for teams that support the academics with a range of skills.

With such support MOOCs provide a great opportunity to develop new pedagogy. In a world of abundant content, courses can draw from a pool of open educational resources (OER) and provide their students with better and more varied teaching than individual instructors could develop by themselves. The University of Michigan (2012) (which made history by using OER from Africa in its medical school) uses OER extensively in its Coursera course *Internet History, Technology and Security.* UC Berkeley (2012) draws extensively on OER in its course on *Quantum Computing.*

Knox et al. (2012), a team from the University of Edinburgh, which is one of Coursera's few non-US partners, gives an interesting account of getting to grips with the Coursera platform. Their course sounds to be more cMOOC in approach, although they consider cMOOCs remain on the radical fringe of higher education. They qualify the Coursera platform as 'conservative in terms of online pedagogical practice' but, like MIT, they see xMOOCs as an experimental venture and want to 'participate in an emerging pedagogical mode that is significantly under-theorised'. They conclude that xMOOCs are not simply 'ed-tech *du jour*' but worth serious engagement.

This is, however, a work in progress. Bates (2012) addresses the myth that xMOOCs are a new pedagogy. In fact, he notes, so far the teaching methods 'are based on a very old and out-dated behaviourist pedagogy, relying primarily on information transmission, computer-marked assignments and peer assessment'. He goes on to remind the xMOOCs movement that it did not

invent online learning and that the useful techniques that it is discovering – and likes to claim it has invented – are already well known in distance learning and in some cases go back 40 years.

Another myth is that computers personalise learning. Bates (2012) again: 'No, they don't. They allow students alternative routes through material and they allow automated feedback but they do not provide a sense of being treated as an individual. This can be done in online learning, but it needs online intervention and presence in the form of discussion, encouragement, and an understanding of an individual student's needs'. It is here that we find the greatest difference between the xMOOCs and the earlier cMOOCs, which have a strong focus on online discussion.

In completing his debunking of xMOOCs myths, Bates (2012) points out that the primitive use of 'big data' referred to by Koller (2012) is not learning analytics but simply a way of catching errors that should never have found their way into the course in the first place.

MOOCs: for what purpose?

The final group of myths and paradoxes are related to the reasons for offering xMOOCs. The basic paradox is between the laudable desire, in the spirit of the open educational resources (OER) movement (UNESCO, 2012) to make knowledge the common property of humankind, and to find a business model that generates money for doing it. The business case for OER is developing nicely and OER will transform the availability of school textbooks (Butcher & Hoosen, 2012). However, the search is still on for reliable ways of making money out of xMOOCs, especially for the universities involved. It is unfortunate that Koller (2012) justifies xMOOCs in a particularly inept way by claiming that they are the answer to increasing access to higher education in developing countries.

Already, at the 2009 UNESCO World Conference on Higher Education, the president of the 300,000-student University of South Africa (UNISA) labelled OER a form of intellectual neo-colonialism (Daniel & Uvalić-Trumbić, 2012b) – although UNISA has now become an important player in the OER movement and the OERu. However, as Bates (2012) comments acerbically: 'these elite universities continue to treat xMOOCs as a philanthropic form of continuing education, and until these institutions are willing to award credit and degrees for this type of programme, we have to believe that they think this is a second class form of education suitable only for the unwashed masses'. It is a myth to think that providing not-for-credit open online learning from the USA will address the challenges of expanding higher education in the

developing world. Bates adds: ‘please, is it too much to ask for a little humility? (Probably, from so-called elite institutions)’!

Possibilities

MOOCs, both cMOOCs and xMOOCs are a fascinating development. This essay has taken a critical stance because the discourse about MOOCs is overloaded with hype and myth while the reality is shot through with paradoxes and contradictions. However, an important process is underway that will chart new paths for the universities involved and for higher education generally.

This development may fall apart. We noted some earlier Internet ventures of elite universities that started with fanfare but were wound up shamefacedly only six years ago. This time, however, the scale of the involvement is such that something will survive, even if some who can well afford it lose money on the way. We envisage that MOOCs will have an important impact in two ways: improving teaching and encouraging institutions to develop distinctive missions.

But first, we agree with Bates (2012) that what MOOCs will not do is address the challenge of expanding higher education in the developing world. It may encourage universities there, both public and private, to develop online learning more deliberately, and OER from MOOC courses may find their way, alongside OER from other sources, into the teaching of local institutions. We have long argued that higher education must find ways to address the needs of those at the bottom of the pyramid (Prahalad, 2004) but institutions in those countries will eventually do that using technology and it is unlikely that they will make fortunes.

We also agree with Bates that current xMOOCs pedagogy is pretty old hat but this will now change fast. Even if Coursera gave its partner universities great freedom in course formats in order to sugar the pill of signing the contract, this will quickly produce a great diversity of approaches and much healthy experimentation. By the end of 2012 various actors from the media through student groups to educational research units will be publishing assessments of xMOOC courses. These will quickly be consolidated into league tables that rank the courses – and the participating universities – by the quality of their offerings as perceived by both learners and educational professionals (Uvalić-Trumbić & Daniel, 2011).

This will not please the participating universities. Elite universities in the UK thoroughly disliked the state-approved teaching quality assessment system that operated there between the 1995 and 2004 (Laughton, 2003). Eventually their presidents successfully petitioned the authorities to close it down. My own conclusion was that behind the fog of methodological arguments about the difficulty of assessing teaching quality, the real problem was that some elite universities did poorly and some lesser-known institutions did well. By the time results of teaching quality assessments by discipline had accumulated over ten years a small former teachers' college ranked in the top ten (out of ~100) and the Open University was in 5th place, one above Oxford. The difference with the xMOOCs assessments and rankings is that no one will be able to abolish them by appealing to authority. Institutions that rate poorly will either have to quit playing xMOOCs or raise their game.

This, in turn, will put a focus on teaching and pedagogy to which these institutions are unaccustomed, which will be healthy. At the same time academics all around the world will make judgements about the intellectual quality and rigour of the institutions that have exposed themselves in this way. Other combinations of institutions and commercial partners will join the fray and a new pecking order will emerge.

In contrast to the copycat rush to jump on the xMOOCs bandwagon, this may encourage more institutional leaders to share Harold Shapiro's scepticism about the ability of traditional universities to expand seamlessly into new areas. With luck the dream of the great American educator Ernie Boyer (1990) may even come true. In 1990, in *Scholarship Reconsidered: Priorities of the Professoriate,* he wrote: 'We need a climate in which colleges and universities are less imitative, taking pride in their uniqueness. It's time to end the suffocating practice in which colleges and universities measure themselves far too frequently by external status rather than by values determined by their own distinctive mission'.

The broader purpose of Boyer's book was to encourage the emergence of a scholarship of teaching alongside the scholarships of discovery (research), integration (multidisciplinary) and application (development). Placing their xMOOCs in the public domain for a worldwide audience will oblige institutions to do more than pay lip service to importance of teaching and put it at the core their missions. This is the real revolution of MOOCs.

MOOCs may also have the long-term effect of helping to cut the outsize costs of higher education, which in the US have increased by 360% above inflation since 1986 (Archibald & Feldman, 2010). But that is another story!

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