

MIGHT MOOCS STILL PROVE TO BE DISRUPTIVE?

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The term 'MOOC', originating as an acronym for massive open online courses offered by universities, has gained wider meanings as it has been adopted by politicians, university leaders, the media and the public. These meanings are being used in the increasingly complex context in which Western higher education operates, one in which online learning is widely accepted as permanent and where the forms, purposes and costs of university education are being challenged. This essay reviews these developments, drawing on academic literature and media reports, and assesses whether MOOCs are (still) the disruptive force they seemed to be and, if so, how and where in their various forms they might contribute to substantial change in higher education.

INTRODUCTION

After all the hype surrounding massive open online courses (MOOCs) settled down in 2014, the worldwide higher education (HE) community generally came to terms with their existence and, in some cases, embraced them as part of their educational activities. The pre-existing digital education¹ community seized the opportunity for new areas of practice and research, albeit with some initial reluctance, and funding followed (see MOOC Research Initiative website or, below, NWO, 2014), as did many MOOC-orientated conferences and publications. Although the governments of some Western countries remained interested in MOOCs and had set in train explorations of their potential (Creelman, 2014; NVAO, 2014), some reduced the attention that they were paying to the subject as the MOOC platforms stabilized and a decent number of universities in their jurisdiction offered these online courses.

What, therefore, of those early predictions of the disruption of higher education, including mass education for free online from top universities and a breaking of the stranglehold of cost, residential requirements and competitive entry? Is it back to business as usual for Western higher education, or is it too soon for it to relax? Are MOOCs still acting as agents of change, or have they already begun to be domesticated (Berker et al., 2005) and safely penned in?

This essay will take a path through a consideration of 'disruption' and what this might mean for HE, looking at what MOOCs are and (importantly) what they are used to signify at policy level. The essay will also ask what signs of change can be seen in Western higher education that might signal early-stage disruption, catalyzed by MOOCs.

THE MEANING OF DISRUPTION

A dictionary definition of disruption leads us to an understanding that it is about enforced or imposed change to the normal state of affairs, although often with the implication that normal service will be resumed, and by the same providers. By contrast, 'innovative disruption' as defined by Clayton M. Christensen (2013) is more severe and leads to the disappearance of, or at least serious damage to, the existing state of affairs and the permanent replacement of existing organizations by new providers. A brief survey of the use of the word 'disruption' in the titles and abstracts of recent academic publications about digital education suggests that it is often disruption, meaning 'change to how things are done', that is being discussed, rather than serious damage to an existing entire business sector. In this essay I shall use both expressions, but shall be clear about distinguishing between my uses of 'innovative disruption' and 'disruption'.

¹I shall use 'digital education' as a catch-all term for all use of technology in higher education teaching and learning regardless of the format (e.g. fully-online, blended online-offline, or online and open). Over the years various terms have been used (computer-assisted learning, technology-enhanced learning, online education) and digital education as used here subsumes them all.

In the case of higher education, this innovative disruption rhetoric proposes that the majority of universities, with their traditional pedagogies and physical campuses, will be displaced in favour of new providers, which are assumed to be solely digital and probably more vocationally orientated (Christensen and Eyring, 2011). Of course, not all existing universities would be equally affected; some with very attractive locations and reputations would survive, as would some in specialized niches. Many, however, would either convert to the 'new way of doing business' or fail. There is a strong assumption in this rhetoric that most universities do not know how to change, or that, like leopards, they cannot 'change their spots' (Cohen, 2015; Tapscott, 2009).

In reality this is a rather US-centric view of HE, because in many other countries university education is national government-funded or even part of the government apparatus (Yongbloed, 2010), and often there is strict regulation that isolates universities from most external competition (Lester, 2013). It is also not clear, even for those non-US countries where higher education institutions (HEIs) are independent and largely free from majority state funding, that national governments would be prepared to let 'their' universities fail in a big way. As we shall see later, HE can be a national brand. One difficulty (of several) with these analyses is that they largely ignore the different academic levels of HE; that is, they fail to distinguish between Bachelor, Masters, doctoral and lifelong learning/continuing professional development (CPD)/extension levels. It is at least theoretically possible that one level is much more susceptible to disruption than others, and so when some university leaders dismiss the imminent demise of the traditional university, they too may be missing a key point of significance to their continuing success.

In terms of higher education then, disruption and innovative disruption are clearly very different outcomes, at least as far as universities and colleges are concerned. In the face of the former, they have to redesign their teaching business to varying extents, whereas in the latter they may not even be in business.

THE MEANINGS OF MOOC

The appearance of MOOCs gave fresh and powerful impetus to the discussions about disruption and innovative disruption, which had been around for some time before the appearance of the courses (Voss, 2013). As MOOCs were brought into this debate though, the meaning and purpose of the term began to change. The word 'MOOC' began as an acronym for a quite specific type of online course: a course open to all with access to the internet, with no fees, fully online and with a (potentially) massive or very large enrolment (Yuan and Powell, 2013). However, the word has now acquired a wider range of meanings:

MOOC = open education: 'MOOC' is often used as proxy for all open education, perhaps seen as summing up in one word a widely understood encapsulation of the 'concept of modern open education', even though MOOCs are only one component of it. This use can be seen in, for example, the European Commission 2013 report 'Opening Up Education' and the discursive moves of the US Office of Educational Technology 'Open Education' report in 2014.

MOOC = online education: 'MOOC' is used as a proxy for all online education regardless of openness, requirement for fees or offer of credit. In a series of recent interviews for a European study of online learning, it was noticeable how often this occurred. Newspapers and the media are also inclined to this use.

MOOC = national brand: MOOCs became politicized early in their development. Although they, and the platforms from which they were offered, Coursera and edX, began in earnest in the USA in 2012, the US Government has largely not been particularly strong in its claims for them as 'American'. It is

not that the US federal Government is indifferent to MOOCs, for it views them as part of the HE efficiency drive and it deploys US MOOCs internationally (e.g. the MOOC Camp programme) as an element of US soft power (Nye, 2005); however, in Europe, MOOCs are much more clearly politicized. In 2012 the UK Government strongly supported the Futurelearn company as part of the 'UK higher education brand' (according to a Futurelearn press release). The French Government quickly followed suit by setting up France Université Numérique—FUN). Language was important here, as FUN MOOCs would be predominantly in French, with international targets in the francophone world. Across Europe, China, Australia and the Arab states there were rapid parallel developments.

Thus 'MOOC' means something beyond the courses themselves. It means 'innovative online higher education' in the world of policymakers. 'MOOC' is important internally as a signal of progressive and forward-looking government, and externally as part of the higher education brand, supporting growth of influence in strategic world regions. To university leaders, 'MOOC' has a similar meaning, signalling a university in tune with the modern world. More widely, it has become a single word to indicate 'fully online university education in all its variants', regardless of whether that is viewed as a positive or a negative development.

THE CONDITIONS FOR DISRUPTION OF HIGHER EDUCATION

Given the varied meanings of 'MOOC', and the types of disruption that MOOCs might trigger or support, what therefore is the context in which Western higher education operates that might favour or disfavour their disruptive power? Does the socio-politico-econo-techno-environment currently contain conditions and factors that might favour substantial change?

Online learning is growing: One of the important mind-set shifts in HE of the past 10 years has been a widespread acceptance that online education is here to stay (Allen and Seaman, 2013), although this is not to say that all academia also sees it this way, as is clear from some of the opposition and critique (Straumsheim, 2014a and b). Universities and colleges, many of them traditional, are increasingly offering fully online courses (ICEF, 2012) and the number of learners studying them is trending steadily upwards (Straumsheim, 2015). Multi-university virtual universities have been established in several countries (e.g. African Virtual University, Bavarian Virtual University and Canadian Virtual University) and a recent detailed analysis of United Kingdom transnational education (TNE) reported that more students were studying at a distance (largely online) with UK universities than were coming to the UK (BIS, 2014). At the same time—and while it would be a mistake to imply that online education is easy to offer or that viable cohorts are therefore easy to find—as more citizens in developed countries have Bachelor degrees and need upskilling and advanced CPD while maintaining their hard-won careers (Gallagher, 2014), there will be increasing demand for part-time or intermittent online courses and degrees.

Public and policy awareness: In 2012 MOOCs arrived into this context of growth in taught online HE. The very high levels of publicity created for these first MOOCs, both from the US universities and from the start-up companies providing the technical platforms for the courses, resulted in enormous worldwide interest in them (Bulfin et al., 2014). The elite nature of the universities that joined the early companies increased the interest, for their MOOCs were regarded by some as being an opportunity to be 'educated by the world's best universities' (Vasagar, 2012). There is not sufficient room in this essay to discuss in detail the reasons why these high-ranked universities joined the MOOC movement, but regardless of what one thinks about the motives of the universities in offering MOOCs and about the pedagogical approaches chosen by their academics, some important outcomes beyond the courses themselves are evident.

First, for around two years there was public discussion about online education set against the backdrop of the need for better

HE for the 21st century. Unlike previous debates about online learning, this debate was not restricted to academia, but drew in politicians, policy leaders in national education-focused organizations and the educated public. In most countries the discussion reached public prime-time television and news. Regardless of its quality, the existence of the discussion itself was important, and it contributed to a view that mass online education from top universities was feasible. One outcome that was barely commented on, but which with hindsight is significant, is that, with a few rare exceptions, these very large, fully open, fully online university-level courses did not 'crash and burn'. Technically and educationally, scale was proven possible, albeit for limited learning outcomes. By 2015 over 10m individuals had gained some insight into online study, an aim that research has shown to be common to many MOOC learners (MOOCs@Edinburgh, 2013).

In the more reflective discussions about MOOCs, some key concepts were being addressed: the meanings of retention (Reich, 2014); crowd-supported learning (Milligan, 2015); remote assessment (Webley, 2012; Eisenberg, 2013); open education business models (Kolowich, 2012); and learning analytics for making courses more effective (Ferguson, 2014; OET, 2014). Many of these terms found their way into the vocabulary of the policymakers. University leaders in particular have become accustomed to ideas with roots in MOOCs as they promote their own university's MOOCs or hear others doing so. Many events for university leaders now have an almost mandatory MOOC session.

MOOCs and openness: The openness of MOOCs also chimed with a wider social movement towards 'open everything' (e.g. the Open Everything and Open Knowledge organizations). This includes open access research publications, open government data, open source software, free news, Wikipedia and Khan Academy, among others. In Europe the European Commission's Opening Up Education initiative and, in the USA, the Office for Educational Technology website reflected a political desire to make the transition from closed to open higher education. Some modest explorations have taken place to test how to offer teaching, learning, assessment and credentialing towards degrees based on open educational resources (OER) and thus create an 'unbundled' higher education process (e.g. Peer 2 Peer University, or OERu—OER university).

Learning from MOOCs: Among the MOOC cohorts are modest, but rising, numbers of students enrolled in traditional degree programmes. Even though MOOCs themselves mostly do not give university credits, these students may choose to request that their studies are recognized for some form of credit by their own university, and there is anecdotal evidence that some students are indeed doing so. Where expansive university degree transcripts exist—the UK is a clear example with its Higher Education Achievement Record, or HEAR—universities can easily include MOOCs as part of that record.²

The great majority of MOOC teachers are academic staff at traditional universities and, as a consequence, they have been able to design and deliver fully online courses even in universities with no other opportunity for fully online delivery. Some have taken existing on-campus courses and ported them into MOOCs, while others have designed new courses from scratch. In those universities with several MOOCs, confidence that successful online courses can be created has taken root. Importantly, MOOCs are open, and enrolments include many teachers who are able to see exactly what is involved, unlike closed, taught online courses (Seaton et al., 2015). Despite the limited pedagogies often deployed, experiments have been and are still being done to use MOOCs beyond their origins as simple, time-limited, open courses: incorporating them in on-campus classes; reusing video sequences elsewhere; sharing MOOCs with other universities; allowing others to reuse the MOOC independently; offering MOOCs as always-on, not sessional; and offering them with university

² For example, the University of Edinburgh does this if students use their university email address in their MOOC platform enrolment ID, thus giving some small degree of official status to open education.

credits, for the institution's own students and/or for the general public.

MOOCs are durable: These MOOCs will not disappear quickly; this is not a flash in the pan. The universities offering them must maintain them for at least a few years (Coursera, for example, has a three-year contract per MOOC) and some of the companies have moved from uncertain businesses and commercial models to a more robust senior team and better market analysis (for example, see the Coursera website on 'Leadership'; Knowledge@Wharton, 2015). Only serious discontent from learners is likely to cause MOOCs to downturn rapidly. This is not to say that the companies will be unchanging in their approach; they have already moved to more diverse partnership models and to courses with better market-orientation, in search of more learners and other income streams (Bruff, 2014; Shah, 2014). Successful MOOCs can attract income measured in tens of thousands of US dollars (Chung, 2015). Even if the business model fails for some platform companies, this may well not be seen as a failure of online learning per se, but rather of a particular open education business model.

An important enabler of online education, and of MOOCs in particular, has been the pronounced maturing of online technology, especially communication tools and mobile versions (Castells, 2014). Through use of Google Docs, Dropbox, social media, PayPal and Skype, a broad swathe of the Western population has accepted the concept and the reality of working collaboratively and socializing online. Thus, the step to learning online, and with others rather than as an isolated individual, is not a big one to take. It may also be that the simple, short MOOC courses and their undemanding, traditional pedagogies are in fact enablers for many learners.

MOOCs and efficient higher education: MOOCs arrived at a time when the calls for HE to become more efficient, more effective and more relevant to society were becoming more insistent (Bowen, 2013; Zemsky, 2013). Comparisons of the impact of technology on different business sectors suggested that HE was not taking best advantage of the opportunities. At least on the face of it, MOOCs were addressing the challenge of scaling up higher education without commensurate increases in costs. Also, it seems reasonable for a government to assume that universities which are able to take a quick decision to offer MOOCs were clearly capable of faster innovative action in the rest of their teaching.

PRESSURES FOR CHANGE IN HIGHER EDUCATION

Emerging from, and in parallel with, the maturation of online learning have come important considerations of ways to bring significant changes to the form and nature of higher education. All of them are orientated around the theme of breaking a straitjacket that operates in much of traditional HE—even in quite innovative HEIs that offer MOOCs and online education—that lock learners, teachers and universities into very inflexible practices and that significantly prevent real personalization in which learners can choose or shape the pace, format, study locations, content and learning outcomes of their education. For example, these limiting practices include: the requirement for regular physical attendance; courses that run in a sessional format; assessments that are scheduled for synchronous testing on specific dates; the academic year (i.e. progression is limited, useful study weeks are lost); curriculum limitations due to timetable conflicts; credit-recognition and transfer being viewed as exceptional; and credits being time-served measures more than learning achieved. Despite the challenge of a major remodelling of the HE system, with its long history of defining its own structure, some developments are taking place, beyond simple online learning, that offer signals to the sorts of changes that might take place:

Competency-based education (CBE) and recognition of prior (experiential) learning (RPL/RPEL): Assessing what learners really know (knowledge) and can do (skills) is the core of credentialing in all forms of education. The third component of education, but generally less well formalized in assessment, is attitude, although it is important for good citizenship and for ethical professional practice. Competency-based education

(CBE) and recognition of prior learning (RPL) are (fairly) time-independent, minimize attendance, give credit to learning and so support complex learning journeys (Weise, 2014; SCQF, 2015; Lafont and Pariat, 2012). Related developments are taking place in measuring learning gains of students to ensure effective education, and when pathways to assessment are diverse (HEFCE, 2015). Internationally, school education can be benchmarked through the Programme for International Student Assessment, or PISA, which is closely watched by governments. An analogous process for HE is now being tested by OECD (AHELO), which again will offer evaluation of learning independently of class time. All these developments inform discussions about credentialing MOOCs.

Removal of time-based accounting: In the USA and Europe much-needed harmonization of very variable HE was achieved through the use of common standards for credits earned and for calculating government funding entitlement. Developed at a time when only face-to-face teaching was in place (leaving aside a small but important distance education sector), credit-hours were most simply recorded as time spent in class or in study (IFAP, 2011; EC, 2015). With more variations in routes to award, funding by study time is less valuable than outcomes (progression, graduation rates, competences). The US Government is considering the value of credit-hours (Laitinen, 2012), and outcomes-directed thinking may become a more prominent feature of European education ministries too. MOOCs are effectively assessments that ignore time spent in study.

Reducing governmental regulation of higher education: One clear message for many governments in the proliferating world rankings of universities was that the US research-intensive universities dominated them, and a lesson drawn was that university autonomy was vital if a country wished to have highly ranked universities (see website of the European University Association on autonomy, for example, and Salmi, 2009). This was not the only factor—funding certainly mattered—but minimum state direction was important to enable university leaders to compete on the world stage. Controls are being reduced, especially in Europe, where strong control has been common, in both legislation (e.g. academics as state employees, mandatory annual teaching hours for professors) and in regulation (e.g. pre-vetting of new degrees, fee level setting). The desire of governments for an innovative HE brand is clearly in tension with overly tight controls, and MOOCs have formed a visible test case for this.

Virtual mobility: This builds on the established Erasmus scheme, which has enabled 3m. European students to undertake a short period of study at a university outside their country. It is based on the standard of the European Credit Transfer System (ECTS). Virtual mobility embeds this concept in the digital realm and supports part-time mature students who cannot easily leave home (Ruiz-Corbella and Alvarez-Gonzalez, 2014). To date, virtual mobility has been small scale, but MOOCs and other fully online courses from European universities may begin to shift that balance, and online education from other countries may gain higher acceptability.

At present the exploration of how to offer a less traditional form of higher education is mostly modest in scale but, given enough political muscle and enough learner demand, it has the potential to impact significantly on university practice. However, there is a question over which part(s) of the system current practices have most impacted on or disrupted. As referenced above, higher education consists of three main levels—Bachelor, Masters and continuous professional development/lifelong learning—but the trends in these three levels are distinct, albeit with strong overlaps.

CHANGE AT THREE LEVELS OF UNIVERSITY EDUCATION

At Bachelor level, full-time and residential/on-campus education is still in evident demand in all Western countries, although options exist in some for distance education through open universities and those universities that offer fully online Bachelor degrees. Some of this can be attributed to funding models, to school and to family expectations, and to a long tradition of going to university being equated with leaving

home (despite the fact that many do not do so and commute to their universities). Little suggests that this view is changing and such a culture change is likely to take several years. However, as noted earlier, many Bachelor students are mature, working or caring, and so seek the kinds of universities that can offer them a part-time and flexible model for their studies. This is very country specific, strongly evident in the USA and in the UK, but much weaker in many other European countries. Such people find blended learning very useful (Dahlstrom and Bichsel, 2014, p. 22) and, from the outset, have been the student majority at open universities. New higher education providers, both residential and online, have emerged in this sector where legislation allows. The universities that offer MOOCs have mostly not served these students to any large extent, although new outreach is now being explored by them via MOOCs (Mangelsdorf et al., 2015).

By contrast, at Masters level many traditional universities, including top-ranked research ones, now offer some fully online degrees. This occurred initially most frequently in business subjects (the online MBA), but spread to a wide range of subjects, although with an emphasis on professional areas (e.g. clinical, education, law, information technology). The emergence of online degrees has not displaced the on-campus degree to any detectable extent, but has complemented it, probably because it reaches different populations.³ The online format is most attractive to the time and location-dependent, mid-career adult and, as a consequence, will grow as more education beyond Bachelor level is sought by working citizens. Employers are increasingly accustomed to online collaboration and co-working, and so any view that distance education is 'second class' may decline. Online education is also easier at Masters than at Bachelor level because of the more experienced learners. The conclusion one draws is that expansion of online education at Masters level is going to grow and be an increasingly important part of the business of many Western universities.

Finally, there is continuing professional development (CPD), which is the most diverse and hardest to classify level of education, and for which least data are available. CPD includes short courses for university credit (sometimes parts of degree programmes), short non-credit courses and advanced training courses in professional subjects such as education, para- and clinical subjects, IT or law (perhaps with professional training points or credits awarded). The range of providers is very wide: universities, colleges, professional bodies, and commercial education and training companies. Regulation tends to be weaker for CPD than for degree education, and quality assurance (QA) oversight from national or regional QA agencies often is absent if university credit is absent. University interest in CPD is very variable, although those universities that have moved into online Masters education may find, as we did at the University of Edinburgh, that potential students enquire about the options for taking a single module, or a small cluster, rather than the degree, and that many sign up for the degree programme but only wish to study part of it. Like Masters education, online CPD has not displaced traditional classes. They grow alongside each other, although it would not be surprising to discover, if data were available, that online has passed face-to-face in number of enrolments.

While it is hard to gain a full picture of how much HE is changing, many examples of all these developments exist at present. The well-quoted phrase commonly attributed to William Gibson might reasonably be said to apply right now to Western higher education: 'the future is already here, it's just not very evenly distributed'.

MOOCS AS DISRUPTORS OR AS INNOVATIVE DISRUPTORS?

In the light of the pressures, changes and trends outlined above, it can be argued that MOOCs have already disrupted Western higher education, to the extent that digital education

³ For example, at the University of Edinburgh almost all on-campus Masters students are full-time and not working, whereas the online Masters students are almost entirely part-time and working.

is seen by many as here to stay. This is 'MOOC as online learning' rather than MOOCs per se, although the latter are influencing both teaching practices (e.g. flipped classrooms) and academic governance processes (e.g. evaluating how to credential or recognize MOOCs). Universities offer fully online courses in greater numbers, with more confidence that these are signs of innovation rather than of low quality. University leaders speak publicly about online learning as a given, suggesting that a step has been taken that will not be easily reversed. MOOCs will be around for some time as a public 'reminder' of online education, and so their effect is more than just the one or two years of strong hype followed by a vacuum.

MOOCs did not initiate fully online education, nor may they necessarily be a long-lasting component of it, but they added a significant boost to a trend towards online education that was previously quiet and almost invisible to most people. At all degree levels and in CPD, the move towards blended and full online education is likely to gain momentum, driven by the developments described here. There are early experiments taking place now in simple sharing of online courses, collaborative virtual universities, virtual mobility, using online courses to flex the academic year and pace of study, CBE and RPL to assess external or non-traditional learning, and offering MOOCs for credit. The sum of this scattered activity, often on small scale locally and with little publicity, but across a large number of universities in all Western countries, will probably be a normalizing or mainstreaming of fully online education into academic thinking, and into the thinking of students and graduates. Over the next five- to 10-year period the impact of this large number of explorations will become felt and, as competitive universities watch each other to stay abreast, and governments either encourage or mandate innovation to keep their national education competitive, change across the board is almost inevitable.

Although mainly evolutionary rather than revolutionary, if measured from 2000—a point at which technology in university education was regarded as here to stay and virtual learning environments were almost ubiquitous—in the next few years these changes will be quite significant and will at least seriously modify how universities see themselves and how they operate. Viewed from the standpoint of those who believe that higher education has to be (mainly) face to face in small groups, this is undeniably disruption. For universities where residence and location are the main parts of their brand, this will require a serious rethinking of how to project quality and academic community without those aspects being the underpinnings. However, 'stickiness' in traditional pedagogies, the large legacy of buildings and facilities designed with a different vision of teaching and learning in mind, existing interlocked curricula and reward systems skewed towards research do not suggest an easy transition to a new HE model (Johnson et al., 2014, p. 20).

Finally, the move to fully online should not be taken automatically to mean a substantial change in pedagogies, although in very many Western universities the old purely didactic transmission model has been weakening, due to funding for innovation, requirements of quality assurance processes to defend teaching practices, the work of university academic development units and a new generation of university teachers with personal experience of more varied HE and comfort in using technology everywhere. MOOCS demonstrated the resilience of traditional course design, even as they offered a test-bed for experimentation.

What about innovative disruption, however? Have MOOCs, with any of their various meanings, shown any signs of displacing and replacing traditional universities as providers of higher education? And how might they do that?

This is a tougher call to make and depends very much on conditions in individual countries. In countries where HE is lightly regulated, new providers can enter the market and compete with universities for the degree and lifelong learning markets (BIS, 2013; UUK, 2010). In countries with very tight state control on HE and with little positivity towards new providers, especially from outside their borders, very little will change in terms of competition for local universities (Lester, 2013). Clearly this analysis is very location-orientated—that

is, it is couched in terms of a new HE provider being physically resident in a particular country—whereas the affordance of digital education is that this restriction is removed. MOOCs are a clear example of mass, digital, transnational HE, and might be assumed at first glance to be free to operate anywhere, but even here one could see some of the restrictions of regulatory processes (Lumb, 2014; Anderson, 2014).

A softer but vital form of regulation is recognition of the degree (or credits) for further study or for employment. It may not be possible or desirable to prevent citizens taking online studies from outside state borders, but their value may be significantly decreased if they are not recognized as portable. On the one hand, in this area traditional universities with a reputation and a physical base may fare better in attracting citizens beyond their borders than might purely digital new entrants. On the other hand, global corporations have much stronger reach and capacity for publicity than do universities; some provide education themselves and some have taken over smaller education companies.

Online learning is an example of Christensen's 'sustaining innovation', where incumbents adapt to the changing needs of existing 'customers' (Christensen, 1997). So too, arguably, are CBE and RPL, although they all also address new customers who previously could not access the 'product'—in this case, the degree programme. However, 'innovative disruption' primarily affects areas like CPD, advanced training and lifelong learning which, while universities are beginning to develop capacity to deliver them, are not the universities' core business. New providers in the form of corporate universities (Grenoble Ecole de Management, 2015; Maybar-Plax et al., 2014)—of which there are more than 2,000 in the USA at present—and specialized training providers in the professions with a willingness to accept more non-formal qualifications and to operate on demand and all year round are a serious challenge to the option for universities to grow this income-generating business. More innovative pedagogies and course designs might draw learners from traditional courses, and MOOCs demonstrate how deeply these are embedded in academic thinking.

Simpler offers (for example, the module or short course) are also part of innovative disruption for universities, moving them away from the well-polished, longstanding product (the degree). At present, most universities that offer MOOCs do so in parallel with, rather than integrated with, their degree or CPD businesses. New providers, with a sharper eye on the cost-benefit balance are likely to offer MOOCs as a shop-window or direct route into paid-for courses as part of a developed 'freemium' strategy. This would challenge universities to rethink the purpose, and design processes for, their MOOCs. So MOOCs themselves, at present almost the prerogative of traditional universities, might become a potent tool for competition and even challenge the national HE brand.

Predicting the outcome is difficult, and analogies with the music, newspaper and book-selling sectors are not always helpful when considering higher education as a whole. However, in the new growth areas for HE, where an increasing number of universities are trying to expand their disposable income, online courses, CPD and advanced training are smaller 'purchases', perhaps less status-sensitive, where new providers may dominate by offering quicker, simpler and more exciting products. Open education credentialers might find a viable foothold here too. Universities as a whole would not cease to exist, but those with a weak economic base would be damaged, possibly fatally, as some were when experiencing the loss of international students during periods of currency fluctuations (UUK, 2014, p. 39; THE, 1998).

In summary, MOOCs have brought online learning in higher education into the limelight and raised its political impact. They have changed online, distance learning from a second-class activity to a signal of innovation, and they have taken many universities into new territory. Together with other forces pressing on universities, MOOCs are part of an irreversible process bringing disruption to the traditional model of higher education, based in time and location, but simultaneously these forces bring new global competitors for universities at a time when they are most financially chal-

lenged. Only time will tell how many universities are able to change quickly and survive (even thrive) and what balance will be reached between them and new providers.

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