

THE CULTURAL AND SOCIAL  
FOUNDATIONS OF EDUCATION

Series Editor: A.G. Rud

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THE EVOLUTION  
AND EVALUATION  
OF MASSIVE OPEN  
ONLINE COURSES

MOOCs in Motion

Leonard J. Waks



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Series Editor

A.G. Rud

College of Education  
Washington State University  
Washington  
USA

The Palgrave Pivot series on the Cultural and Social Foundations of Education seeks to understand educational practices around the world through the interpretive lenses provided by the disciplines of philosophy, history, sociology, politics, and cultural studies. This series focuses on the following major themes: democracy and social justice, ethics, sustainability education, technology, and the imagination. It publishes the best current thinking on those topics, as well as reconsideration of historical figures and major thinkers in education.

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# The Evolution and Evaluation of Massive Open Online Courses

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Leonard J. Waks  
Temple University  
Philadelphia, Pennsylvania, USA

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*To Veronica and Sjoma*

## SERIES EDITOR'S PREFACE

The Palgrave Pivot series on the Cultural and Social Foundations of Education seeks to understand educational practices around the world through the interpretive lenses provided by the disciplines of philosophy, history, sociology, politics and cultural studies. This series focuses on the following major themes: democracy and social justice, ethics, sustainability education, technology and the imagination. It publishes the best current thinking on those topics, as well as reconsiderations of historical figures and major thinkers in education. The cultural and social foundations of education are enjoying a rebirth. While studies of Plato, Pestalozzi and Dewey or analyses of the effects of U.S. Supreme Court decisions or world economic policies have always been important to understanding education, there is increased urgency for such work in today's educational climate. Education is seen in both the developed and the developing world as a means to social advancement and improvement of life. More than ever, there are questions about what kind of education should be provided and for whom. In addition, information technologies are rapidly transforming teaching and learning, while the political climate in many countries emphasizes market solutions to social problems at the same time that it moves away from democratic forms of schooling. Out of this rich context, the Cultural and Social Foundations of Education series was established to explore five themes important in schooling in short books by leading and rising scholars. I chose themes that are of perennial importance to the foundations of education, such as democracy and social justice, as well as newer emphases, such as technology and sustainability, that scholars are exploring. Democracy and social justice has been a

perennial theme in foundations of education and continues to have greater urgency. This series features works that examine worldwide issues related to democracy and social justice, from the effects of wealth and income inequality on schools in developed countries to the spread of democracy and social justice concerns to other countries around the world. Closely related to this is the second theme of ethics: issues of right, wrong, fairness, equity and equality in schools and educational practices worldwide. Increased attention is being paid to our planet's health, so how we can educate our children to accept and deal with environmental degradation forms the third theme. What it means to educate for a sustainable future is a question that foundation scholars are increasingly addressing. For a fourth theme, the impact of information technology upon education is enormous and not something that should be left just to technical experts in that area. There is a need for scholars in the cultural and social foundations of education to inquire critically about the claims made by technology and to inform us about new developments in this area. Finally, the arts and imagination are all too often pushed to the margins of schooling, especially today, and so this topic forms the fifth theme. Scholars of foundations have long championed the importance of this area: in the last century, John Dewey made a compelling argument in his late work, *Art as Experience*, for the importance of art and the imagination and especially for supporting the arts in educational practice. The volumes in the series include both single-authored and edited collections and they serve as accessible resources for those interested in foundational issues in education at all levels, particularly advanced undergraduate and graduate students in education and the social sciences who are being exposed to the latest thinking on issues of perennial importance and relevance to the contexts and practices of education worldwide.

## FOREWORD

Leonard J. Waks' *The Evolution and Evaluation of Massive Open Online Courses: MOOCs in Motion* is desperately required as a book that brings good sense and reasoned argument to a hyped discourse by examining in a tough-minded and thorough way the educational value of MOOCs before addressing a series of criticisms. This is a balanced approach that brings considerable experience and erudition to the table without prejudging the question of future development of MOOCs. Waks provides one of the clearest and sharpest evaluations of this technological phenomenon.

The *New York Times* dubbed 2012 the year of the MOOCs – Massive Open Online Courses. Suddenly the discourse of MOOCs and the future of the university hit the headlines with influential reports using the language of ‘the revolution to come’ (e.g., Barber et al., 2012; Ernst & Young, 2011). Most of these reports hailed the changes and predicted a transformation of the traditional university delivery of teaching and higher education through competition from private venture for-profit and not-for-profit partnerships. The development of MOOCs globally should be seen within the theoretical framework of postindustrial education, distance education and venture capitalism.

This has been especially evident in the United States where social media has become the dominant cultural phenomenon and where new era business models focus on for-profit institutions, for-profit online courses and learning management systems, where we find an increasing alignment of consortia of universities, big media and multinational publishing companies setting up new commercial synergies between MOOCs, e-books and video content. While MOOCs are an extension of existing forms of

distance education as an online learning approach with its home in the movement of open education, both increased scalability and new business models offer opportunities for innovation.

The existing players – edX, Coursera, Udacity, Udemy, P2Pu, Khan Academy, Open2Study – demonstrate a mix of for-profit and not-for-profit start-ups, with increasing development of MOOCs in Germany, Japan, Australia, United Kingdom, Brazil, New Zealand and China. The legislated change in California with the Online Student Incentive Grant programs focused on the right to educational access to prevent bottleneck problems with enrollments at the community college level. While the legislation has been put on hold to be reevaluated in the summer, the resulting draft legislation clarified objectives concerning the provision of instructional support and related services to promote retention and success with the accent on including adaptive learning technology systems that can provide significant improvement in student learning and learning measurement analytics. The temporary defeat of the Bill was in part the result of opposition by academic staff associations to private companies poised to play a larger role in the public higher education market. Those who opposed the Bill emphasized that MOOC courses suffer from high dropout rates, poor outcomes for students struggling with basic skills and high cheating rates. The critics also argued that MOOCs produce the worst outcomes for exactly those students they would most likely serve.

Len Waks ably clarifies two competing notions of openness that shape and differentiate two different and opposing concepts of MOOCs: the notion of openness that belongs to open markets associated with venture capital innovation and private provision of public education and a much older and traditional notion of openness that governs MOOCs as a public technologies based on user-generated logics to provide solutions to the distribution of scarce public goods in education.

Open education has involved a commitment to openness in the broadest terms and is seen by advocates as a political and social project. The concept of openness in regard to education predates the openness movement that begins with free software and open source in the mid-1980s with roots going back to the Enlightenment that are bound up with the philosophical foundations of modern education with its commitments to freedom, citizenship, knowledge for all, social progress and individual transformation.

These early origins and the basis for open education have been expressed in a variety of forms from the ‘open classroom’ to the ‘open

university'. Political, social and technological developments have taken place in parallel with the history of the movement of open education that have heightened certain political and epistemological features and technologically enabled others. These emphasize questions of access to knowledge, the coproduction, codesign and co-evaluation of educational programs and of knowledge, the sharing, use, reuse and modification of resources while enhancing the social ethics of participation and collaboration. Open education as a movement sits within the broader framework of the history of openness that brings together a number of disciplines and fields to impact directly upon the value of knowledge and learning, their geographic distribution and ownership, and their organization.

The movement toward greater openness clearly represents a change of philosophy, ethos and governance and a set of interrelated and complex changes that transform markets altering the modes of production and consumption, ushering in a new era based on the values of openness: an ethic of sharing and peer-to-peer collaboration enabled through new architectures of participation. These changes indicate a broader shift from the underlying industrial mode of production, from a productionist metaphysics to a postindustrial mode of consumption as use, reuse and modification where new logics of social media structure different patterns of cultural consumption and symbolic analysis becomes a habitual and daily creative activity. The economics of openness constructs a new language of 'prosuming' and 'produsage' in order to capture the open participation, collective cocreativity, communal evaluation and commons-based production of social and public goods.

The social processes and policies that foster openness as an overriding educational value is strongly evidenced in the growth of open source, open access and open education and their convergences that characterize global knowledge communities. Some observers argue that openness seems also to suggest political transparency and the norms of open inquiry, indeed, even democracy itself as both the basis of the logic of inquiry and the dissemination of its results based on concept of the open society and open government that aims to promote strong citizenship participation.

With the advent of the Internet, Web 2.0 technologies and user-generated cultures, new principles of openness have become the basis of innovative institutional forms that decentralize and democratize power relationships, promote access to knowledge and encourage symmetrical, horizontal peer-learning relationships. In this context, radical openness is

a complex code word that represents a change of philosophy and ethos, a set of interrelated and complex changes that transform markets, the mode of production and consumption, and the underlying logic of our institutions. It is not clear at this stage whether or how MOOCs will advance these values.

The theory of openness points to fundamental differences between the logic of industrial systems and that of information systems. Computer-based information systems embrace all forms of automation, expert systems, search engines, management information and processing systems that include both hardware (monitor, processor, printer and keyboard) and software (the programs), together with databases and networks that make up what is known as the information technology platform. These can provide truly global systems based on algorithms that have a kind of scalability that dwarfs the old assembly line production.

Social media differ from industrial media: social media are based on Internet-based applications that build on the ideological and technological foundations of Web 2.0 and enable user-generated content. In this sense then, MOOCs might be seen as a form of industrially scaled automation of the teaching function that uses Internet platforms to deliver content globally. MOOCs understood this way are based on the traditional one-to-many broadcast principle rather than the many-to-many, horizontal peer-learning structures. The major pedagogical question is to what extent massively large online classes permit or encourage peer learning or interaction. This book offers the necessary tools for approaching this question.

I recommend Leonard Waks' book on MOOCs as urgent reading for all educators, policy-makers and university administrators. He clarifies the issues in a nonpartisan way and provides a crisp account of the major issues facing us at this juncture in the MOOCification of the academy.

—Michael A. Peters,  
Professor, University of Waikato (NZ)  
and Emeritus Professor,  
University of Illinois  
Urbana-Champaign, US

## PREFACE

MOOCs are free or low-cost Internet-based university courses and near equivalents. If you are holding this book in your hands, you are almost certainly familiar with MOOCs, or Massive Open Online Courses, and you may have even sampled one or more of them. The first large MOOC platforms were introduced, amid great fanfare, in 2012, and MOOCs rapidly spread throughout the world. MOOC leaders heralded a new age – a MOOC ‘revolution’ that would ‘level the higher education playing field’ by making the best courses from the best professors at the best global universities accessible to anyone, anywhere, with an Internet connection. The *New York Times* proclaimed 2012 the ‘Year of the MOOC’.

Based on the early MOOC prototypes, educators and the general public joined the discussion and chose sides; MOOC founders hyped their prototypes, while critics discovered serious flaws. Attitudes hardened about the educational and occupational value of MOOCs. By 2013, the MOOC critics held the field. Dramatic failures, negative research findings and sharp critiques put an end to the MOOC hype. By the end of 2013, academics and journalists had declared MOOCs ‘dead’.

As Mark Twain had quipped, however, the obituaries were premature. Somewhat under the radar, MOOC producers were improving their original prototypes and responding in creative ways to the negative findings and criticisms.

In this book, I reconsider the educational and occupational value of MOOCs based on developments since 2013. My goal is to break down hard pro vs. con attitudes about MOOCs. To that end, I explore some

developments in the world of MOOCs that point to new educational and occupational possibilities. I then reconsider MOOC criticisms in light of these. If I could sum up my message in a single sentence, it would be this: MOOCs are in motion – in a continuous process of change and improvement. Consider these statements from MOOC leaders:

MOOCs will continue to change so you can't base a policy argument on current MOOC models – Jonathan Haber

There is no reason why a future MOOC should resemble anything we are currently familiar with – Keith Devlin

People are going to build stuff in a few years that is going to make today's MOOCs look fairly pathetic – Armando Fox

In a year we will be talking about something other than MOOCs – George Siemens

Instead of dividing into pro- vs. anti-MOOC camps, educational thinkers and practitioners should give MOOCs space to develop and mature – and to morph into something new and different, and through a process of social construction, to enter into our changing educational arrangements. Meanwhile, we should focus our critical attention and research on positive and negative features of *particular* MOOCs and MOOC models in their shifting political, economic and geographic landscapes, and withdraw from over-general praise or condemnation (an excellent survey of the current environment can be found in Bonk et al., 2015).

In the following chapters, I start by examining the nature of educational value, in order to establish a solid basis for evaluating MOOCs (Chap. 1). I then outline the crisis situation prevailing when MOOCs entered the educational situation (Chap. 2), provide an overview of MOOCs (Chap. 3), consider whether MOOCs can generate ‘world-class’ – or even merely adequate – primary educational benefits (Chap. 4) and whether and how MOOC-based education can, through badges, certificates or transfer credits, be translated into job qualifications comparable to college diplomas (Chap. 5). The book concludes (Chap. 6) by describing in detail how MOOCs can be beneficial for both contemporary young people and the colleges and universities they attend, as well as by supporting new ‘higher education 2.0’ arrangements such as competency-based education, nano-degrees, digital

portfolios and self-directed degree equivalents that may prove more suitable to the information age.

So let's now get started with the fundamental question: just what is educational value, and what must MOOCs achieve to be educationally valuable?

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## CHAPTER 1

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# MOOCs and Educational Value

**Abstract** The term ‘educational value’ may be used to refer to several distinct kinds of value, which fit together in a complex pattern. This chapter reviews the most important kinds of value and then constructs a conception of educational value suitable for assessing the value of MOOCs as educational instruments. The key kinds of value of enduring importance in education are *technical value* – being *good at* various intellectual and practical arts, and *use value* – being *good for* some end. One subspecies of use value – *beneficiality* or *being good for the good of a being* – is of particular importance. Good education conduces to technical goodness that benefits learners. The book then addresses the twin questions: can MOOCs contribute to goodness at intellectual and practical arts, and are MOOCs beneficial – in the broadest sense – for learners?

**Keywords** Value · Educational value · Pleasure · Educational benefits

## EDUCATIONAL VALUE

The 2012 MOOCs were early, and undeveloped products – prototypes issued in Beta for feedback and further development. In the last 3 years, the basic MOOC model has undergone many developments – most of them somewhat under the radar. Change continues and is unlikely to slow down anytime soon. Some leaders say that in a few years we won’t even be

talking about MOOCs – MOOCs will have morphed into something new and unexpected. Nonetheless, some basic outlines of MOOC education are now emerging and we may begin to consider the overall *educational value* of MOOCs.

The term ‘*educational value*’ may be used to refer to several distinct kinds of value.<sup>1</sup> These fit together in a complex pattern, which I discuss later. For now, I focus on the main varieties of value.

### *Instrumental Value*

First, we speak of *instrumental* value, in the sense of the goodness of something as an instrument or tool or agency. Education, like all human arts, makes use of such instruments. A school or college, a course or textbook, a computer or software package, a pedagogy considered as *a way of teaching* – these are all tools employed to achieve educational aims. MOOCs are a new kind of educational instrument, and so we can consider their value as instruments for achieving educational ends.

### *Technical Value*

Second, the primary end of education may be considered the fostering of goodness *at* various activities and arts – reading and listening, analyzing and criticizing, doing sums and calculating, conducting inquiries, making works of art and literature, designing and building homes, healing the sick, teaching children and so forth – by employing knowledge, understanding and technique. This kind of value we may call *technical* value (from the Greek *techne* – craft), by which I mean goodness *at* a skill, technique, craft, practice or art. This is the kind of goodness involved when we speak of a good piano player, carpenter, chess player, lawyer, artist, student, teacher, planner or manager. People can have talents for certain skills or arts, and in developing these, and becoming good at them, they typically increase not only their levels of performance but their enjoyment of life. We can even speak of the art of living, the complex art of shaping a flourishing and contributory life, and consider the role of education in the development of this art.

One important feature of many skills and arts is that they are in practical terms unbounded – there is no final perfection; the good chess or tennis player, architect or scientist, painter or pianist, doctor or lawyer, can keep growing and improving – getter better – throughout life. Similarly, a

person can grow in the art of living itself. Typically, the better people become at their arts, the more they enjoy them, and the more they enjoy them, the more they practice them and improve their performance. This is sometimes referred to as ‘The Aristotelian Principle’. Schools and colleges can introduce young people to these arts, though it takes many hours and years of out-of-school informal practice and supervised performance at them to improve at and master them.

When people become good at a skill or art, they often seek to develop it further, and come to identify with it. A person good at gardening or baking pies may come to consider herself a gardener or pastry chef. Such activities are often institutionalized; there are clubs, magazines, contests and so forth to bring practitioners together, to provide information, training and recognition. Many are organized into trades and professions, and in this way linked to the economy, to remunerative work, and through this to the support of life and overall well-being.

Technical value is central to education. The *primary* point of education may be the facilitation of technical value, of learners’ getting *good* or at least getting *started at* and getting *better at* a number of arts. This may be what Richard Peters (1968) meant in stating that ‘education is initiation into worthwhile activities’. At first, young learners know little about such activities as reading and writing, calculating, making art, explaining events and so forth, but through education they are brought into these activities, get better at them and learn to enjoy them both in themselves and for usefulness. They come to identify with some of them – to see themselves as, for example, readers, writers, computer nerds, gardeners, as well as future teachers, nurses, doctors, lawyers, craftsmen, artists, architects or engineers.

MOOCs are unquestionably one means of conveying knowledge. Knowledge, however, is for the most part merely the working capital of skills and arts, though of course the creation and utilization of knowledge can be arts-in-themselves: the arts of scholarship. The architect, mathematician, historian, home builder, doctor, lawyer or teacher, however, does not in general acquire knowledge for its own sake but for its use in the performance of an art – designing a home, solving an outstanding problem, healing the sick or teaching the young. No doubt, there are a few individuals who do love merely to acquire knowledge for its own sake – outside of any contexts of use – to take pleasure merely in their knowledge and its demonstration. But we tend to disparage them, call them book-worms or condemn them as show-offs or know-it-alls. Mere storing up of knowledge is a perversion of learning.

When John Dewey (1916) speaks of education as growth, he frequently adds ‘in powers or capacities’. In the terms here employed, Dewey is saying that education is for the sake of technical goodness, and that this kind of goodness has no limits. The whole point of education, he is saying, is continual improvement in chosen avocational and vocational arts, leading to continuing success and enjoyment in life performances, many of which also contribute directly to the good of others, so as to be motivated to improve them even more without end. When Dewey says there is no end of education outside education, he may be taken to mean that education can be conceived in terms of this limitless process.

MOOCs automate and scale up the main components of instruction; one important question is whether, and in what ways, they can contribute to technical value – helping students in getting better at intellectual and practical arts – without live teaching.

### *Hedonic Value*

**Hedonic Value** is the value of pleasure, enjoyment or satisfaction. *Passive pleasures* are those derived merely from *undergoing* experiences or *having* things – watching television, enjoying a new sports car. *Active pleasures* are those derived from *doing* things – playing chess or teaching a class or directing a play. *Satisfactions* are experiences of completeness, as when a person has been acting to attain an end and succeeds in achieving it completely. Satisfactions are akin to what Dewey calls *consummatory* experiences.

In education, hedonic value accompanies many kinds of learning activities. With respect to passive pleasure, teachers can be highly entertaining and lectures fascinating. Indeed, for many students, the main criterion for a course being a good course is that it provides passive pleasure.

Passive pleasures have little *educational* value, however. They do not build powers, and they rarely even add up in their own terms; a person can have one pleasurable entertainment after another from morning to night and while enjoying each, may end up feeling deeply unsatisfied, feeling that he ‘wasted the whole day’. A life of passive pleasures is a wasted life. Further, passive pleasures can have an addictive character. One can watch mindless television, shoot aliens on computer screens, eat rich foods or ogle pictures of pretty girls (or boys) endlessly and become upset or even violent when such pleasures are denied. Such addictions create roadblocks to all significant life achievements.

Active pleasure accompanies activities in which learners are engaged – where learners are guided either by their own ends or ends they can freely embrace. When this happens, the learners *like* what they are doing. Examples in a school or college may include investigating a new topic, problem-solving or performing in a play or concert.

Finally, at the completion of educational episodes, students and teachers may feel satisfied. Education has a specific aesthetic dimension, in so far as it involves active engagement that leads up to consummatory experience.

Hedonic value is an important long-term result of a good education. A college student can engage in, for example, public speaking, discover a talent for it, join the debate club and develop the art of argument. Later this student may become a lawyer, love his work and feel satisfied. A line attributed to Confucius states ‘choose a job that you love and you’ll never have to work a day in your life’. Active pleasures are in this way the *building blocks* of the good life.

### ***Use Value***

A fourth kind of value is use value, the goodness of something *for* some purpose. A good textbook (instrumental value), for example, may be good *for* use in a course, and also *for* reviewing a subject, or preparing *for* an exam (use value). Another textbook, however, might also be a very good one but, for example, too densely packed with information to be useful for review or exam preparation. In that context, the latter has little use value. Similarly, a course may be a poor course but still good (useful) in preparing one for one’s major field (as even a mediocre statistics course might be good for the study of economics).

John Dewey (1938) appears to emphasize use value as a component of educational value. He states that the educative value of an experience lies in the two features of interaction and continuity. He may be taken as saying that first, the experience has to *engage* learners; they have to *interact* with learning materials, find in them something related to their own ends or even better, provide opportunities for directly pursuing and achieving these ends. Engagement in itself is a form of *active* pleasure. It is not sufficient for engagement that the learner merely enjoys the experience passively, is amused, entertained or pleased by it. Further, the necessity of engagement for educational value implies that the learner’s carrying away something from an encounter that can subsequently be demonstrated on a test is quite irrelevant to educational value.

Second, the experience must be *continuous* with the life of the learner. This seems to mean it must be *useful for the learner*, drawing upon previous learning and contributing to the buildup of powers and capacities brought forward cumulatively into successive pursuits of ends. In other words, in being continuous, an experience is educative by being good (*useful*) *for* the ongoing buildup *of* technical goodness – goodness *at* some skill, technique or art, the practice of which benefits the learner and other people.

### *The Beneficial*

One particular kind of use value is the usefulness of a thing for the *good of a person* – what we call the *beneficial*. *Beneficability* is thus an important *subtype* of use value. Think for a moment of the role of the benefits office in a firm. It may organize pensions, for example, which provide financial *support for* a retired person's wants and needs – food, clothing, entertainment and all the things such as active pursuits that make up or constitute a good life. Insurance, again, provides financial support in times of need, but on a more positive note, also provides a sense of security, which may be 'priceless'. These benefits are not *building blocks* or *constituents* of a person's good – they are its underlying *supports*.

Many things in life are beneficial. For example, vacations may be enjoyable (passive pleasure), but in the relief they provide from the stresses of work, they are also beneficial – they *do the person good*. Even a dissatisfying vacation – one that was not as enjoyable as expected – may nonetheless be beneficial – it may give a person a chance to recover from the stress of work. We may say that while it was not a particularly good *vacation* (instrumental value), it was *good for him* (i.e., good for his well-being).

In educational evaluation, beneficability is central. Regardless of how good the courses taken are, as courses, or how good the teachers or techniques employed are, if the person's education has not been beneficial – that is – *good for the person's good*, supplying the supports for the person's well-being – then at the very least the education has been unsatisfactory.

## TWO TYPES OF EDUCATIONAL BENEFITS

Education is beneficial – it contributes to well-being – in two major ways. In one frequently cited account of educational benefits, Thomas F. Green et al. (1980) distinguishes among primary educational benefits, social

(noneducational) goods and secondary educational benefits. Primary educational benefits are the direct result of educational treatments, such as knowledge, skill and attitudes that underlie technical value – getting and being *good at* arts and activities. Secondary educational benefits are credits, certificates and diplomas awarded by educational organizations on the basis of primary educational achievements. Learners are awarded these benefits on the basis of success in various courses or the demonstration of relevant knowledge and skill. In modern developed nations, social goods are typically obtained through possessing secondary educational benefits serving as occupational credentials or qualifications. Social goods include income, wealth, and social position and recognition.

This account of benefits is deeply insightful, but inadequate. Green acknowledges that he is using the term ‘benefit’ in a way that does not imply the value judgment that such ‘benefits’ are actually beneficial for particular learners. The knowledge, skill and attitudes resulting from educational treatments, he says, are simply what educators *call* educational benefits – the things designated as the intended outcomes of the educational system. Furthermore, the secondary educational benefits – the credits and diplomas – are, as Green explicitly states (p. 48), only beneficial insofar as they can actually be cashed in for things more directly desired – income, wealth and recognition. When they cannot be cashed in in this way, they are not beneficial at all. So both of Green’s types of educational benefits have to be further unpacked, in particular social contexts and for particular individuals, in terms of what is actually beneficial, or good for individual learners’ goods.

So, first, education can be *directly* beneficial. The principal aim of education is growth in powers and capabilities – in what we are calling technical value – the goodness involved in being *good at* activities – having the right skills, techniques and dispositions. We learn and thus get better *at* various social, occupational, intellectual and self-regarding arts. As we get better at these, we come to enjoy their practice more, and then to dedicate ourselves to further – potentially boundless – growth in them. With dedication, we move beyond the modest capabilities acquired in school and college and become masters of these arts. *We build our lives out of the practice of these arts and the active pleasures derived from them.* The active pleasures and satisfactions we derive from their practice become the *constituents* or *building blocks* of our good.

Second, education can be *indirectly* beneficial through the provision of secondary benefits – the degrees, diplomas and certificates – used as

qualifications for advantageous occupations and social positions. Such occupations and positions are satisfying in themselves, especially as they provide opportunities to exercise and improve in the performance of practical arts. But they also grant holders, as they master these arts, access to greater income and social position and prestige and, with these, access to safer and more commodious neighborhoods, better schools and more influential people as coworkers and neighbors.

Education can also fail to be beneficial in these two major ways. First, and most obviously, it can simply fail, period. It can fail to engage students, who in turn will not learn much or become good at anything. It can fail as well when the technical goodness it fosters is unbalanced, where, for example, students get good at one or two academic or practical skills and arts but not at the right number or in the right combinations to promote success at living. We may think here of the football star who is not large or quick enough to get a professional offer and has few other skills to fall back on. Or the star liberal arts or science major who upon graduation becomes *lost* – lacking skills in the arts of living and thus unable to orchestrate academic and other achievements to form a practical life plan. Being good *at* this or that is not in itself sufficient to underlie a good life. To be beneficial, an education has to be to a certain extent balanced or well-rounded.

Second, education can fail if it provides no secondary benefits – that is, if it generates no credentials such as diplomas that can serve as qualifications. It can also fail if the secondary benefits are worthless – when they are not recognized as qualifications – or if they no longer provide the *expected* access to occupational and social positions they once did. A good example is the person who goes to trade school to become a printer, but graduates to find that word-processing computers and printers have largely wiped out the printing trade. Or the student who gets a Ph.D. and then finds no opportunities because the academic job market in her field has shut down. Such a doctoral graduate might then decide to go to law school to get a more ‘practical’ degree, only to find that the law job market is in no better shape. After a decade of higher education, the student is ‘no better off’.

## EDUCATIONAL BENEFITS AND THE SOCIAL CONTEXT

For the last 100 years and more, we have lived within what may be called an industrial–professional culture. An ever-increasing number of young people have graduated from high school and gone on to college.

Occupational and social positions have been allocated by academic credentials. The diplomas of high school graduates qualified them for decent industrial and commercial jobs; those of college graduates prepared them for the professions. In general, the higher level of schooling a person attained, the more desirable occupational and social position they achieved. Conventional primary educational benefits converted readily into noneducational social benefits through the mediation of secondary educational benefits – diplomas that served as qualifications.

Especially at the pinnacle of American industrial power, from the end of the Second World War through the early 1970s, unionized industrial and commercial workers enjoyed ‘middle class’ status. They owned homes and cars and televisions, and enjoyed vacations. Their jobs became safer to perform, and they enjoyed some measure of job security. They gained health and pension benefits. Those on the professional level had access to homes in better neighborhoods. Their kids went to better schools. Their work was interesting and led to cognitive and social growth. They associated with more influential people and could leverage social capital for additional benefits. In this landscape, the benefits of education were clear and could be more or less taken for granted.

But this industrial-professional culture has now broken down. It has been replaced by a culture of high-tech information and communications, and contingent work in the global economy. Many industrial and professional tasks previously performed in American firms exclusively by Americans have now been off-shored or programmed into software. Many jobs have been eliminated, with full-time employees replaced by part-time ‘contingent workers’ hired on the basis of skills that are immediately needed, rather than degrees and diplomas. Other jobs have been radically de-skilled, and their tasks can now be performed by a low-skill operative looking after high-tech machines.

## THE EDUCATIONAL VALUE OF MOOCs

This brings us to the immediate context of the evaluation of MOOCs. Evaluative questions do not arise in a vacuum. The need for evaluation arises when an individual or group faces difficulties that block action, where alternative paths are emerging and we are unsure how to proceed. The value of formal education has to be rethought in this new culture, and emerging educational tools, techniques and arrangements have to be evaluated.

Today, our institutions of higher education are facing a severe crisis. The crisis is described in some detail in the next chapter. For now, it suffices to say that changing government priorities and resources have led in the United States to greatly reduced funding for colleges and universities. The burden for the support of college education has been shifted to students (and their families) who now have to take out loans to pay for tuition, and who often leave school – with or without their diplomas – with massive and unsustainable debt.

Meanwhile, attractive job opportunities for graduates have been reduced as firms have replaced young domestic workers with low-cost overseas labor and technology. The result is that students are now paying more for less – more tuition dollars for less socioeconomic benefit. The ‘value proposition’ of a college education is less inviting. As a result, since 2011 overall enrollments – and tuition revenues – have been declining. Universities, for their part, have high fixed operational costs – especially building maintenance and the salaries of tenured faculty members and administrators – and as students withdraw, many colleges and universities now find for themselves in deep financial trouble. Their credit ratings are falling, and they cannot borrow to pay for operating costs at market rates. Some have been forced to close their doors (Moody’s [2013, 2015](#)).

MOOCs entered the scene in the midst of this crisis situation. The founders of the leading MOOC platforms such as edX and Coursera promised to solve these problems by making free, world-class education available for all those seeking it in both developed and developing nations.

The evaluative question before us, then, is whether MOOCs are good instruments in the current social and economic situation for generating technical value benefiting learners and society.

## NOTE

1. My treatment of the concept of value derives substantially from G. H. Von Wright ([1963](#)). The extension of his framework to educational value is my own.

## The Economic Crisis and the Rise of MOOCs

**Abstract** When the major MOOC platforms were established in 2012, the economy and higher education were in crisis as a result of the 2008 financial collapse. Also, due to the long-term shift from industrial to information society, the nature of work, the skill base and organization of the labor force, and the production and utilization of knowledge were all changing. Middle-class jobs were disappearing and middle-class wages were no better than stagnant, while college tuition and student debt skyrocketed. Students found themselves paying more in tuition for fewer benefits in expected pay-offs. Thus, starting in 2011 American college enrollments began to decline, and some colleges were driven to insolvency. MOOCs gained rapid visibility by promising to resolve the high education crisis by making free, ‘world class’ higher education available for all.

**Keywords** Information society · Work · Skills · College tuition · Transaction costs · Gig economy

### INTRODUCTION

In this chapter, I examine the erosion of middle-class jobs and the skyrocketing cost of college tuition, especially in the United States. These factors have reduced the benefit/cost ratio of private investment in higher education, leading to a decline in college enrollments since 2011

and driving many colleges and universities to the brink of insolvency. According to a recent Moody's report, 'College enrollment across the board has trailed off since reaching peaks before and during the recession.' Roughly 40 % of universities estimate lower total enrollment this fall compared to the fall of 2010. Susan I. Fitzgerald, associate managing director at Moody's and coauthor of the report, added: 'There is a material portion of this sector that is experiencing a lot of pressure. We expect to see more college closures and consolidations' (Douglas-Gabriel 2015).

The crisis, broadly speaking, has resulted from the shift from industrial to information society. Information products, services and technologies have supplanted the products of heavy industry such as cars and consumer appliances at the heart of the advanced economies. This shift has brought about fundamental changes in the nature of work, the skill base and organization of the labor force and, consequently, in knowledge production and utilization.<sup>1</sup> This has undermined the settled social structure and the 'social contract' in advanced postindustrial societies and, as a result, the settled pattern of education. The shift has not been entirely technical, however; it has been guided by economic and political elites in their capital accumulation efforts, and it will require political as well as intellectual and technical activity to recreate a social and educational contract for our times.

Coursera, edX and Udacity offered their first massive online courses in 2012, at the height of this crisis. Udacity's founder Sebastian Thrun, the Google AI Engineer and Stanford Computer Science professor, first considered the possibilities of scaled-up learning after attending Salman Khan's 2011 TED talk (The Advisory Board Company 2012). He had captured the news headlines with his Kahn-inspired Fall 2011 Stanford Artificial Intelligence course – Computer Science 221 – that enrolled 160,000 students from 90 countries in what one student dubbed 'the online Woodstock of the digital era' (Leckart 2012). The initial Coursera, edX and Udacity MOOCs, hardly more than prototypes, promised an educational 'revolution' that would resolve the educational crisis by making world-class education free and available for all with access to the Internet. They instantly grabbed the media's attention – The *New York Times* called 2012 'The Year of the MOOC'.

## EDUCATION, SOCIETY AND THE ECONOMY

It is important right from the start to understand that social and economic positions have not always been allocated by education-based credentials. Until the civil war, most Americans worked in agriculture, either as

farmers or as agricultural laborers. Land and agricultural know-how were passed down from generation to generation. The Puritans insisted on literacy for all, because as Protestants they grounded religion in a knowledge of scripture. While they believed that God-fearing Christians would be more diligent and productive members of society, the Puritans made no direct connection between schooling and workplace skills.

The early Massachusetts schools – using a hornbook, psalter and bible – taught basic literacy and religion to children whose parents could not do so. A few young men attended a Latin grammar school to prepare for college and a career in the ministry or – in a few cases – as background for the study of other learned professions. A few ‘academies’ taught practical subjects, including bookkeeping, navigation and surveying. Some families sent their children to live and work with other families, often relatives, to learn trade skills. There were, however, no *systematic* pathways between school and work.

This began to change as the industrial revolution, initiated in England in the 18th century, extended to the New England and Middle Atlantic states. Benjamin Franklin reimagined the college as a training ground for business, technical and government elites and educators. His 1751 plan for the Philadelphia Academy, which evolved into the University of Pennsylvania, included programs in the useful and practical arts. This plan was rejected by the Academy’s trustees. American universities would only embrace occupational programs more than a century later, after the civil war.

## WORK AND EDUCATION IN THE INDUSTRIAL SOCIETY

The link between education and the workplace became more firmly established as the first automated American factories, the Massachusetts textile mills, were introduced in 1813. By the 1820s, factory automation had spread throughout New England. Industrial firms were also by then producing agricultural implements, clocks, guns and sewing machines on a mass scale, employing both factory operatives and educated workers – bookkeepers, technicians and managers. The industrial elites appealed to the colleges to offer technical and commercial courses, but the colleges soundly rejected their pleas. In the famous Yale Report of 1828, a committee of the trustees and faculty declared:

Professional studies are designedly excluded from the course of instruction at college, to leave room for those literary and scientific acquisitions which,

if not commenced there, will, in most cases, never be made. They will not grow up spontaneously, amid the bustle of business. . . . As our course of instruction is not intended to complete an education, in theological, medical, or legal science; neither does it include all the minute details of *mercantile*, *mechanical*, or *agricultural* concerns. These can never be effectually learned except in the very circumstances in which they are to be practiced. The young merchant must be trained in the counting room, the mechanic, in the workshop, the farmer, in the field.<sup>2</sup>

In response to the narrow view of vocational education maintained by the colleges, education, the New England elites created public high schools – a new invention – to train workers in applied sciences and practical arts; the first of these opened in Boston in 1819, following a plan conspicuously similar to Franklin's plan for the Pennsylvania Academy. For more than 50 years, the high school stood as an alternative to the college as a form of higher education. Initially controversial because of the additional tax burden they imposed (Katz 1968), public high schools nonetheless spread during the next 50 years throughout New England and the expanding West.

The increased availability of capital and rail transport, and the increased scale of production, after the civil war created demand for many new kinds of educated workers: agronomists and plant pathologists, agricultural and industrial chemists, industrial and civil engineers, transport and industrial managers, industrial designers, accountants and corporate lawyers and others.

By the 1870s, the new state colleges organized during the war under the provisions of the Morrill Act – Michigan State, Penn State and the University of Iowa, Michigan and Cornell – as well as the old retrofitted liberal arts colleges – Harvard, Princeton, Brown, Penn and Yale – began to open departments or schools of applied sciences, engineering and commerce to supply the new needs for professional workers. Some universities had already opened law schools before the civil war, but only in the late 19th century did formal legal education become a standard element of legal training.

The new post-civil war universities provided a standardized system of training and certification for educated workers. Firms could go to the relevant professional and technical departments of the universities and find graduates with the standard knowledge base and a diploma to prove it. This reduced the costs and risks of hiring professional workers. The

modern notion of the professional – as a worker with a university-based professional qualification – was born (Bledstein 1976).

By 1890, colleges were gaining a monopoly on training educated ‘professional’ workers. An influential report by the school and college leaders, chaired by President Charles Eliot, proposed reshaping the educational system into well-defined elementary, secondary and tertiary levels (National Education Association 1894). The high school, initially formed to provide educated workers for business and industry, evolved into an intermediate step on the path to college and professional school. After the passage of the Smith-Hughes Vocational Education act of 1917, the mission of the high school was reshaped to add general education for industrial workers to the college preparatory course, and the rate of participation in both high school and college accelerated.

Starting in the late 19th century and accelerating in the early decades of the 20th century, new techniques of labor control, operating under the label ‘scientific management’, were introduced into industrial production – first in the United States and then throughout the industrial world. Management consultant Frederick Taylor and his associates led this movement (see Taylor 1967/1911). They carefully analyzed the concrete steps in each industrial labor process and then simplified and reconstructed the processes so that they could be performed with a minimum of training. The rationale given for so-called Taylorist methods was that they improved industrial efficiency. More output could be generated per unit of time and per unit of labor input. More important, from the standpoint of management, Taylorist methods transferred direct control over labor processes from workers to managers. Instead of hiring workers who had acquired broad skills through formal or informal apprenticeships or long periods of on-the-job training, managers using these methods could assign the simplified reconstructed tasks to unskilled workers who could learn them at the highest efficiency in a matter of days or weeks. Such workers were readily replaceable; they could be paid a low wage and were in no position to bargain for improved working conditions. As the Marxist social theorist Harry C. Braverman argued in his magisterial *Labor and Monopoly Capital* (Braverman 1974), the concept of efficiency as employed in scientific management presupposed the exploitation of alienated labor. From the point of the capitalist owners and managers, the point of Taylorist techniques was to gain control over labor processes in order to generate the highest returns on investment.

De-skilling the industrial workforce was an ‘efficient’ means for this end. But, as Braverman put it, from the point of view of ordinary workers, who comprise the greatest part of society, the end of their life activities is not cheap products but their very humanity – the full growth of their distinctly human capabilities. Thus, from the point of view of society as a whole, de-skilling labor and radically reducing the contribution of work processes to the practical intelligence of the great mass of people is grossly *inefficient*.

The American working class, which increasingly suffered from industrial exploitation, saw its condition improved with Franklin Roosevelt’s New Deal. The subsequent buildup of the war economy in the early 1940s set the stage for U.S. economic dominance in the 1950s and 1960s. The United States had the only fully functioning industrial economy after the war, and with surplus capital, could lend money abroad through the Marshall Plan to be used for the purchase of American goods. The Soviet Union established its competing zone of economic dominance, laying the basis for the cold war. With the labor protections put in place by the new deal, and the global opportunities for profit, American firms were willing to pay higher wages and provide more benefits to recruit and retain industrial workers to dampen labor strife. Unionized workers entered the (lower rungs of the) middle class.

### *The Industrial Social Structure*

A pyramid-shaped social structure evolved after World War II, consisting of (i) a bottom rung or ‘underclass’ of ‘uneducated’ workers; (ii) a ‘lower middle class’ of high school educated, mostly unionized industrial, technical and commercial workers; (iii) a ‘middle- and upper-middle-class’ of college-educated professionals; and (iv) an upper class of capitalist owners and top managers.<sup>3</sup>

As recently as 1950, less than 5 % of the adult population over 25 years old possessed a college degree, and only 34 % had graduated from high school. The great majority remained in agriculture or the lower rungs of industry. But participation in both high school and college rose rapidly after the war. Any good job now required a good education – a high school education to become a ‘middle-class’ worker, and a college diploma or more to become a professional. The G. I. Bill brought young working class people to college campuses. By 1980, 17 % of 25-year-olds had bachelor’s degrees or higher, and almost 70 % had high school

diplomas (almost 80 % when we add in those who completed high school by age 30). And college enrollment continued to rise – by 2000, one in four American adults had a college diploma, but high school completion had plateaued around 80 %.<sup>4,5</sup>

The Industrial era thus built a massive education super highway. An ever-increasing fragment of the youth population completed high school and went on to college. Education promised a secure middle-class status.

## THE CRISIS OF WORK IN INFORMATION SOCIETY

This education-based social structure has now crumbled; the implicit social contract has been severely strained in the wake of globalization and the spread of computer information networks. Many ‘middle-class’ jobs have been lost to competitor nations, or outsourced to low-wage nations, or lost to computer information technology – performed by software or software-controlled robots.

### *Globalization*

Global trade goes back to prehistory. Globalization in its current phase began in earnest in the 1970s, accelerated after the fall of the Berlin Wall and the end of the cold war in the mid-1980s. It is now accelerating due to the spread of global information networks in the 1990s and Web 2.0 technologies after 2004. Each of these developments has led to the loss of steady middle-class jobs.

### *Multinational Firms and Foreign Competition*

The first step in the current globalization process was the growth of large multinational firms, characterized by strong command and control centers in developed metropoles in North America, Western Europe and Japan, with satellite firms situated elsewhere. These mega-firms have drawn increasingly on low-wage workers in ‘developing’ nations and have marketed mass-produced products throughout the world.<sup>6</sup> These firms set the developed economies into economic competition, giving rise to the war cry of education for ‘competitiveness’ that marked the Reagan administration’s educational policies as expressed in ‘A Nation at Risk’.

Some background is in order. The Second World War had destroyed the productive capabilities of Germany and Japan. After the war, the United States enjoyed an overwhelming domination of world industry.

By 1950, the other industrial nations were tooling up, but they did not make major inroads into U.S. markets until the 1960s and 1970s. The automobile industry was by far the largest employer in the United States in the mid-1950s – seven of the top ten employer firms made cars, car parts or fuel for cars.

But by 1990, one-third of all cars sold in the United States were Japanese, and the United States had lost more than 200,000 jobs in the auto industry – jobs with union protections, job security, benefits and middle-class wages. This decline is symptomatic of a very general decline in manufacturing employment.

### *Multinational Firms and Declining Employment*

As multinational firms turned to low-cost labor in developing nations, all major industrial nations shed manufacturing jobs. But the decline was faster and more dramatic in the United States. From 1970 to 2005, workers in manufacturing in Japan fell from 28 % to 18 %, a loss of 35 %, in Germany, from 40 % to 25 % – a loss of 37 %. But in the United States, the percentage fell from 25 % to under 10 %, a whopping loss of 60 %. Worse yet, the job losses actually *accelerated* throughout this period: while manufacturing employment declined just 3 % in the 1990s, it fell an astonishing 33 % from 2000 to 2009. Some economists have attributed this loss to a corresponding gain in productivity achieved through the use of advanced information and computer technology. But as Robert Atkinson, President of the Information Technology and Innovation Foundation, explained in 2014:

The real reason the U.S. lost 5.7 million manufacturing jobs in the last decade was...the decline in manufacturing output, which in turn was caused by U.S. manufacturing losing out in global competition. During the 2000s, 13 of the 19 aggregate-level U.S. manufacturing sectors, which employed 55 % of manufacturing workers in 2000, experienced absolute declines in real output...motor vehicle output decreased 45 %, textiles 47 %, and apparel 40 %. In other words, manufacturing establishments were producing less, and so...they employed fewer workers. (Atkinson 2013)

Because of the destruction of middle-class jobs for high school graduates, working families felt compelled to send their children to college, and college enrollments soared after 1970.

### *The Managerial Revolution*

#### *The Japanese Miracle*

Why were our competitors winning? In addition to producing reliable and fuel-efficient cars, Japanese manufacturers developed superior approaches to industrial engineering and manufacturing management. By the early 1970s, management guru Peter Drucker (1971) was lauding their distinctive management style, involving building consensus, sharing information and relying on worker knowledge, focusing on clear definitions of problem questions rather than applying analytic techniques to determine the best answers, and taking action by delegating it to those who best understood the problem and had the best plan for addressing it. Drucker emphasized that these features grew organically out of the Japanese culture and could not be emulated elsewhere.

By contrast, commentators sharply criticized American industrial engineering and management. Emma Rothschild's (1974) study of Ford (and by extension, all of Detroit) in the early 1970s focused on managers' narrow short-term thinking, denigration of worker knowledge and general laziness, bred by decades of domination without serious competition. Rothschild loaded her account with graphic descriptions of burned-out auto workers sabotaging shoddy vehicles.

Despite Drucker's cultural explanation of the difference between Japanese and American performance, Japan's management thinking had in fact been reshaped by its embrace of the quality management ideas of Americans W. Edwards Deming and Joseph Juran that had been ignored by Detroit. Their 'total-quality management' approach depended on all people in the organization making continual process improvements. It was clear to business commentators as early as the 1970s that America needed its own management revolution.

#### *Process Reengineering*

Braverman (1974) predicted as early as 1974 that the introduction of information and communications technologies (ICTs) in the field of white collar and professional work would lead to a de-skilling of such work as thorough as the early de-skilling of Taylorist methods in industrial production. This use of ICT was a major factor in the American response to the Japanese miracle. It took the form of 'business process re-engineering' – a method of ground-up redesign aimed to improve a firm's competitiveness by redesigning workflows and

business processes to reduce operational costs and improve customer service. Business Process Management (BPM) involves taking a fresh look at the organization, with all work processes reanalyzed and redivided to the most efficient, cost-effective suppliers. Process reengineering introduced economic rationalization into every pore of American business and industry, and, like Taylor's scientific management, this economic hyper-rationalization spread out into every sector of American life. By the mid-1990s, 60 % of all Fortune 500 companies claimed to have adopted reengineering (Hamscher 1994).

The reengineering Guru, Michael Hammer (1990) pointed to the Japanese redesign of automobile production as a demonstration that business processes could be radically transformed, not merely incrementally improved. Hammer argued that as computers and information technologies were adopted by American firms, they had been used primarily to 'automate' existing processes. Instead, ICT made it possible fundamentally to rethink how any business worked. Analyzed in this fashion, ICT made many existing processes – and the workers performing them – unnecessary. Hammer's motto for business process reengineering: 'Don't Automate – Obliterate'.

It is time to stop paving the cow paths. Instead of embedding outdated processes in silicon and software, we should obliterate them and start over. We should 'reengineer' our businesses: use the power of modern information technology to radically redesign our business processes in order to achieve dramatic improvements in their performance.

As an example of a successful reengineering effort, Hammer pointed to the redesign of accounts payable at the Ford Motor Company. In the 1980s, handling the accounts-payable function for Ford's North American operations alone required more than 500 employees. In Japan, by contrast, Mazda had only five employees working on worldwide accounts payable. At first, Ford set out to eliminate 100 accounts-payable jobs. But after rethinking the accounts-payable function from the ground up,

Ford didn't settle for the modest increases it first envisioned. It opted for radical change – and achieved dramatic improvement. Where it has instituted this new process, Ford has achieved a 75 % reduction in head-count, not the 20 % it would have gotten with a conventional program.

And since there are no discrepancies between the financial record and the physical record, material control is simpler and financial information is more accurate.

In one fell swoop, using process reengineering, Ford obliterated 375 jobs. Regardless of its success in improving business processes, reengineering sharply reduced employment in manufacturing firms. Indeed, critics complained that reengineering was just a buzzword for large-scale layoffs. Thomas Davenport, professor of business at Babson College and one of America's top business consultants, an early BPR proponent, stated that:

When I wrote about 'business process redesign' in 1990, I explicitly said that using it for cost reduction alone was not a sensible goal. And consultants Michael Hammer and James Champy, the two names most closely associated with reengineering, have insisted all along that layoffs shouldn't be the point. But the fact is, once out of the bottle, the reengineering genie quickly turned ugly. (Davenport 1995)

The continued destruction of jobs after 1990 once again propelled increases in college enrollments, and fed the growth of for-profit 'convenience' universities for working adults.

### *From Multinational to Global Firms*

To source labor more efficiently in global labor markets, and to market in a more targeted way to the many distinct global markets, firms in the 1990s and 2000s began to rely on the entire global industrial and professional workforce, shifting from multinational to truly global firms. Maintaining and integrating basic command functions, they shifted many design and marketing decisions from the metropole, to be made or coordinated by peripheral partner or supplier firms.

The shift to 'full globality' has led to more efficient and targeted production and distribution, with both design and marketing functions more sensitive to local values and trends. This shift has generated the need for many local and regional professional and semi-professional workers at the periphery with greater discretion, and a corresponding reduction in the demand for professional services in the metropole. The truly 'global' firms of today have no real geographic 'centre' and weak binding ties to the metropolitan nations where they are nominally based.

### *From Mass Production to Flexible Production*

As production makes ever-greater use of computer-controlled technologies, the costs of small batch production, even fully customized production, decrease. Consumers, in different national and even metropolitan consumer cultures, can afford, and increasingly demand, more customized and less mass-produced products, reflecting shifting individual and cultural styles. Just as firms have been hollowed out by outsourcing labor, they have also done so by outsourcing production to flexible production firms – ‘Flextronics’ is the apt name for the leading one.

Just as mass production called for standard professionals with a standard education and knowledge base, customized production requires greater creativity, sensitivity to rapidly shifting styles, and utilization of ever-changing technologies of design, production, marketing and distribution. Firms can no longer rely on standard education and diplomas – whether earned decades ago or last year – to determine readiness to take on ever-changing challenges. While until recently more and more young people were going to college and earning diplomas, the diplomas’ value as a signal of task readiness has been rapidly declining. Firms now want workers who can get the immediate job done now, and they understand that this will be no indication that these workers can get tomorrow’s task done.

### *Stagnant Wage Levels and Persistent Unemployment*

Facing intense competition from foreign workers at all levels, the ‘middle-class’ workers in the metropoles have suffered from stagnant or declining wages and persistent unemployment, even after the recovery from the recent 2008 recession. In 1982, the average weekly wages and salaries of full-time workers were \$701, and slowly rose to \$728 in 1986 where it remained more or less flat until the end of the Clinton presidency, when it rose into the \$780s before gradually declining during the George W. Bush and Obama administrations, hitting \$776 in 2013.<sup>7</sup> When commentators speak of stagnant wages, this is what they mean.

A U.S. Bureau of Labor Statistics survey from 2015, labeled ‘employed, usually work full time’ reports that before the recent recession 122 million workers fell into that category in 2008, falling to 111 million at the depth of the employment crisis in 2010, but rising back over 120 million in 2015.<sup>8</sup> Recent gains in employment can, however, be misleading. A worker losing a steady professional job, and settling for

either steady work at a lower wage, or creating his or her own ‘gigs’ as a contingent contract worker (a so-called entrepreneur), may be ‘gainfully employed, usually full time’ yet nonetheless suffer from considerable under-employment in relation to education, training, prior job experiences and settled ‘middle-class’ expectations about wages and job security.

### *New Opportunities for Educated Workers at the Periphery*

As firms have shifted from multinational to fully global status, opportunities for knowledge work once largely confined to workers from the metropole become more available in the periphery. New opportunities have been created in fields from design and production management to bookkeeping, accounting and marketing. While diploma holders in all of these fields are abundant in the developed world, those with sufficient capabilities – with or without diplomas – are scarce in most developing countries. Meanwhile, firms in developed economies are seeking lower cost technical and professional labor and now employ foreign-born but U.S.-educated technical workers at a lower cost than demanded by domestic professionals. In the United States, these workers, holding H1-B visas until they acquire permanent visas ('green cards') by landing full-time jobs, replace high-wage domestic workers.

The business community talks about a ‘skills-gap’ to justify the turn to foreign workers, but many domestic workers could, with (or sometimes without) some additional training, perform these tasks – though they would demand a higher wage. H1-B visas are primarily a tool to drive down the wage rate of professional labor. The H1-B visa holders have an additional advantage – they retain connections in their nations of origin, and can communicate in their native languages with workers there. They are frequently used by firms to coordinate the work of low-wage workers in those nations with workers in the United States, enabling firms to shift even more tasks to low-wage labor in developing nations. Both the hiring of H1-B visa holders and their use as coordinators of offshore labor contribute to the downward pressure on domestic professional and technical employment levels and wages.

### *Global Communications Networks*

ICT further penetrated business and industry with the commercialization of the World Wide Web in the late 1990s, and the spread of Web 2.0

technologies after 2004. The result has been a further hemorrhaging of middle-class jobs and their reduction to ‘gigs’ – tasks for contingent workers.

How has Web 2.0 facilitated the growth of the gig economy? As Clay Shirky ([2008](#)) explained in his classic *Here Comes Everybody*, Web 2.0 has enabled everyone with an Internet connection to do two things: (1) make him or herself visible online and (2) to rapidly be located through search procedures and assessed on the basis of multimedia online products and demonstrations. Shirky labeled this situation ‘dual visibility’.

An excellent example of dual visibility is the model and actress Kate Upton. Upton was signed by the IMG agency in 2008, but industry insiders saw her as too ‘full-figured’ to be a cover girl. The head of IMG stated that ‘When Kate first came in, everyone at the agency thought I was crazy. She wasn’t “fashion” enough.’ In 2011, however, Upton posted a video of herself doing the dougie dance on YouTube. The video went viral. Almost overnight, Upton became a star, appearing on the Sports Illustrated swimsuit issue cover 2 years running – something no previous model had achieved.

‘We all know that social media now creates its own reality’, said Wayne Sterling, the publisher of Models. com, an industry Web site. ‘If you become a YouTube star among teenagers, you have even more recognizability than a TV star’, he said. ‘Kate Upton is the perfect example of that’. ([Trebay 2012](#))

Upton accomplished through ‘dual visibility’ what her agency could not. Despite her rejection by fashion industry elites, Upton gained visibility among firms seeking young eyeballs through her YouTube videos, and they demanded Upton for their campaigns.

YouTube is not the only channel providing visibility. LinkedIn, Blogger, Facebook and Twitter all offer efficient channels for demonstrating capabilities directly to online audiences and firms. This is now impacting higher education, as dual visibility enables *everybody*, regardless of diplomas or the biases of industry elites, to demonstrate capabilities and lower barriers to work opportunities. That is precisely what Shirky meant by his catchy title: ‘here comes *everybody*! Consider two further dual-visibility stories that have the added advantage of demonstrating the power of MOOCs.

### *A Hydrologist Becomes an Information Manager*

Upon graduating from secondary school in 2008, and longing for a career in information technology, Guarev Guyal took the entry examination for India's prestigious Indian Institutes of Technology (IIT). Despite scoring in the top 1 %, his score was not high enough for him to be admitted to a computer science program. When he was admitted to IIT Delhi, he was routed to the department of civil engineering to study hydrology. In the rigid Indian system, this destined Guyal to a lifetime of work as a hydrologist.

Guyal, however, never gave up his dream of working in IT. He used dual visibility to 'hack' the Indian employment system. While at IIT Delhi, he was denied admission to computer science courses but was permitted to take elective courses in management. On the side, he enrolled in computer science MOOCs, including the three-course specialization in data analytics, offered by Johns Hopkins University on the Coursera platform. As a web-savvy extrovert, Guyal made himself visible online as an IT management specialist and attracted the attention of Dunnhumby, one of Britain's largest customer-analytics companies. He now works for the firm as a Delhi-based senior IT analyst (Anders 2015).

### *The un-MBA*

In August 2013, Laurie Pickard, newly married and heading off to a job in Rwanda, was unable to pursue her dream of obtaining an MBA and working in management. Instead, Pickard reviewed the standard courses for MBA programs and found equivalents from the world's leading business schools in the form of MOOCs. Pickard selected 16 courses to complete over two to 3 years, after which she would award herself an MBA. A self-starter and auto-didact, Pickard knew she could acquire the knowledge base for management through MOOCs. The question remained: could she use this knowledge to get a position in management? The resourceful Pickard decided to start a blog to bring online visibility to her project.

When I started this project, my aspirations were really modest. I was just thinking maybe I'll get some press coverage so people will take this project seriously, and I can convince an employer that I have a business education. That happened so quickly, within the first six months. (Everitt 2015)

Through her blog, the cleverly titled *No-Pay MBA*, Pickard gained a large following and was profiled in *TIME*, *Entrepreneur*, *The Wall Street Journal*

and *Management Today*. Pickard counters those who dispute the legitimacy of her training by showcasing her own best work and that of other MOOC students on her website. Pickard, by validating the concept of the capable, highly motivated un-MBA, is undermining the monopoly of university business schools in management education. ‘No one hires you because you have a piece of paper,’ she states. They are looking for a whole package, including a knowledge base, practical skills and demonstrable achievements. A diploma simply cannot provide this, but a digital portfolio with MOOC certificates and documented accomplishments can (Everitt 2015). Pickard is confident that her un-MBA will land her a management job. She says,

After I graduate I have no doubt that I will be able to use my unique experience the next time I search for a job. For a certain type of employer, the creative way I have sought my education and the publicity I have garnered for doing so are more indicative of my potential than a regular MBA would be. (Pickard 2015)

Pickard has used dual visibility to turn the diploma-based system on its head. What differentiates the ‘average’ graduate from the ‘average’ non-graduate is the diploma. But what differentiates Pickard from the average MBA graduate is her total package *including her lack of a diploma!*

### *The Decline of Jobs in the Gig Economy*

Dual visibility is, however, a double-edged sword. While it provides opportunities for creative self-starters like Upton, Guyal and Pickard, it also enables firms to further ‘obliterate’ their full-time workforces by replacing employees with short-term and part-time contract workers they locate and assess online. This substitution of part-time and short-term contract workers for employees has created the ‘gig economy’.

To understand the gig economy better, it is necessary to make a short side trip into the world of ‘transactions costs’ economics. We already touched on transaction costs – the costs of searching for, assessing, hiring and bringing on board new workers – in our account of the post-civil war university. The university succeeded because it served a pressing need – reducing the costs and uncertainties of hiring professional workers for industrial firms and government bureaucracies. Universities provided a standard level of professional know-how and a diploma – the standard

mark that they possessed it. Firms were no longer operating in the dark when hiring technicians, applied scientists and managers; they could use the diploma as a filter.

The costs to the firm of full-time professional employment, however, are considerable. Firms have to pay full salaries and attractive benefits. They have to pay a professional salary for a 40-hour week even when they do not have 40 hours of professional work at the professional's highest value skills. Why don't they save money by only hiring professional labor to handle immediate needs, and select professional workers by competitive bid to drive down the cost of labor? The simple answer is that if firms don't already have workers to perform tasks, they have to go into the labor market to hire them, and there are transaction costs of hiring – of searching, negotiating, contracting and preparing workers to take on the tasks. They also have to absorb costs caused by delays in locating workers while pressing tasks remain undone. The transaction costs of hiring workers on contract may thus outstrip the costs of employment, making it more economical to retain employees, with all of the associated costs and inefficiencies, than to hire workers on contract. *High transaction costs of hiring make full-time employment more attractive to firms.*

But what if firms had a large pool of unemployed or underemployed educated workers to draw upon, and the technology to sharply reduce the transaction costs of hiring them? Then it would make economic sense for firms to shift from full-time employees to contract workers. Today, due to high college graduation rates and the reduction of middle-class jobs, we have that large reserve army of unemployed and underemployed educated work-seekers. Web 2.0 technologies and dual visibility radically reduce the transaction costs of hiring them. Potential workers with the needed high-value skills can make themselves visible and demonstrate their skills online, and firms can find and assess them through online search techniques. Firms can thus bring them on board on short-term or part-time contract, without benefits or obligations, for just the precise tasks requiring their skills, and terminate them as soon as the tasks are completed. The workers do not have to be vetted to make sure they are a 'good fit' for the firm, because in most cases they will have no chance to fit in – they perform their tasks – often online – and then disappear.

After the introduction of Web 2.0 technologies, and especially after the global recession of 2008–2009, firms rapidly began replacing jobs with contingent 'gigs' either by hiring so-called 'contract workers' from labor services firms such as Manpower, Inc., or by hiring freelance workers for

temporary assignments. While labor service firms had previously been used primarily for relatively menial tasks, they began supplying workers at all levels, including the highest professional levels. Meanwhile, firms eliminated entire departments, from law and accounting to design and marketing, retaining only a hard core of control functions.

Lou Gellos of Microsoft explains why his firm makes such extensive use of contract workers: they do only the part of the project where their capabilities are needed. ‘They’re experts at it. Boom boom, they’re finished.’ Maynard Webb, a former COO at E-bay who now runs the labor services firm Live Ops, stated the primary advantage of contract workers to firms: ‘You have access to the talent you need. And when the need is gone, the talent disappears’ (Coy 2010). The ‘gig’ is simply the new form of the ‘job’ under economic rationalization. That is why ‘gigs’ are replacing ‘jobs’.

A recent study of human resources, procurement and financial executives by Ardent Research indicated that 92 % of enterprises indicated nontraditional staffing was a vital to moderate facet of their overall corporate strategy; 32 % of the average company’s workforce fell into the contingent or contract-based category; and by 2017, contingent workers, including independent contractors, statement-of-work-based labor and freelancers, will account for nearly 45 % of the world’s total workforce (Wood 2015). A similar study by Elance, the online contractor, of 1,500 firms in 2012 found these firms projecting that 54 % of all of their workers would soon be contingent workers from around the globe, and 73 % said that they would be hiring more contingent workers in 2012 than in 2011 (Hardy 2012).

Dual visibility is the key to understanding today’s occupational situation. Firms can bring contingent workers on board without high transaction costs. Candidates for contingent jobs – with or without college diplomas – can present themselves via websites linked to digital portfolios of their previous work, make themselves available to online clients or bid on listed jobs, and get rated by their clients – just like Amazon or eBay sellers. Fabio Rosati, Elance CEO, projects that by 2020, ‘one in three workers will be hired online, perhaps never to meet an employer or work in a company building’ (Hardy 2012).

Occupation-oriented websites like LinkedIn play a crucial role in facilitating connections between work-seekers and firms in the gig economy. When Microsoft acquired LinkedIn in June 2016, Microsoft CEO Satya Nadella and LinkedIn CEO Jeff Weiner explained that it derived from a ‘mind meld’

during discussions of the emerging work situation. Nadella explained that ‘today’s work is split between tools workers use to get their jobs done and professional networks that connect workers’. The deal, he said, aims to weave those two pieces together. ‘It’s really the coming together of the professional cloud and the professional network’ (Greene 2016).

This cryptic phrase was further explained in Weiner’s memo to his LinkedIn employees. He said:

Remember that dystopian view of the future in which technology displaces millions of people from their jobs? It’s happening. Whether it’s worker displacement, the skills gap, youth unemployment, or socio-economic stratification, the impact on society will be staggering. I’ve said it on multiple occasions and believe it even more so every day: creating economic opportunity will be the defining issue of our time. (Weiner 2016)

LinkedIn’s aim, Weiner explained, ‘was to connect the world’s professionals to make them more productive and successful’. Microsoft’s aim was ‘to empower every individual and organization in the world to achieve more’ (Weiner 2016). In the face of massive job losses, as Weiner saw it, there will still be immediate tasks to be done, high-tech tools seeking uses and educated capabilities seeking employment. ‘Creating economic opportunity’ and ‘making individuals more productive and successful’ then mean eliminating frictions in the orchestration of these productive factors – reducing dead times and inefficiencies for both workers and firms. The \$26 billion deal, in short, aimed to create synergies in an effort to dominate the integration of factors – the clouds of tools, tasks and professional capabilities – in the gig economy. Weiner reminded his employees about LinkedIn’s unofficial mantra: “Next play!” In other words, don’t dwell on the past. Focus on the task at hand’ (Weiner 2016). Repeating this mantra may now benefit *all* workers and firms in the gig economy.

## THE CRISIS OF HIGHER EDUCATION IN INFORMATION SOCIETY PERSISTENTLY HIGHER UNIVERSITY TUITION

From the 1980s until today, tuition has continued to rise at well above the inflation rate in the United States, and has been introduced or increased in many other developed countries. In the United States, the average cost per year for 4-year public college shot up between 1982–1983 and 2012–2013 from \$7,534 to \$17,474 in constant dollars, while the annual costs

at private 4-year colleges rose from \$16,797 to \$35, 074.<sup>9</sup> Tuition has more than doubled, while family incomes have stagnated.

While the rise in tuition has many causes, the dominant cause of the rise in public colleges is the rising cost of incarceration – caused in large measure by rising mandatory sentences. Focusing on prisons, from 1982 to 2012 the number of people incarcerated in state prisons rose from roughly 300,000 to 1.3 million, an increase of more than 400 %. Costs per prisoner have also exploded: in California, for example, the state cost per prisoner has almost doubled in real dollars since 1994. State spending on corrections is growing six times faster than state spending on higher education, and prisons are now soaking up more dollars from the budget than higher education in many states (Leopold 2012). Costs are increasing in part because prisons have been outsourced to private firms; other industries from food services and laundry to telecom profit from rising rates of incarceration. Prison firms and the prison worker unions have effective lobbying power. In difficult economic times, state agencies have to pay prison costs more readily than ‘discretionary’ items like higher education. Thus the state contribution to higher education has fallen dramatically in recent years, especially after the global recession of 2008–2009, and spending levels have not recovered after the recovery.

College tuition is a hot button political issue in 2016, as aspiring ‘middle-class’ families with stagnant incomes press lawmakers to control the cost of college. Meanwhile, economic elites in the developed nations are not pressing legislators to increase spending on higher education. They have all of the domestic person-power they can absorb at rates they are willing to pay. And they can augment them with low-cost workers abroad or here on H1-B visas. The result is that a larger share of higher education costs must come from tuition dollars; instead of funding universities adequately, legislators demand cost-reductions, leading to pressure for efficiencies in higher education service delivery.

### *Shifts to Low-Cost Contingent Academic Labor*

To respond to declining revenues, universities have continued to rationalize their employment policies, shifting most of the teaching load to contingent workers: low-cost nontenure track contingent faculty and adjunct professors without job security or benefits. To make ends meet, these workers in turn have to teach as many courses as possible, often in several different universities in the same region. To cope, they must limit

their performance to minimum necessary tasks, leading to a steady decline in teaching quality. In some cases, their work is considerably de-skilled; they are hired faithfully to deliver courses designed by others by following a highly scripted course manual.

### *Declining Return on Investment in Higher Education*

With tuition costs rising, and the number of steady, well-paid professional and technical jobs declining, the private return on the investment in higher education is also declining. Meanwhile, in the ‘gig’ economy, firms are now hiring more contingent workers with high-demand ‘skills’; they want workers – with or without diplomas – who can climb on board (without training), performing tasks requiring their highest value skills and then leave. Such workers don’t qualify as ‘employees’ and lack employee workplace protections. The result is that the extra perceived value of holding a college diploma matters little. Potential workers can demonstrate capabilities through a combination of certificates of learning, past work experiences and the endorsement of current or past coworkers.

### *Declining Enrollments, Declining Revenues and Financial Exigency*

As the return on investment in college declines, both enrollments and tuition revenues have been falling since 2011. The largest declines have been experienced by for-profit colleges. The recent bankruptcy at Corinthian University is illustrative. But Moody’s Investment Service reports that more than half of U.S. colleges now have financial exigencies affecting their credit ratings (Moody’s Investors Service 2013), and those institutions that cannot borrow at market rates to pay for operating expenses are threatened with collapse. A follow-up in September 2015 projects a slow but steady rate of college and university closures (Moody’s Investors Service 2015).

As the college diploma, as such, no longer distinguishes its holders effectively from other members of their age cohort, and as the number of domestic jobs designated as permanent full-time high-wage jobs with benefits declines, the differentiating factor now used as a job filter has shifted from the diploma to the ‘daunting diploma’ – a degree in a challenging, high-demand field from a low-admission-rate university. The newly minted electronics engineering graduate from Stanford, or MBA in finance from Wharton, will, because of scarcity, continue to be able to

demand great jobs. Flagship campuses of state university systems which, despite declining revenues, continue to offer graduates advantages in the labor market are also receiving more applications and experiencing increased enrollment and tuition revenue. The pressures to gain admission to these high-value universities that young people now experience, due to the highly competitive admissions processes at these universities, are staggering.<sup>10</sup>

### *Need for Rapid Development of Education Infrastructure in Developing Nations*

I close this chapter with a brief comment on the situation in developing nations. As firms move from multinational to global status, they need more, and better educated, workers in developing countries. Newly available financial credit brings new opportunities for the expansion of private enterprise, and the need for the expansion of public infrastructure. Both dimensions of this expansion will require enlarging the educated workforce, but the education infrastructure remains underdeveloped; there are few secondary schools, and other than those serving the children of elites, they are often of low quality. Even in those countries with high literacy rates, there are not enough workers with high-demand skills and diplomas.

Many citizens in these nations aspire to join the new middle class by acquiring advanced education. This will require new educational arrangements. Because the primary competitive advantage of these nations is the low cost of their materials and labor, and because state revenues remain limited, elites now look for low-cost ways to build up secondary and tertiary education.

The vast reach and relatively low cost of online education – especially that reflecting ‘world-class’ education values from the metropoles – such as MOOCs from edX and Coursera – makes it attractive. The transfer of educational technologies and values from the metropoles to the peripheries, however, is not without problems. It threatens indigenous vernacular culture, by reinforcing a hierarchical global system of knowledge, where metropolitan institutional knowledge dominates local practical knowledge.<sup>11</sup> It also facilitates the movement of the most promising students at the periphery to the metropole for advanced education and H1-B visa jobs.

This suggests an additional challenge for those seeking to develop appropriate online education and MOOCs in developing nations – recruiting local experts, featuring the use of local knowledge in new

online platforms and programs, and connecting these efforts with the expanding opportunities for educated workers in their own nations. I'll pick up this challenge briefly in [Chap. 4](#) when I discuss alternative visions for the global spread of MOOCs.

### *Summary and Prospect*

In this chapter, we have examined the occupational and educational situation prevailing when MOOCs were introduced in 2011. Though official employment statistics report that unemployment in 2016 has dropped to prerecession levels, the composition of employment has changed and family income continues to stagnate.

The globalization processes of the 1970s destroyed most full-time middle-class jobs for high school graduates, closing one of the exit lanes on the education super-highway and compelling working families to send their children on to college to maintain middle-class status. Business process reengineering after 1990 destroyed more jobs, including many requiring college education. Web 2.0 technologies introduced after 2004 enabled firms to eliminate many additional college-level full-time jobs, as firms could locate contingent workers without job security or benefits to perform just their highest value tasks and then leave. Formal education was gradually becoming the road to nowhere for many young people.

The cost of college has skyrocketed, while opportunities for college graduates have declined. Unless a student gains admission to a highly rated public or private university and completes a daunting major program in a high-demand field, he or she is no longer assured of a middle-class job. The result of this combination of factors is that since 2011, college enrollments and tuition revenues have fallen, and many tertiary institutions are in financial trouble. Meanwhile, new opportunities for economic growth and middle-class life have opened in developing nations. But these nations lack both education systems to produce enough educated workers and the capital to create them.

The founders of the leading MOOC platforms such as edX and Coursera promised to solve these problems by making free, world-class education available for all those seeking it in both developed and developing nations. In the next chapter, I offer an overview of MOOCs, and in [Chap. 4](#), I consider whether MOOCs can generate ‘world-class’ primary educational benefits – the skills, techniques, knowledge and understanding needed to support excellence in human activities and arts.

## NOTES

1. Sheila Slaughter and Gary Rhoads (Slaughter and Rhoades 2009) have called this the shift from the professional-state power/knowledge regime of the 20th century to the ‘academic capitalism’ regime of our time.
2. The text of the report can be found at <http://collegiateway.org/reading/yale-report-1828/>
3. C. Wright Mills, in *White Collar* (1951) and *The Power Elite* (1956) provided the classic analysis of this class structure. Mills’ analysis was influenced by the Marxian tradition, Max Weber and American pragmatism, particularly the philosophy of John Dewey.
4. See [https://www.census.gov/population/www/cen2000/censusatlas/pdf/10\\_Education.pdf](https://www.census.gov/population/www/cen2000/censusatlas/pdf/10_Education.pdf)
5. See [https://en.wikipedia.org/wiki/Educational\\_attainment\\_in\\_the\\_United\\_States#/media/File:Educational\\_Attainment\\_in\\_the\\_United\\_States\\_2009.png](https://en.wikipedia.org/wiki/Educational_attainment_in_the_United_States#/media/File:Educational_Attainment_in_the_United_States_2009.png)
6. ‘The term “metropole” has traditionally been defined in terms of their distinct separation, with a pronouncedly one-way, near-dictatorial channel of command, communication, and control proceeding outward from the center; the metropole informed the periphery, but the periphery did not directly inform the metropole’ (from <https://en.wikipedia.org/wiki/Metropole>)
7. See <http://www.statista.com/statistics/185247/median-weekly-earnings-of-full-time-wage-and-salary-workers/>
8. See <https://research.stlouisfed.org/fred2/series/LNS12500000>
9. See <https://nces.ed.gov/fastfacts/display.asp?id=76>
10. This pressure and its often fatal effects have been documented extensively. See e.g., Winerip (2007); Perez-Pena (2014); Scelfo (2015).
11. From a Foucauldian point of view, this process opens up channels for the flow of power/knowledge from the metropole to the periphery. On the concept of power/knowledge, see Foucault (1980).

## What Are MOOCs?

**Abstract** The large MOOC platforms were introduced against the background of the occupational and educational crises after 2008. The first Massive Open Online Courses, or MOOCs, were introduced in 2007 and entered the higher education scene and attracted immediate attention after the large platforms entered the scene after 2012. MOOCs had their origins in distance education, e-learning and open education. This chapter critically examines the meaning of the MOOC acronym, explains the vision and aims of the MOOC founders and charts the spread of MOOCs around the world and across the spectrum of learning situations after the launch of the big U.S. MOOC platforms.

**Keywords** Value · Educational value · Pleasure · Educational benefits

### ORIGINS

Against the background of the dual occupational and educational crisis after 2008, we can now turn our attention to MOOCs. Massive Open Online Courses, or MOOCs, were first introduced in 2007 and entered the higher education scene and attracted immediate attention in the economic and educational crisis situation after 2011. In this chapter, after accounting for their origins in distance education, e-learning and open education, I explain the meaning of the MOOC acronym, explain the vision and

aims of the MOOC founders, and chart the spread of MOOCs around the world and across the spectrum of learning situations after their launch by the big three U.S. MOOC platforms in 2011 and 2012.

The acronym ‘MOOC’ – standing for massive open online course – has existed for only a few years – eight since its invention and only four in general use as I write. College courses offered at a distance, however, have a long history.

By the middle of the 19th century, the University of London was already offering correspondence degree programs. Distance higher education then became commonplace in the 20th century; as new and improved communications technologies emerged, they were rapidly adapted for educational purposes. Radio was added to the post office as a major technological vehicle for distance education in the 1930s, and television followed in the 1950s. CBS TV, which from the 1950s through the 1980s broadcast courses from New York University in its *Sunrise Semester* program, already anticipated today’s MOOCs; students could either register for credit by paying a tuition fee, or simply view the lectures for free. The TV area in the living room became in effect a *virtual learning environment*, supported by a *course management system* at the university that provided the lectures, graded the assignments and assigned credits and grades for tuition-paying students. Visionary educators have ever since imagined that video courses featuring leading experts would largely replace face-to-face on-campus teaching.

Charles Wedemeyer, as Director of Correspondence Education at the University of Wisconsin-Madison developed distance education into an academic discipline in the 1960s, by combining learning theory, sociology of learning, instructional design and technology, and educational evaluation. Wedemeyer, an early advocate for independent learning in higher education, aimed to extend access to educational opportunities for poor, isolated and disabled learners and gifted learners who required enriched resources for independent study to supplement school and college curricula. These two aims – extended access and curriculum enrichment – have continued to motivate educators. With a million dollar grant from the Carnegie Corporation, Wedemeyer initiated the Articulated Instructional Media (AIM) project to promote and evaluate the use of available communications media – radio, TV, audio cassettes, text-based study guides – as educational delivery systems. AIM was the prototype of later *open learning systems*. That concept gave birth to *open universities* – mega universities delivering distance education and open to all learners

regardless of prior educational attainment. Open universities appeared in the United Kingdom (1971), Spain (1972) and Germany (1974) and were then copied throughout the world. They have been influential in the spread and legitimation on online education and MOOCs (see below).

### *Distance Education, Internet Technology and Learning Management Systems*

The Internet enabled new developments in distance education, by augmenting the interactive communications already introduced in closed-circuit satellite television systems, enabling what has come to be called *online education*. The associated term ‘e-learning’ refers broadly to both formal and informal web-based learning. Open education itself has split into *synchronous* and *asynchronous* types. The former features meetings of teachers and learners in real-time (synchronous) digital classrooms. Learners can see a live teacher (and in some cases, other classmates), ask questions, make comments, supply additional learning materials by providing hyperlinks and even ‘take the microphone’ to speak. The latter involves net storage of software packages, learning and instructional materials, assignments, quizzes and discussion boards for courses offered in self-paced, just-in-time (asynchronous) learning formats. Both formats make use of digital learning environments for students and course management systems for teachers and administrators. As online education has spread, providers created associations to promote it, influence policy and set quality standards.<sup>1</sup>

### *Proprietary e-Learning Management Systems*

Third-party proprietary firms, meanwhile, entered the market to provide institutions with complete learning management systems for both on-campus and online learning. These include digital interfaces or learning environments for course activities and back-office management of course data for grading and assigning credit. Many such firms compete; important entries have included Blackboard and Instructure-Canvas, both of which have entered the MOOC space.

Blackboard was formed in 1997 and became a public company in 2004. It offers a bundled suite of software tools for learning and data management; these are used by over 1,700 organizations worldwide, including the majority of U.S. colleges and universities. The rapid spread

of Blackboard technology is widely considered as one of the prime reasons for the global expansion of classroom technology and e-learning.<sup>2</sup> In 2010, it launched Blackboard Learn as a new iteration of its LMS, and the next year introduced Coursesites, a free online course management system that serves as its MOOC platform.<sup>3</sup> Despite the wide use of Blackboard's learning and course management tools, a large fraction of its users have nonetheless been reported to 'detest' them as rigid and user unfriendly (Empson 2012).

Instructure was founded in 2008, introducing as their flagship product the Canvas learning management system; it became a public company in 2015. Touting Canvas's greater flexibility and ease of use, Instructure has competed aggressively against Blackboard in the college learning management market. A 2011 ad from Instructure entitled 'Change is Good' shows an animated Canvas 'warrior' entering a Blackboard-mediated classroom filled with robot-like students and torching it with a flame thrower.<sup>4</sup> As of 2015, Blackboard was responding to Instructure with a complete redesign of their learning tools (Blackboard 2015).

### *Open Courseware and Educational Resources*

In 1999, the University of Tübingen in Germany was the first to publish lectures from some of its courses online, initiating the Open Courseware (OCW) movement. OCW gained wide visibility when MIT followed suit in 2002, publishing courseware with licenses allowing its use, modification and redistribution. OCW projects were soon launched at Yale, The University of California and other universities. A Consortium for OCW was created to aggregate these offerings, and OCW rapidly spread to almost 200 universities worldwide. OCW became one element in the later Open Educational Resources (OER) movement, which also includes open source educational software and open knowledge in free scholarly journals and textbooks. A frequently cited definition of OER has been offered by the William and Flora Hewlett Society:

Teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge.<sup>5</sup>

The terms ‘courseware’ and ‘educational resources’ are well chosen; organizations provided materials to be used, both by college teachers preparing their courses and by independent learners, but not, in most cases, complete courses with assessment of learning and recognition of completion. Some open courseware packages included videos of course lectures and text materials for an entire course, but most contained mere grab bags of course ‘resources’. The courseware was produced at minimum cost beyond that invested in preparing it for classroom teaching, and without concern about production values; in some cases several minutes of a video lecture were taken up with images of students entering the lecture hall and waiting for a professor to appear.

Many software packages for managing learning were issued under open, creative commons licenses and categorized as OER. Moodle is one of the best known. Others were proprietary products offered to the commercial market as complete learning management systems. The best known among these include Blackboard and Canvas. These are intended to be used as ‘total learning system’ – not to be broken up so that the parts can be recombined and repurposed – as required by the definition of ‘open’ in OER. A major feature of open education in the sense intended by the OER movement is that the widest range of materials from all sources can be brought into the learning environment for learner use. Proprietary LMS’s, however, have tended to emulate conventional nonopen pedagogies in narrowly scripting the learning experience and providing predetermined learning materials in a fixed sequence. In this way, these LMS’s are incompatible with open education. Canvas, however, is closing the gap by positioning itself as a more open and flexible system than Blackboard, and by releasing its software under an APGL (Afferro General Public License) open source license. As of 2015, Blackboard is responding with a more open system.

### *Early MOOCs*

The first course to be *called* a MOOC, ‘Connectivism and Connected Knowledge’, was offered in 2008 by George Siemens of Athabasca University – Canada’s Open University – and Stephen Downes of the Canadian National Research Council.<sup>6</sup> Siemens and Downes offered some introductory definitions and ideas *about* connectivist learning theory, and student participants then developed and critiqued them on blog posts, threaded discussions on Moodle (a free open source course

management system), and social media. The course was itself designed *on connectivist learning principles* such as *distributed knowledge* – the idea that all participants, not just the ‘teacher’, have useful knowledge to share, and *connected learning* – the idea that students learn best when they are connected to one another via the Internet, and thus can use online resources and social networks in the learning situation. Downes explained that the purpose of MOOCs like this is not to convey content. ‘We say explicitly that the content is the “McGuffin” – it is the thing that gets people together, gets them talking, gets them thinking in new ways’. People do actually learn a lot of content, he noted, but the point is to get people exchanging ideas and creating a connected learning community, and that has to be the focus for assessing MOOCs of this sort (Downes 2012).

‘Connectivism and Connected Knowledge’ became a dynamic virtual seminar with 25 tuition-paying students at the University of Manitoba and 2,200 nonpaying participants. Students were encouraged to form working groups, reach out and connect to other educators and experts, and report back to the core group through online social media. The learning environment was thus open – it was not contained in a learning management system. The participant group, through their connections, were engaged in both creating and coming to know ‘connectivism’.

Dave Cormier of the University of Prince Edward Island called this experiment a MOOC – for Massive Open Online Course – and the name stuck. Similar MOOCs have subsequently been offered at a number of universities. Because they are based on connectivism, Stephen Downes has labeled them ‘c-MOOCs’.

### *x-MOOCs and Early MOOC Platforms*

Starting in 2011, a very different kind of massive online course grabbed newspaper headlines after three MOOC platforms – Udacity, edX and Coursera – were created to host them, leading the *New York Times* to dub 2012 ‘The Year of the MOOC’. Stephen Downes coined the term ‘x-MOOC’ in 2012 to differentiate the courses on these platforms from the connectivist MOOCs that he later dubbed c-MOOCs. Downes took the ‘x’ from MITx (later edX) and TEDx, where the ‘x’ denoted an extension to the core function of the term so modified: so MITx was an extension of the core functions of MIT, and TEDx an extension of the core TED conferences (Downes 2013). George Siemens drew a very sharp line between c-MOOCs and x-MOOCs: ‘our cMOOC model emphasises

creation, creativity, autonomy and social networking learning', whereas the x-MOOC model emphasizes 'a more traditional learning approach through video presentations and short quizzes and testing. Put another way, cMOOCs focus on knowledge creation and generation whereas x-MOOCs focus on knowledge duplication' (Siemens 2012).

A *MOOC platform* is simply a Learning Management System for a menu of courses, accessible through a single URL, built in a technical infrastructure that can scale to meet demand, and thus accommodate an indefinite number of learners. A number of what may be called *pseudo-platforms* also emerged. These lacked their own courses and LMSs, and instead simply aggregated MOOCs from other platforms and made them available through their own URLs.

The courses on x-MOOC platforms were, as Siemens stated, to a large extent modeled upon typical college courses and featured the familiar lecture-discussion – quiz pattern of instruction. They were early *prototypes* of automated mass online education, or in the language of design, *minimum viable products*. They were put out into the market to attract attention and to test the concept and obtain feedback for subsequent design improvements. The initial formats, with their various limitations, were intended to be modified in the face of research, criticism and user preferences. Computer scientist Armando Fox, who contributed to the first MOOC launched by the University of California on the edX platform, explained: 'When the first motion picture camera was invented, they pointed it at a stage with live actors. It took people a while to realise that it was actually a medium that allowed you to do things quite differently. That's a little bit like where we are with MOOCs now. We're taking elements that are familiar from residential education – such as lectures, homework assignments, and syllabi that stretch out several weeks – and we're sort of trying to reproduce those elements online.' He added, 'People are going to build stuff in a few years that is going to make today's MOOCs look fairly pathetic' (Lane 2014).

The conventional pedagogical pattern they emulated has been widely labeled (and disparaged as) *instructivism* to set it apart from *constructivism*, a pedagogy where students work together to 'construct their own knowledge' (see below) and connectivism (see above). At first, the x-MOOC founders ignored the extensive research on learning and online education. Their early MOOCs were panned as 19th-century instruction on a 21st-century platform. Downes and many others sharply critiqued their *instructivist* approach to teaching and learning as static and outdated.

### *Sebastian Thrun and Udacity*

In 2011 Sebastian Thrun, a professor of computer science at Stanford and Vice President of Google famous for his work on robotics and the self-driving car, offered the course ‘Introduction to Computer Science’ live for tuition-paying Stanford students and online for 160,000 MOOC participants. On the surface, this course was not at all similar to the c-MOOCs of Siemens and Downes. In place of the free-form spontaneous activities of c-MOOCs, all of the activities in Thrun’s course were carefully scripted in a learning management system (LMS) – a composite virtual learning environment and course management system – based on Stanford’s earlier Courseware platform, subsequently updated and released in 2012 under the label ‘Course2Go’. Thrun’s course, however, featured more constructivist ‘learning challenges,’ where students could ‘learn by doing’ as assignments. The course drew a massive audience due to Thrun’s worldwide fame and its free availability online. So it too was labeled a MOOC. After the popularity of and acclaim for this course Thrun left Stanford, and along with his business partners obtained venture capital to form Udacity, a for-profit MOOC platform *learning corporation*. Udacity offered its first courses in February 2012.

### *edX*

In 2011, MOOCs gained further broad public visibility when MIT announced its MIT-X project. Led by Anant Agarwal, a Stanford-educated MIT professor of Electrical Engineering and Computer Science, MIT-X started by offering a computer science MOOC similar to Thrun’s at Stanford. MIT-X partnered with Harvard in 2012 to form the nonprofit MOOC corporation edX; Agarwal and his MIT associates Gerry Sussman, Chris Terman and Piotr Mitros offered the first edX course, MIT’s ‘Circuits and Electronics’, drawing 155,000 students from 162 countries. By the beginning of 2015, edX had 4 million students taking more than 500 courses online, and by December 2015 edX had 44 charter members and 46 additional members.<sup>7</sup>

### *Coursera*

After Thrun’s departure from Stanford, two other Stanford computer science professors, Daphne Koller and Andrew Ng, formed Coursera in 2012. The Coursera LMS is also an outgrowth of Stanford’s

Courseware platform. Princeton, the University of Michigan, and the University of Pennsylvania partnered in the effort. In January 2013, the American Council on Education approved five Coursera courses as suitable for college credit. As of December 2015, Coursera had 140 university partners from 28 different countries, and offered more than 1,500 distinct courses from 119 institutions and 13 million users from 190 countries.<sup>8</sup>

## THE X-MOOC REVOLUTION

EdX, Udacity and Coursera – all U.S. based – emerged as the ‘big three’ early x-MOOC organizations. The earliest of these MOOCs, like those offered by Thrun and Agarwal at MIT, were computer science courses. But EdX and Coursera rapidly introduced courses in the humanities, social sciences, the arts, as well as commerce, medicine and other practical arts. By 2013, MOOCs were already available – on these platforms and others that formed to rival them – for almost every conceivable university subject, from foundation to graduate level. In this sense, at least, the x-MOOCs had in their first year already achieved their early goal of making free world-class online university courses available worldwide for those with an Internet connection.

The global spread of MOOCs was hailed as a ‘revolution’. Journalist Justin Pope, after attending a MOOC gathering near Phoenix Arizona, stated that higher education was ‘on a path towards a worldwide revolution’ (Pope 2013). Vish Makhijani, installed as President of Udacity in 2013, declared that he had joined the MOOC revolution because conventional university education offered an ‘antiquated experience’ that was ‘fast becoming unaffordable and inaccessible for many in our society (and around the world)’ (Van Norman 2013). Anant Agarwal of ed X added that ‘given education has been calcified for 500 years, we really cannot think about reengineering it, micromanaging it. We really have to completely reimagine it. . . . Everything really has to change’.<sup>9</sup>

## THE MEANING OF ‘MOOC’

What then is this revolutionary new form of education? While each of the four terms contributing to the MOOC acronym – massive, open, online and course – has been interpreted in different and sometimes conflicting ways, more or less standard meanings have emerged.

### *Massive*

The colossal size of the first MOOCs by Thrun and Agarwal gave the term ‘massive’ the vague meaning of ‘very very big’. But few successive MOOCs could boast student populations in the hundreds of thousands. A more typical MOOC on one of the major platforms would have on average around 25,000 students (Jordan 2015). As new platforms opened and smaller or less prestigious organizations started to produce MOOCs, courses with just a few hundred students became common. ‘Massive’ has come to mean that the course can be scaled elastically and indefinitely – that there is no practical technological limit to the number of participants.

### *Open*

The term ‘open’ in relation to MOOCs has come to mean ‘open to anyone at no cost’. MOOCs are at least in this way an outgrowth of OCW and OER, and continue the trend toward no-cost learning resources. MOOCs extend beyond these previous efforts by providing entire, high-quality courses online for free, complete with lectures, reading materials, assignments, examinations and (free or low-cost) markers of successful completion. For the MOOC founders, the key was *open access to world-class education* – defined as education from the world’s leading universities. MOOCs have also upped the game on production values, especially using well-edited, engaging short videos. Perhaps the most significant advance beyond OER that MOOCs have made is providing no-cost or low-cost *certificates of learning* for course completion. The certificates permit learners to document their learning when applying for further education and jobs, and thus at least potentially, can provide occupational qualifications similar to those based on college courses and degrees.

The applicability of the term ‘open’, however, has been rightly disputed by many in the open education and open educational resources communities. The courses have not in general been open in several important senses: the materials have been proprietary and issued under restrictive copyright provisions – their component parts cannot freely be ‘mashed up’ – disassembled and reused in new configurations; the courses and their learning materials have not generally been freely available – the courses generally have a set time frame and when the course closes the materials

disappear; the learning design is prescribed – learning is not open to the introduction by learners of new and unpredicted materials and projects. X-MOOCs are thus not as open as resources issued under least restrictive creative commons licenses; many open educators have seen this as a retreat from OER.

It might be thought that c-MOOCs are a natural extension of the OER movement and the open learning paradigm, while x-MOOCs represent an extension, albeit without cost, of the industrial paradigm in education. As will be argued below, the situation is somewhat more complicated, as x-MOOCs are evolving in ways that make them and their component parts into resources for open learning.

### *Online*

The initial MOOCs employed entirely *online* virtual learning environments. By 2013, it had become clear that this narrow environment was inadequate; learning is inherently social – extra-curricular activities and late night bull sessions contribute greatly to the college experience. MOOC learners were disappointed by the contrasting isolation of MOOC learning, and especially the superficiality of ‘discussions’ on comment boards. MOOC leaders have responded by adding various offline activities to MOOC learning (more about this in [Chap. 4](#)).

### *Course*

The term ‘course’ raises its own special problems. A course might be considered a number of educational experiences – lectures, discussions, quizzes, projects – *sequenced for completion*. Learners go through them in the assigned sequence – lesson 1, quiz 1, lesson 2, quiz 2 and so forth – and complete the course (and receive credits) when they have completed the sequence and met the evaluation standards. Initial MOOCs were sequenced like traditional college courses. They started on a specified date, and materials for units were released a week at a time. At the end of the weekly sequence, the course closed. Participants were unable to selfpace their learning or ‘raid’ these courses at will to work on lessons that interested them; they had to wait for lessons to be posted, and the lessons disappeared as soon as the course ended. The structural logic of MOOC instruction, at least in early x-MOOC prototypes, was that of industrial

production – fixed means to predetermined instructional ends – rather than the logic prevailing in Web 2.0-based open learning (Waks 2013).

MOOCs have subsequently gravitated away from the university course model (see more below). Nonuniversity providers have entered the MOOC space, and learners beyond the college age group comprise the largest segment of MOOC participants. To meet the needs and interests of actual providers and learners, MOOCs have increasingly been offered continuously on a self-paced basis; learners can take what they need when they need it – in or out of sequence and without regard for completion. Mini-moocs, comprising brief lessons or lesson sequences, are now also common.<sup>10</sup> In these ways, MOOCs are becoming less and less like traditional on-campus courses.

## X-MOOC AIMS

What are the revolutionary educational aims of the MOOC founders? Agarwal at edX could have been speaking for the other MOOC platform leaders when he stated that ‘We hope to democratize and reimagine education so that anyone, anywhere, regardless of his or her social status or income, can access education’ (Kanani 2014). He frequently added that he was speaking about *world-class* education – offered at prestigious universities like MIT, Harvard and other edX partners. Coursera’s partners like Princeton and the University of California matched those of edX in prestige. The founders wished to *democratize* education by ‘leveling the playing field’ and making the highest level of instruction from world famous academics at the most prestigious universities in the world available to all learners, anywhere, so long as they had access to the Internet. The Coursera founders, Daphne Koller and Andrew Ng, and Sebastian Thrun at Udacity, shared this aim, though while Coursera, like edX, initially partnered only with universities, Udacity partnered directly with well-established star quality professors.

Agarwal and Koller also wanted to *reimagine* campus-based live instruction. The leaders were all convinced that the familiar lecture-discussion course format had no scientific basis. The format was in any event outdated as its conventions had developed before Internet technology provided every classroom with the world’s vast body of knowledge and information. Agarwal saw MOOCs as heralding a new era of ‘blended education’ requiring new paradigms for higher education research and evaluation. He famously said in his already mentioned January 2014 TED

talk that MOOCs were the most important innovation in learning since Gutenberg's printing press:

Education really hasn't changed in the past 500 years. The last big innovation in education was the printing press and the textbooks. Everything else has changed around us. You know, from healthcare to transportation, everything is different, but education hasn't changed. . . . Everything really has to change.

Koller (2011) agreed. In similar, if less apocalyptic terms, she said that MOOCs can serve two goals:

For students lucky enough to have access to great teachers, blended learning can mean even better outcomes at the same or lower cost. And for the millions here and abroad who lack access to good, in-person education, online learning can open doors that would otherwise remain closed.

In short, the x-MOOC founders initially focused, like Wedemeyer, on transforming higher education by making it a more accessible, rich and effective experience; they wished to increase on a global scale what I have called *primary educational value*: academic knowledge and skill. In what follows, I will have relatively little to say about blended on-campus education, because regardless of its potential educational value, it takes place in high-tuition settings and thus moves beyond the promise of free or low-cost education that is the focus of this book.

The founders also hoped to increase available *social and economic value*, by having MOOCs approved as college courses, with their certificates accepted by colleges and universities for transfer credit; they envisioned MOOCs as providing *secondary educational value*, envisioning that the MOOC certificates could contribute to job qualifications – primarily by being bundled into college degrees through transfer credit. Agarwal argued that if colleges accepted the physics course from a community college for transfer credit, they could hardly reject the more demanding MIT physics course offered by edX. The American Council for Education – the body that approves courses as worthy of college credit evaluated some edX and Coursera MOOCs and declared a number of them worthy of college credit (Lederman 2013).

Few colleges, however, have yet to accept the MOOC certificates.<sup>11</sup> MOOC firms continue to push transfer credit, but have also responded

to the barrier to transfer by providing MOOCs or MOOC sequences as stand-alone job qualifications. This model has been adopted wholesale by Udacity with its MOOC-based nano-degrees,<sup>12</sup> but other platforms have taken qualified steps in this direction – Coursera with specialization programs<sup>13</sup> and edX with x-series<sup>14</sup> (more in Chap. 4).

## THE SPREAD OF MOOCs

After the launch of the major x-MOOC platforms, MOOCs rapidly spread across the globe. MOOC providers were no longer drawn exclusively from prestigious universities; new course providers appeared from middling colleges and universities, community colleges, high schools, government agencies, nongovernment organizations and business firms. The learners targeted by MOOCs in turn shifted gradually from college students to high school students and retired seniors, working professionals with college degrees, employees seeking firm-specific training, aspiring technical workers priced out of the college market, and employees in developing nations lacking access to secondary and tertiary education because these education sectors were under-developed. By the end of 2013, MOOCs had expanded to serve most niches in the education and training space worldwide, and new formats were developed to better serve the range of users.

### *Geographical Spread*

Because the big three platforms were based in the United States, MOOCs were initially marked as an American phenomenon, though interestingly, none of the founders are American born (Thrun, Germany; Agarwal, India; Koller, Israel, Ng, VietNam). But many other MOOC organizations emerged in rapid succession worldwide (see below). MOOCs were also conceived as courses offered by star professors in ‘world-class’ universities, hosted by prestigious MOOC organizations setting rigorous requirements for partners. Almost all of the courses on the big three MOOC Platforms – Udacity, edX and Coursera – were initially offered in English.

MOOCs were, not surprisingly, rapidly critiqued as instruments of neo-colonialism. To counter this perception, MOOC organizations rapidly built partnerships with prestigious universities in the United Kingdom, Europe and Asia to offer MOOCs – in their native languages (often with

English subtitles) or in English (with native language subtitles). But fearful that the U.S. platforms would dominate the MOOC universe, other nations and regions – with astonishing speed – generated their own MOOC organizations, in many instances drawing on their existing open universities. These new MOOC organizations partnered first with their leading national or regional universities and then, like the big three platforms, engaged partners globally. Beyond regional differences, these organizations also added new ‘trademark’ features that are worth considering because they respond to perceived shortcomings in initial MOOC prototypes. I will have more to say about these new efforts and their modifications of the ‘least viable product’ MOOC prototype in [Chap. 4](#). Here I restrict myself to some of the most important of these non-U.S. MOOC platforms.

### *FutureLearn (United Kingdom)*

FutureLearn was formed by the U.K. Open University in December 2012, and offered its first MOOCs in 2013. It started with 12 leading British Universities, including the Universities of Birmingham, Bristol, Cardiff, East Anglia, Exeter, Leeds, Lancaster, Southampton and King’s College London. Other leading U.K. institutions soon were invited to join. FutureLearn was pegged as the British Coursera, and like Coursera, it sought to build prestige by selecting top-ranked partners, drawing on a ‘range of league tables, in order to help us identify which were consistently ranked as the top institutions in the UK’ (Parr, C. [2013](#)). Though Oxford and Cambridge have remained conspicuously absent, FutureLearn claims that the British higher education it offers is ‘the best in the world’. At this point FutureLearn has 30 UK university partners, and 18 non-UK partners, including leading universities from Ireland, Australia, New Zealand, France, Norway, Spain, Switzerland, China, South Korea, Colombia and Israel. A new feature is that FutureLearn has nonuniversity partners: in keeping with its British identity these include the British Museum, the British Library and the British Council. By early 2014, FutureLearn had already enrolled its millionth student ([Coughlan 2015](#)). The MOOC with the largest enrollment has been FutureLearn’s ‘Understanding IELTS: Techniques for English Language Tests,’ produced by the British Council, a non-University FutureLearn partner. The course has enrolled 440,000 students, demonstrating the worldwide interest in learning English.

### *Open2Study (Australia)*

Open2Study was formed in 2013 by Open Universities Australia, an organization controlled by seven leading Australian universities, including Monash and Griffiths, and the Curtin and Swinburne Universities of Technology. Its courses are primarily sourced from Australian university partners, but significantly, the Australian National University and the University of Melbourne, arguably the two most prestigious universities in Australia, are conspicuously absent: National University has partnered with edX, Melbourne with Coursera.

Open2Study has expanded from academic courses to those fostering personal and business skills, and has also extended partnerships to nonuniversity providers, including Australian business corporations. In its first half year of operation, the platform had over 94000 student enrollments in over 50 courses (Open 2 Study, n.d.).

### *OpenUpEd (the Netherlands, Europe)*

OpenUpEd was launched in April 2013 at the Open University of the Netherlands by the European Association of Distance Teaching Universities (EADTU) in collaboration with the European Commission. 11 countries have contributed partner universities: France, Italy, Lithuania, the Netherlands, Portugal, Slovakia, Spain, United Kingdom, Russia, Turkey and Israel. OpenUpEd is a pseudo-platform, or portal for MOOCs produced by partner universities using their own home-grown or proprietary LMSs (Moessinger 2013). Because of its accommodating structure, OpenUpEd has grown into one of the biggest MOOC portals, in terms of partners, courses and students. Collaborating with UNESCO and distance education groups in Asia and Africa, OpenUpEd is currently ‘exploring the creation of similar initiatives (“OpenupEd alikes”) in other regions around the world’ (Evolution of OpenupEd n.d.) The special trademark of OpenUpEd is its commitment to ‘complete openness’ in the OER sense.

### *Iversity (Germany, Europe)*

Iversity grew from a private company that began to build its pan-European MOOC platform in 2012. It launched its first MOOCs in 2013, and has partnered with dozens of European universities, offering most courses

in either English or German, with a few available in other European languages, including Spanish and Russian. As a for-profit venture, it has been dubbed the ‘Coursera of Europe’. Following the lead of FutureLearn and Open2Study, Iversity has partnered extensively with nonuniversity providers, including government agencies, nongovernment organizations and business firms. Noting early MOOC research showing that more MOOC learners were college graduates seeking professional development than college students, Iversity has branded itself as a provider of work-related skills, not just academic education. It has, however, joined the Euro Credit Transfer System (ECTS), facilitating the transfer of some Iversity certificates into university credits.

### *Verduca (Brazil)*

Verduca was founded by Carlos Souza while on sabbatical from Proctor and Gamble in 2012. Initially, Verduca simply translated MOOCs from other platforms into Portuguese. Verduca is now growing its own MOOCs addressing knowledge needs in Brazil’s home industries. Like many developing nations, Brazil has an under-developed higher education sector; only 17 % of the college-age residents are enrolled in some form of higher education, compared to an average of 33 % across Latin America (Else 2014) and about 41 % in the United States.<sup>15</sup> Verduca’s MOOCs can supplement the existing higher education system. Its certificates are issued by the Brazilian Ministry of Education; to earn one, learners must be tested in one of 240 nationwide test centers.

### *EdRaak (Jordan, Arab Countries); XuetangX (China)*

Created in November 2013 by the Queen Rania Foundation of Jordan, Edraak (standing for ‘the promotion of education in the Arab world’) offers courses in Arabic as well as translated courses from prestigious universities such as Harvard and MIT. Edraak is hosted by edX, but commissions courses from professors at leading regional universities to design and deliver its own courses.

XuetangX was also formed in late 2013 by a consortium of leading Chinese universities, including Peking University, Zhejiang University, Nanjing University, University of Science and Technology of China, Shanghai Jiaotong University, Renmin University Of China, Beijing Normal University, China Agricultural University, Hong Kong

Polytechnic University and National Tsinghua University. It is also hosted on the edX platform. In keeping with the effort to brand MOOCs as prestigious, Anant Agarwal, president of edX, who attended the ceremony in Beijing said: ‘The institutions that have joined together today are among the leading universities in China with a long history of offering the highest quality education’ (EdX 2013).

To conclude this section, starting in late 2011 MOOCs from world’s leading universities – and in some cases nonuniversity MOOC partners – had by 2013 covered most academic fields and disciplines, at basic and advanced levels, in English and other languages, on global, regional and national platforms.

The question remained whether all of these global ventures were mere copies of the pattern established by edX and Coursera, and were a force for neo-colonization – if not by the United States, at least by a global corporate-university elite dominated by that nation. Consider, for example, a recent statement by Andrew Ng, cofounder of Coursera. Ng was asked how people in different parts of South Asia or even the Middle East and Africa might go about building MOOC platforms for their people in a fashion that works best for them. He answered that ‘the world is best served by having one or a relatively small number of MOOC platforms, because technology is just scaled that way’. He went on to say:

I think the top, say, Chinese universities will want to take content and share it globally, and I think it’s better for universities, it’s better for learners. Learners want to learn from the best universities around the world, not the best university that they’re living two miles away from.  
(Knowledge@Wharton 2015)

This idea – that there is a small number of world-class universities where the world-class experts create universal knowledge, and a one best technology for disseminating it to everybody else – could be taken as the ultimate colonization of the mind. This charge of neo-colonialism has been qualified by J. E. Willis of Purdue University. He says:

Thanks to the internet and other forms of mass communication, we live ever-globally aware lives. Being able to watch world events in near live-time is unparalleled in human history. This means that value systems of an influential first-world country can have tangible effects on the localized contexts of people worldwide. While MOOCs may not be neocolonialist

strictly speaking, they certainly have the ability to irrevocably alter localized contexts. (Willis 2013)

This convergence of local contexts and vernacular values and ways of doing things represents a significant loss of global cultural diversity that systems theorists associate with lack of robustness and vulnerability. But do we not have to grant that MOOCs exert an inevitable pressure in the direction of uniformity as envisioned by Willis.

Yoonil Auh, a professor of instructional technology at Korea's Kyung Hee Cyber University, argues that MOOC platforms like edx and Coursera have actually *created* the network of elite global universities. This network engages less than 1 % of universities worldwide, while marginalizing and neglecting the other 99 %. Their MOOCs are top-down; the English language dominates and they provide merely a 'one-way transfer of knowledge from the West to the rest' (Sharma 2014).

But Auh thinks this trend can be resisted by a strategy he labels 'MOOC 2.0'. To avoid 'this type of neo-colonization', he says, receiving countries must collaborate from the start in producing the MOOCs their students will take. 'The stance of MOOC 2.0 is that higher education should find ways to address the needs of those at the bottom of the pyramid while being sensitive to their culture.' His MOOC 2.0 platform, offered as an alternative to the large x-MOOC platforms, is moving into a beta version with a course on global citizenship education for teachers in Korea, developed collaboratively with community groups and NGOs. Auh concludes that 'We may discover whole new areas of how the content should be taught from the untouched territory of local colleges and community colleges that we have not yet tapped into' (Sharma 2014).

Such MOOC 2.0 projects can also add to the global knowledge base. Their knowledge formation and ameliorative efforts, disseminated globally via the Internet on MOOC aggregation sites and elsewhere, can provide precedents and templates suggestive of and useful for similar projects in many other localities. Bottom line: while the global spread of MOOCs from the network of elite world universities may tend toward a form of neo-colonial convergence, this is not a matter of technological determinism. It is not merely a matter of 'how technology scales' as Ng claims, but an assertion of elite power that can be resisted using the same technical means: cheap digital tools and the worldwide web. This brings us to the next topic: the spread of MOOCs from the elite universities to the great mass of worldwide colleges and universities.

### *Spread Across the Prestige Scale*

The prestige-based selection of University and organization partners by the major MOOC platforms created anxiety among less prestigious colleges and universities that they would be ‘left behind’ – excluded from the MOOC game. Most of these, however, already had learning management systems provided by Blackboard, Canvas or open source alternatives like Moodle. By the end of 2013, Blackboard’s software and services, for example, were used by almost 75 % of American universities, and approximately 17,000 schools and organizations in 100 countries (Empson 2014), while Instructure’s Canvas LMS platform had already spread to more than 425 American universities by the end of 2013.<sup>16</sup>

With the technical infrastructure for online distance education in place, it was a short step for these LMS firms to add MOOC functionality. Blackboard launched CourseSites in 2011. Instructure offered Canvas Network under an open source license in November 2012. With a flick of the switch, all of their clients – including small liberal arts colleges, 2-year community colleges and even K-12 schools – were able to produce MOOCs. With no invidious comparisons intended, CourseSites MOOCs are now being offered by such institutions as Pace University and Concordia University of Wisconsin, while Canvas MOOC providers include Parkland College and Shoreline Community College. These are no doubt fine institutions, but none of them can match Harvard, Stanford, MIT or other early MOOC partners in prestige. Nonetheless, the main MOOC portals such as Class Central, through which learners locate the MOOCs that address their learning interests, list them all without differentiating the prestige of their providers or host platforms. MOOCs are now a commodity, not a top drawer product.

In a final extension, MOOC capabilities are now available for everybody. Early in 2014, Inge deWaard, organizer of MobiMOOC, a c-MOOC on mobile learning, published *MOOC Yourself* (deWaard 2014), a book of guidelines for those wishing to set up their own MOOCs for whatever purpose. That same year edX initiated the open edX project to make edX software code available to anyone interested in producing MOOCs. The open source code permits MOOC producers to modify and adapt the edX LMS to fit their needs. The open edX mantra is: ‘We do software so that you can do education’ (Huger 2014).

*Spread Beyond the College Audience and Shift Away  
from the College Course Model*

MOOCs were intended as alternative formats for college and university courses. The initial instructivist prototypes emulated conventional course pedagogies by providing automated lectures, discussions, drill and practice sessions, and quizzes, as well as course evaluations through machine or peer-graded essays and examinations. They offered certificates that the providers envisioned as transferable into college credits.

By 2013, the MOOC hype had been countered by scathing critiques of their educational and occupational benefits, and MOOC providers were taking steps beyond both conventional college students and the college course model. I'll have more to say about this in Chaps. 4 and 5, but for now I briefly note some divergences.

First, to answer the needs of their users, many MOOCs shifted from the fixed time schedules of the early prototype to self-paced formats (Fisher 2014). Second, some MOOCs were offered on personal development topics lying outside the conventional college or university curriculum – such as time and stress management,<sup>17,18</sup> personal financial planning,<sup>19</sup> planning for university study,<sup>20</sup> career preparedness<sup>21,22</sup> and even retirement.<sup>23</sup> Open2Study and ivarsity both made such nonstandard courses trademark features. Third, some MOOCs were aimed directly at mid-career professionals who already possessed university diplomas and did not seek further college coursework. Early research showed that these learners were the largest fraction of the MOOC audience (Kolowich 2012). Some of these MOOCs provided training in general business topics such as leadership,<sup>24,25</sup> corporate training,<sup>26</sup> entrepreneurship,<sup>27</sup> business strategy<sup>28</sup> and online marketing and branding.<sup>29</sup> Others offered highly specific technical occupational training, and were in some cases offered by nonuniversity providers, such as the software firm SAP,<sup>30</sup> which produces MOOCs for its own employees and those at supply chain firms. Fourth, MOOCs made a dramatic entry into the High School education market.<sup>31</sup> Fifth, some providers began to offer short, self-contained learning experiences and even single lessons in MOOC-ish formats. The Coursmos platform, for example, offers short courses that can be completed in a quarter hour, composed of lessons lasting three minutes or less.<sup>32</sup> ALISON certificate courses are self-contained one to two hour sequences, while some of their ‘diplomas’ can be completed in less than a dozen hours of study (Bornstein, D. (2012)). These self-paced

single-experience formats are taking the ‘C’ (for ‘course’) out of the ‘MOOC’ acronym.

### *Spread Beyond University Providers*

In a further shift away from the college course model, many MOOCs, including those on major platforms, are no longer offered solely by universities or star professors, but include nonacademic providers. FutureLearn was early to the gate by including such government-related organizations as the British Council, the British Library and the British Museum among their initial partners. The University of Edinburgh then partnered in 2013 with the Tate Gallery and the National Galleries of Scotland to produce the Warhol MOOC on Coursera.<sup>33</sup>

In 2014, Marist College went further in partnering with the non-governmental LINUX foundation and the IBM corporation to offer a three MOOC series on mainframe and enterprise-level computing operations, with the certificate of learning provided by IBM (Stirling 2014).

Some nongovernment organizations and corporations have now taken the next step by offering MOOCs on their own, without university partners. ALISON was an early example. The Saylor Foundation, a non-profit organization committed to making education freely available to all, now offers more than 300 courses for its Saylor Academy MOOC platform.<sup>34</sup> The Institute of Recruiters has opened its own MOOC platform, StudyCourse.org., offering courses for recruitment professionals. Aquent Gymnasium has been launched as a platform for courses targeting professionals in creative fields such as writing and graphic arts. Its trademark feature is that industry professional insiders rather than academics serve as teachers.<sup>35</sup>

There are many examples of such moves away from the academy. These are significant because while such organizations as museums, libraries, professional associations, nongovernment agencies and corporate research divisions are not chartered as degree granting universities, they are cognitive institutions employing highly educated knowledge professionals – many with Ph.Ds and other qualifications comparable with those of university professors. The implication is that once higher education provision moves from credit-bearing courses in accredited colleges and universities, and once the employment market begins to recognize forms of qualification beyond tertiary degrees, any expert with suitable credentials can claim the necessary authority to teach advanced level courses. The line between ‘higher

education' and other advanced learning is now blurred – universities and their professors have lost their monopoly as advanced knowledge creators and disseminators. This is particularly important as new pathways are forged between postsecondary education and the workplace. Non-university providers are now competing directly with academia: Sebastian Thrun's Udacity is now offering diploma-like credentials in the form of 'stackable' nano-degrees, while corporations like software giants SAP and Microsoft offer their own courses complete with certificates of completion (more on this in Chap. 5).

Questions remain about whether education offered in MOOCs has significant educational or occupational value. The question of primary educational value will be addressed in the next chapter; that of occupational value in the subsequent one.

## NOTES

1. These include American Distance Education Consortium (ADEC), European Distance and E-Learning Network (EDEN), United States Distance Learning Association (USDLA) and International Council for Open and Distance Education (ICDE).
2. '...from the time Blackboard started in 1997, the use of learning management software in education has increased exponentially, with Blackboard often given credit (in varying degrees) for higher ed's adoption of software' (Empson 2012).
3. See <https://www.coursesites.com/webapps/Bb-sites-course-creation-BBLEARN/pages/learn.html>
4. See <https://www.youtube.com/watch?v=dCIP3x5mFmw>
5. See <http://www.hewlett.org/programs/education/open-educational-resources>
6. Other organizations such as ALISON had previously offered free online courses, but these were not labeled 'MOOCs' until the term came into general use after 2012.
7. See <https://www.edx.org/schools-partners>
8. See <https://en.wikipedia.org/wiki/Coursera>
9. The full transcript of Agarwal's frequently cited Ted talk can be found at: [https://www.ted.com/talks/anant\\_agarwal\\_why\\_massively\\_open\\_online\\_courses\\_still\\_matter/transcript?language=en](https://www.ted.com/talks/anant_agarwal_why_massively_open_online_courses_still_matter/transcript?language=en)
10. See the MOOC platform Coursmos, <https://coursmos.com/>
11. An article in the Chronicle of Higher Education (Kolowich, S. (2013) summed up the early evidence on MOOC-to-credit: 'Stalled efforts to push MOOCs through the institutional membrane that surrounds

higher-education credentialing have cast doubt on whether large scale free courses will end up disrupting anything<sup>7</sup>.

12. See the nano-degree program description at <https://www.udacity.com/nanodegree>
13. See the specialization program description at <https://www.coursera.org/specializations>
14. See the Series program description at <https://www.edx.org/xseries>
15. See [http://nces.ed.gov/programs/digest/d13/tables/dt13\\_302.60.asp](http://nces.ed.gov/programs/digest/d13/tables/dt13_302.60.asp)
16. See the breakdown at <http://www.capterra.com/learning-management-system-software/#infographic>
17. <https://www.coursera.org/learn/work-smarter-not-harder>,
18. <https://www.mooc-list.com/course/time-and-stress-management-saylor.org?static=true>
19. <https://www.coursera.org/course/uffinancialplanning>
20. <https://www.futurelearn.com/courses/preparing-for-uni>
21. <https://www.coursera.org/course/career>,
22. <https://www.canvas.net/courses/designing-your-career>
23. <https://www.gsb.stanford.edu/newsroom/school-news/joshua-rauh-launch-open-online-course-retirement-planning>
24. <https://www.edx.org/course/inclusive-leadership-training-becoming-catalystx-il2x-0#!>,
25. <https://www.coursera.org/course/lead-ei>
26. <https://www.open2study.com/courses/becoming-a-confident-trainer>
27. <https://www.udacity.com/course/how-to-build-a-startup-ep245>
28. <https://www.coursera.org/learn/foundations-business-strategy>
29. <https://www.mooc-list.com/course/secret-power-brands-futurelearn?static=true>
30. <https://open.sap.com/pages/about>
31. <http://www.edweek.org/ew/articles/2014/09/24/05moocs.h34.html>
32. See for example the mini-MOOC provider Coursmos <https://coursmos.com/catalog>
33. <https://www.coursera.org/course/warhol>
34. <https://learn.saylor.org/>
35. <http://gymnasium.aquent.com/>

## The Primary Educational Value of MOOCs

**Abstract** The *New York Times* declared 2012 ‘The Year of the MOOC’; 2013 was the year of the rebound – when criticisms mounted and the MOOC hype balloon burst. Critics claimed that MOOCs were worthless both in narrowly educational terms and as credentials for the job market. This chapter examines four *educational* criticisms of MOOCs: that (1) MOOCs have low completion rates, (2) MOOCs cannot replace essential teaching functions, (3) MOOCs are isolating while good learning situations are social and (4) at their best, MOOCs merely reproduce the widely rejected top-down methods of conventional college courses. Selected examples of cutting-edge MOOCs are then examined to show how, and why, these early critiques can no longer in general be sustained.

**Keywords** MOOC hype · MOOC critiques · Completion rates · Teaching · Pedagogy

### CRITIQUES OF MOOCs

If 2012 was ‘the year of the MOOC’, 2013 was the year of the rebound – when criticisms mounted and the MOOC hype balloon burst. It did not take a generation of fantastic new MOOCs, as Armando Fox had suggested, to make early MOOCs look pathetic. By 2013, research on and criticism

of the early MOOCs had already done the job. MOOCs – the darlings of 2012 – were declared ‘dead’.

Two categories of criticism emerged. The first claimed that MOOCs had little *primary* educational value – value at fostering the knowledge, understanding, skills and attitudes we associate with college education and the ‘educated person’. The second claimed that MOOCs had no *secondary* educational value: their certificates were worthless as occupational qualifications. MOOCs were initially intended to contribute to such qualifications in two different ways: by being accepted as transfer credits by degree-granting colleges and thus counting toward diplomas that would translate into job qualifications, and by being recognized directly by employers as valid qualifications on their own. The criticisms in the second category claimed that MOOCs would be accepted neither for transfer credit nor as free-standing occupational qualifications.

In this chapter, I examine *educational* criticisms of MOOCs as sources of knowledge and skill, and developments in MOOCs since 2013 addressing such criticisms. In Chap. 5, I turn to criticisms alleging that MOOCs lack secondary educational value in the form of either credits transferable to college degree programs or free-standing job qualifications attractive to employers.

## TWO LINES OF PRIMARY EDUCATIONAL CRITICISM

When considering the primary educational value of MOOCs, two contradictory lines of criticism have emerged. First, critics aligned with the entrenched higher education system argue that MOOCs fail to achieve the ends of college teaching. MOOC students, they state, don’t, or can’t, complete the courses. MOOCs, they add, eliminate the central element of education – teaching – and thus cannot educate. Given that MOOC founders aimed to offer equivalents to conventional college courses, and the designs of their MOOC prototypes followed college course templates, these are fair lines of criticism.

Second, educational radicals turn the argument around, claiming that the real problem is that MOOCs are *too much like* conventional college courses – they use the same outmoded pedagogy, built on the same outmoded structural logic, and thus neglect breakthroughs in learning sciences, digital technologies and organizational models – and generate outmoded habits of thinking and approaching occupational life.

This split is inevitable. When new labor-saving technologies are introduced, there will be winners and losers. Each will offer critiques supporting their divergent interests. Conventional higher educators will attack free or low-cost competitors. Like the Luddites – or the legendary John Henry – they will struggle against being eliminated by machines or reduced to de-skilled machine tenders. Technological innovators, by contrast, will seek to become players in the MOOC game and thus will both critique early versions and work hard to improve them. Each will make critiques of the MOOC prototypes to serve their own interests.

In back of the competing critiques lie different visions of the future of higher education. Will it be a continuation of the institutional pattern familiar since the 1870s, when the large public universities and private research universities emerged? Or will it make use of new knowledge and new technology to break from that pattern in some fundamental way? This may be the most important question raised in the MOOC debate. In the next section, I summarize the four main critiques; in the section that follows, I consider these critiques in light of developments since late 2012 and 2013.

## MAIN EDUCATIONAL CRITICISMS OF MOOCs

The first three criticisms are that (1) MOOCs have low completion rates, (2) MOOCs cannot replace essential teaching functions and (3) MOOCs are isolating, while learning is social.

### *Very Few Enrollees Complete MOOCs*

The first criticism is that MOOCs have very low completion rates. Conventional higher education depends upon course completion. Only by completing courses by moving through the sequence and meeting a minimal standard of achievement can students obtain credits toward a diploma. The diploma then serves as a job qualification; it is the ‘secondary educational benefit’, the link between primary educational achievement – acquisition of the knowledge, skills, attitudes and tastes designated as educationally valuable – and opportunities for employment, which in turn translates into social opportunities and advantages.

Insofar as MOOCs have been advanced as substitutes for conventional residential or online higher education, course completion appears to be a crucial factor in success. Studies have shown that while completion rates for for-credit online courses initially lagged those of residential courses,

the rates of both are now more or less on a par – more than 70 % of students in both complete their courses (The Instructional Technology Council (ITC) 2010). There are no comprehensive data on MOOC completion rates – and statistics are not available for every course. But an early 2013 study of learners in Coursera MOOCs by Laura Perna and her associates at Penn found that user participation fell dramatically after initial enrollment and few users persisted to the end of the courses. The completion rates were very low, averaging 4 % across all courses, though rates were higher for courses with low student workloads (about 6 % versus 2.5 %). Moreover, variations in completion rates based on course length and other factors were not statistically significant (Stein 2013). Subsequent studies confirmed the Penn findings. A further review of studies on completion rates found that lack of learners' motivation, feelings of isolation and the lack of interactivity in MOOCs, as well as insufficient background and skills explained most of the student attrition (Khalil, H. & Ebner, M. 2014). The question remained whether MOOCs could respond to these issues.

With MOOC completion at 4 % and conventional course completion, whether in online or residential settings, in the mid-70 % range, MOOCs appeared to have a big problem with completion.

## MOOCs CAN'T EDUCATE BECAUSE EDUCATION REQUIRES TEACHING

The second, and perhaps deeper, criticism is that in scaling up education, MOOCs eliminate teaching, which is a necessary component in worthwhile education. One of the leading academic critics of MOOCs, Jonathan Rees of Colorado State University, Pueblo, who positioned himself as the debunker of the 'MOOC Racket', argued that MOOCs could not achieve what is routinely achieved through live teaching. Noting that 'MOOCs.... bear a more-than-passing resemblance to ordinary college classes', he asked 'How do you teach tens of thousands of people anything at once?' His answer: 'You don't. What you can do over the Internet this way is deliver information, but that's not education'. Education, he explained, 'involves more than just transmitting facts. It means teaching students what to do with those facts, as well as the skills they need to go out and learn.... Local professors answer their students' questions (and) can offer their students the kind of personalized education that no massive course ever can' (Rees 2013).

A similar critique was offered by Justin Pope (2014) of Longwood University, writing in MIT's *Tech Review*. 'For all the hype, MOOCs are really just content – the latest iteration of the textbook... On their own, MOOCs are hardly more likely than textbooks to re-create a quality college education in all its dimensions.'

Thomas Leddy (2013), one of the signers of the broadly circulated letter from the San Jose State philosophy department that refused to use MOOCs in its courses, offered a strikingly similar critique:

It is the 'massive' aspect of MOOCs that raises the deepest problems. MOOCs pose a great threat to the most important value of higher education: 'literacy.' By 'literacy' I mean, very broadly, the ability to read, think about, and intelligently respond (both orally and in writing) to the literature of any field of study... Actual knowledge requires more than being able to do well on a (multiple choice) exam. It also demands an ability to integrate and explore information creatively – an ability that cannot be so measured.

These critiques all take MOOCs as alternative versions of conventional college courses; their critique is that they are unable to achieve the *ideal aims* of such courses – though recent evidence suggests that conventional college courses also mostly fail to achieve such ideal aims.<sup>1</sup> Rees, Pope and Leddy only hint in these quotes at what live teaching ideally adds to the information content of a course, but their basic idea is clear enough: college teaching 'in all its dimensions' (and at its best) involves the orchestration of information content with discussion about and use of that information. Over time, instruction trains students in patterns of discourse and problem-solving. Through the guidance of teachers, students learn to use the materials in exchanging their own insights and solving their own problems. These patterns can then be carried forward into future learning and life experiences.

The aim of teaching, then, is the building up of a composite of knowledge + understanding + use that prepares students to continue learning on their own, as they will have to if they wish to get good at and eventually master practical arts. Live teachers contribute uniquely to this aim by *personalizing* instruction by responding to the questions and concerns of individual learners. This requires a kind of interpersonal awareness, which only live, knowledgeable and skilled humans, interacting with learners, can attain. The problem with MOOCs, according to these critics, is that these essential elements of the educational situation provided by live teaching cannot be 'scaled up'.

## MOOCs ARE ISOLATING BUT LEARNING IS SOCIAL

The third criticism is that the MOOC learning experience is socially isolating, but humans learn best in a social environment. This social critique of MOOCs can be divided into two distinct lines.

### *Classroom Isolation*

The first refers to the social dimensions of the academic learning session itself. Rachelle Peterson (2013), writing in the blog ‘Minding the Campus’, for example, writes:

One of the main defects in MOOCs is the sterile, disengaged character. A course requires... discussion and debate over claims and analyses, and some form of intellectual community... I've taken two MOOCs... Both were painful. The pre-recorded lectures felt anonymous and distant, and meager student interaction didn't remedy that alienation.

Maria Konnikova (2014), writing in the *New Yorker*, writes in a similar vein:

The problem with MOOCs begins with the fact that... it can be easy to get lost in them. There are tens or even hundreds of thousands of students in some classes. Often, the students receive no personal acknowledgment or contact to hold them to account.

In a campus classroom, the student is interacting with both a teacher and other students. The student ‘belongs’ to the university community and to the class as a learning cohort. A skillful teacher can further divide the whole class into groups or teams to increase the time devoted to interpersonal interaction. The students can then learn from one another, and learn – through participation in discussions and projects – how to relate effectively in a group. These social features can be emulated to some extent in a synchronous small group online environment, where students can ‘take the mic’ to ask questions that teachers can answer – where students can see one another on their computer screens and work together in virtual groups. But these key social features of academic learning cannot, the critics claim, be emulated in MOOC cohorts of tens or hundreds of thousands of learners controlled via a Learning Management System.

### *Community Isolation*

The second line of attack based on the social dimension of learning is concerned not with the classroom environment, whether face to face or virtual, but the social surround of campus life. Students on campus are surrounded by hundreds or thousands of peers, and can extend their classroom learning with extensive extra-curricular social interaction.

Susan Blum (2013) of Notre Dame explores the contrast between residential campus education and MOOCs, arguing that the cocurricular dimension of residential education is very important educationally, and is highly valued by students, simply because humans are social animals. Blum once regarded non-curricular activities as unfair competition with what she took to be the ‘real’ focus of college – academics. But she wondered why social activities were so important to students, and realized that students direct plays, play sports, plan parties, tutor children, organize food drives and play in bands. By contrast, in classrooms ‘students are treated as children, scrutinized and berated for seeing to their bodily needs; the overseeing adults are largely regarded as adversaries rather than as partners’. Blum concluded that academics were not the main draw because:

humans are and must be both embodied and enmeshed in social networks. Their full selves are present in the face-to-face activities that entice them – often much more than in classrooms where students are expected to engage in purely cognitive activities often in isolation from others.

She concludes that instead of dismissing social life ‘we need to attend to this as one of the principal aspects of our humanity’. If conventional classrooms are isolating, MOOCs are even worse.

## MOOCs DEPEND ON OUTMODED PEDAGOGY

I now turn to the educational radicals, who seek to transform higher education by drawing on new learning sciences and digital technologies. The fourth criticism rejects the very premise that MOOCs cannot do what live teachers in conventional classrooms can do. The radical critics argue in effect that MOOCs *actually do* just what most conventional classroom teachers *actually do*. While the idealized image of conventional college teaching features the orchestration of rich educational experiences, the current reality is overworked faculty – most of them adjuncts – serving up predigested content to

disengaged learners. Thus, college courses are an antiquated learning experience. MOOCs simply emulate that experience instead of moving beyond it by drawing on transformative new scientific research and technology.

In a blog post, Doug Holton (2012) noted that MOOC videos ‘aren’t informed by research and theory on how people learn’, and are ‘nowhere near as effective as active learning (where students may learn twice as much and may be three times less likely to drop out than in traditional lecture-based courses)’. He added that ‘*none* of the major MOOC providers have hired *anyone* trained in instructional design, the learning sciences, educational technology, course design, or other educational specialties to help with the design of their courses’.

Holton has complained that ‘the vast majority of MOOCs, like the vast majority of regular college courses, have been completely self-designed by faculty, who are most often not trained in effective instructional design or teaching’. Holton (quoting Richard Felder) jabs: ‘College teaching may be the only skilled profession for which systematic training is neither required nor provided – pizza delivery jobs come with more instruction’ (comment to Kim 2016).

Digging deeper into the problem, Holton (2012) argues that the very idea of a ‘course’ was based on the antiquated need to gather learners in one place at one time. Time and place bound ‘courses’ are no longer necessary. As one commentator on Holton’s post stated, ‘I have tried a lot of these new online courses . . . but I still think they have missed the point. I don’t want to plan my life around weekly assignments.’ Holton (2012) asks:

Are MOOCs an example of imposing an existing worldview (traditional instruction, courses, and instructors) on a new medium for learning? Is it necessary for all the ‘students’ in a MOOC to be learning the same topic at the same time (synchronous learning)? That appears to be a common defining characteristic of all MOOCs. Does there have to be a single, unchanging instructor? Does it have to be a ‘course’ at all, with a finite beginning and end?

## RESPONSES TO MOOC CRITIQUES

While these criticisms were emerging during 2012 and 2013, MOOCs were themselves developing in unexpected ways, and this evolution has accelerated since 2014. In this section, I reconsider the four lines of criticism presented above in light of recent developments in MOOCs.

## COMPLETION IS IRRELEVANT

Since 2014, the low completion rate of MOOCs has come to be seen as a nonproblem. Though MOOCs were conceived on the pattern of college courses, it became clear that college-age students were not the largest fraction of MOOC users. Early and mid-career professionals with college and in many cases even advanced degrees were turning in large numbers to MOOCs for further professional development. These learners were seeking further knowledge and skill to maintain and improve employability, but had little need or desire for MOOC certificates. As a result, they often focused on those *sections* of MOOCs that provided the specific knowledge they sought, and neglected the other sections. As a group, these learners wanted MOOCs to be served up on-demand; MOOC providers responded by archiving the courses. MOOCs thus became less like conventional time-bound courses and more like other forms of on-demand media such as YouTube videos.

Stephen Downes ([2014](#)) punctured the ‘completion’ criticism when he famously asked ‘how many people complete the newspaper?’ ‘The completion argument’, he said, ‘misunderstands the nature of MOOCs’.

The traditional course is designed like a book – it is intended to run in a sequence, the latter bits build on the first bits and if you . . . abandon it part way through . . . you can say the book has failed, because the whole point of a book is to read it from beginning to end. But MOOCs are not like that. Rather, they’re much more like a magazine or a newspaper . . . there’s probably more content than you want, and that you’re supposed to pick and choose from the items, selecting those that are useful and relevant to your present purpose.

And so here’s the response to completion rates: *nobody ever complained that newspapers have low completion rates*. And yet no doubt they do, probably far below the ‘abysmal’ MOOC completion rates (especially if you include real estate listings and classified ads). ‘People don’t read a newspaper to complete it, they read a newspaper to find out what’s important’.

After Downes’ argument circulated, it became bad form in the MOOC community even to mention completion rates. As Martin Weller ([2014](#)) of Cardiff University put it, ‘It has become accepted practice amongst those who know about MOOCs to sniff at completion rates. Focusing on them (hell, even mentioning them) demonstrates just how constrained you are by the old ways of thinking. . . .’

Weller, nonetheless, questioned Downes' analogy, noting that people do return to the same newspaper day after day, and read the same sections even if they don't 'complete' the entire paper. By comparison, he argued, the huge attrition rate of those who enroll in MOOCs – even of those who participate in the first week – suggests that MOOCs do not offer what newspapers inarguably do – information consistently useful and relevant to their enrollee's purposes.

But Weller's argument is also not entirely convincing. Not everyone who has sampled a newspaper has a newspaper habit. Some just scan the headlines; others are happy to remain uninformed. Most pick up information from an ever-increasing variety of media sources. This doesn't diminish the value of newspapers. As Downes' argument makes clear, MOOCs – especially in their archived form – are now just one more form of media. For Weller's argument to work, those sampling a MOOC they do not complete would have to fail to turn to *other* MOOCs – not the *same* MOOCs – among their many possible information sources. But most non-completers of any given MOOC continue to enroll in or view other MOOCs. Whether or not they complete any given MOOC is no more relevant than whether they 'complete the newspaper'.

One possible suggestion for filling in arguments like Weller's is to add an additional premise: because learners don't complete MOOCs they are not learning much, if anything from them. But is this so? David Pritchard, professor of MIT's Mechanics Review MOOC, regards initial registrants as 'window shoppers who face no cost barrier to trying a lecture or two.' Thus, their rates of course completion are irrelevant. 17,000 signed up for Pritchard's MOOC, for example, and while just 10 % signed on for the second assignment, more than 50 % of those earned a certificate of completion. Perhaps more relevant, the MOOC was capable of communicating a difficult subject matter – Newtonian mechanics – even to students with the least science background; these made the same *relative* improvement as stronger students. 'They may have started with an F and finished with an F,' Pritchard says, 'but they rose with the whole class' (Pope 2014). While only 5 % of the enrollees completed the course, many more experienced some significant learning.

It has never been entirely clear what the 'completion argument' was designed to prove. College students complete their courses because (1) they have paid considerable sums of money for them and (2) they depend upon the credits they earn through course completion to earn degrees that provide them with job qualifications. As MOOCs are free and

have up to now generally provided no job qualifications, learners have had little motivation to ‘complete’ them. As a result it is not clear what, if anything, can be shown by comparing their completion rates to those of standard college courses. Insofar as MOOC-like offerings carry tuition fees and offer job-relevant qualifications, their completion rates rise dramatically. According to edX founder Anant Agarwal, the average completion rate in edX MOOCs among learners who sign up and pay for a verified certificate is almost 60 % – 10 times the rate for students taking the class for free (Friedman 2016).

### MOOCs CAN HANDLE THE TASKS OF COLLEGE INSTRUCTION

Today, criticism of MOOCs has shifted from course completion to the quality of the MOOC learning experience – especially the decline in value once live teachers are removed.

It is useful to note at the outset that many mid-career learners with college degrees may be able to learn effectively from MOOCs without teacher mediation; having succeeded at college, they already know how to orchestrate academic resources and learn on their own. These learners make up the largest fraction of MOOC users. A Study by Gayle Christensen and colleagues (2013) at the University of Pennsylvania in late 2013 found that the typical learner in Penn’s 32 MOOCs tends to be ‘well educated, and employed, with a majority from developed countries’ aiming to advance their career or satisfy intellectual curiosity.

The complaint that MOOCs can’t handle the tasks of college instruction is thus particularly pertinent to younger, less educated, less academically prepared college students. It was the relative failure of such a group of students to learn from Udacity’s college math MOOCs, when compared with a similar group with a live teacher, that led Sebastian Thrun to declare his MOOCs a ‘lousy product’ and to withdraw from the college market.

### *High School Enrichment*

One surprising response by MOOC producers to this weakness has been to supplement and enrich *high school* instruction with MOOCs for both students and teachers. The aim has been to make a broader range of school students better prepared for university; superior content from MOOCs,

in high school classrooms facilitated by teachers backed up with additional training provided by their own MOOCs, will, they believe, prepare students for college-level courses – including MOOCs. MOOC platforms have taken several avenues to this goal.

### *Stand-Alone High School Classes*

One avenue has been to enrich precollege education to provide greater academic sophistication for these learners before college so they won't be as dependent on teacher hand holding in their college years. As mentioned earlier, MOOCs have spread to high schools. Some MOOCs offer advanced placement (AP) courses, others AP exam preparation. These MOOCs will improve college readiness while helping learners gain free college credits. Other MOOCs are aimed at standard high school courses and at helping teachers prepare less advanced students for college.

The edX high school initiative, for example, hosts 40 high school courses from leading universities. These cover the entire secondary curriculum, from English Composition, American Government, Geometry, Biology, Chemistry and Physics to Environmental Science, Statistics, Calculus and Computer Science. Most are at the AP level, but some are focused on the CLEP exams, which also can lead to credits accepted by many universities.<sup>2</sup> Rice University in Texas has contributed a suite of the edX AP MOOCs. Carolyn Lavander (2104), Rice's VP for Strategic Initiatives, says these can 'level the playing field in college readiness' and 'improve success rate in individual coursework'.

The Canvas Network platform initiated a similar project in August 2014, with seven MOOCs for high school students and seven more for high school teachers.<sup>3</sup>

### *Precolllege Review and Remediation*

Coursera has added 'bridge' courses to ease the transition from high school to college. An interesting example is 'Preparation for General Chemistry' from Rutgers. This course aims to bridge the gap between high school chemistry and college chemistry by developing 'critical thinking and analytic problem solving skills within a chemistry context'. The course, organized as a series of 'boot camps', begins with a preliminary assessment of prerequisite science and math knowledge, to make students aware of their strengths and weaknesses, and to help them set realistic goals for the course.<sup>4</sup> Another example is the 'Physics in Motion' MOOC from the University of New South Wales, which uses animations, experiments,

example problems, quizzes and online discussions to help high school students – especially those in underserved rural areas in schools – prepare for university science, engineering and technology courses.<sup>5</sup>

Another early example of these ‘review’ MOOCs is from Wake Tech Community College in North Carolina, which introduced its first MOOC, and one of the first ever introduced by a community college – an Algebra Review – in May 2013. Wake Tech followed that MOOC up with other review courses in basic college prep subjects. Tonya Forbes, Wake Tech associate vice president of Arts and Sciences, explained that in accord with the 2-year college mission:

Instead of offering upper-level courses in math and science, we entered into the world of MOOCs with the idea that the MOOC format might be better used to help people prepare for and be successful in college. We envisioned a suite of developmental MOOCs, choosing subjects that often create challenges for our students. (deBruyn 2104)

Two final early examples of college review and remediation MOOCs are the ‘Crafting an Effective Writer’ MOOC from San Jacinto College, added to the Coursera platform in Summer 2013 and designed for ‘the basic writer’, one defined as ‘a person who would place a couple of classes below English composition at an American college or university, and the Mastering Academic Research: Information Skills for Successful Students MOOC offered by Evans Library at the Florida Institute of Technology in July 2014’ (Petralia 2014).

A MOOC offered by the University of Wisconsin La Crosse aimed to prepare students who had tested into remedial math on admission for university level for-credit math courses required for graduation. In a pilot study, 38 remedial students took the online course in the summer of 2012. All but one then qualified for college-level math.<sup>6</sup>

### *College Orientation MOOCs*

MOOC providers have also offered new MOOCs aimed at orienting students from less advantaged groups to college norms and expectations. One good example is the ‘Preparing for University’ MOOC from the University of East Anglia on the FutureLearn platform.<sup>7</sup> According to the course description, the course aims to develop the very skills that MOOC critics like Rees, Pope and Leddy think to be lacking in early college students.

Higher education is about... developing skills relating to critical thinking; holding a supported, substantive argument; analysing and using data or sources critically. These are university-level skills but you can work on the foundations of these skills before you get there.

A second MOOC in this genre is the ‘How to Succeed at College’ MOOC from the University of Kentucky on the Coursera platform. In this course, incorporating ‘videos, and social media while focusing on strategies for student success... students interact and plan their transition to higher education and beyond’.<sup>8</sup> A final example is Charles Sturt University’s ‘What’s Uni Like?’ MOOC. According to Professor Garry Marchant, Charles Sturt’s Deputy Vice Provost, ‘The “What’s Uni Like?” project aims to encourage students from low SES backgrounds to aspire to higher education, and to improve their understanding of university culture and expectations in order to support their effective participation.’<sup>9</sup>

### *MOOCs and the Tasks of Instruction*

We can now move from how MOOCs can help young people prepare for college to examine the central question – whether, and how, MOOCs can handle the tasks of college instruction. This is clearly among the most important question about MOOCs.

To sharpen the terms of debate, we can say that instruction involves three interacting dimensions: didactic, discursive and heuristic. The didactic dimension conveys *knowledge* through lectures and textbook readings; the discursive facilitates *understanding* through interpretive discussion and critical feedback; the heuristic shapes *skills* through practice and correction.

High school and college instruction is geared to ‘initiate’ young people into the arts and practices of academic life. ‘Majors’ in the later college years are then intended to *introduce* young adults to occupational arts and practices. But these programs remain, for the most part, academic. There is an additional dimension of learning – we may call it ‘performative’ – that goes beyond formal instruction and is involved in performing occupational arts at a high level – meeting professional standards.

It takes many hours of training and practice – often under supervision – to get good at these arts – to acquire technical mastery. If students gain some occupational experiences during their college years – for example, through internships and apprenticeships – and if the academic subjects are

approached with a view to their real-world uses, then some level of technical mastery may be attained through college education. This is not, however, the norm. In almost every case, learning for performance takes long hours of additional informal learning – both self-directed and under supervision. In his bestselling *Outliers*, Malcolm Gladwell (2008) popularized the now famous 10,000 hour rule: the key to success in any field is practicing a specific skill 20 hours a week for 10 years. Along similar lines, Sally Ann Moore (1998) of Digital Equipment Corporation has estimated that in ‘learning for performance’ 5 % of the value is contributed by didactic learning, 20 % by discursive and heuristic learning, and an additional 75 % by informal performative learning – practicing to adjust and adapt to the unpredictable real-world demands of professional situations. These two estimates, however rough, are in broad agreement and provide some sense of the relative contributions of formal instruction and informal practice to adult performance capabilities.

Good college teachers will be able to orchestrate the first three learning dimensions. In a geometry unit, for example, the didactic component may present basic concepts such as line, plane, axiom or proof; the discursive component may provide opportunities for discussion and critique of, for example, proof strategies; the heuristic component may provide multiple opportunities to, for example, determine the area or perimeter of figures, to invent proofs, or to construct bi-sections of line segments. In a literature unit, the didactic component may convey background knowledge about the author, genre or period; the discursive may provide opportunities for interpretive discussions of a selected story; and the heuristic may provide opportunities to use strategies of analysis, for example, to locate the protagonist, the central conflict and the dénouement. In drawing instruction, the didactic dimension may include lessons in art history plus drawing methods and materials of great artists, the heuristic may include drawing exercises, and the discursive peer discussion and criticism of the students’ drawings.

Good instruction provides for the development and integration of knowledge, understanding and skill. It aims to engage students in worthwhile activities and practices by melding ‘I know’ and ‘I understand’ with ‘I can do’. The composite aim is for students to get better at these academic arts and practices, and to lay in the cognitive and emotional bases for dedicated informal learning essential for acquiring mastery at any art, and in particular, occupational arts of their choosing.

MOOC critics argue in effect that MOOCs simply cannot handle the tasks of teaching. They are poor didactic instruments – and even worse in

handling discursive and heuristic components. They can't orchestrate composite educational experiences that make students *good at* academic arts and practices, and they cannot connect these with real-world occupational experiences – as some colleges do through ‘cooperative education’ programs with mandatory internships. The critics see MOOC didactics as simply videotaped talking heads; MOOC discourses as limited to discussion boards that are irritating, boring, and riddled with spam and flame wars; MOOC heuristics as limited to repetitive, trivial, and exhausting problem sets.

Because these criticisms are general, they can be rebutted through counter examples. If someone claims that all swans are white, a single black swan provides ample refutation. In what follows, I aim to show that these general claims cannot be sustained. I rely on counter examples showing that MOOCs *can* accomplish tasks the critics claim they cannot. I provide several distinct examples, to show that the exceptional cases are not mere flukes. Once we see *how* the MOOCs accomplish their tasks, we will also understand how other MOOCs *can* perform these tasks.

It is no part of my argument, however, to suggest that MOOCs in general *do* handle the tasks of instruction well, and it would be foolish to suggest that they do. Some MOOCs, like some textbooks, instructional methods and teachers, are undoubtedly poor. The first MOOC prototypes included some real losers, and many current MOOCs are no better. Many of the ‘cutting-edge’ MOOCs, however, are promising and undercut the general critique – that MOOCs *cannot* handle the tasks of instruction.

### *The Didactic Dimension*

While MOOC critics portray live classroom instruction as akin to Mark Hopkins with a few students on a log,<sup>10</sup> the more typical reality – especially under the prevailing economic rationalization of ‘academic capitalism’, is overburdened faculty members (or adjuncts, or grad students) serving up uninspiring lectures to halls filled with disengaged students. If talking heads are the problem, academic critics are simply in no position to condemn MOOCs. As constructivists and connectivists have complained, professors are often clueless about learning design.

MOOC presentations, however, are not *in general* composed of talking heads. On the contrary, they constitute an entirely new form of pedagogical experience. The large data sets and the rich data trails of computerized instruction have enabled researchers to explore new questions, such as the optimum length for lecture segments, and the most effective way of

articulating them with readings and problem sets. So for example, the 50-minute lecture has been shown to leave students lost and exhausted, while MOOC research suggests that 6 minutes is optimal. MOOCs now typically break up brief lecture segments with problem sets and free-response questions. More to the point, lecture segments are supplemented with interviews, clips from panels at research conferences, interviews with other scholars, research presentations by graduate students and on-site videos of knowledge use in ‘real-world’ settings. These varied elements would be impossible to combine in large residential classrooms. While a single instructor, moreover, inevitably gives his course subject matters a personal twist, MOOCs offer unique opportunities for presenting additional points of view.

Jonathan Haber ([2014](#)), who constructed a complete college education in the humanities – in a single year – from MOOCs – and thus knows as much about actual MOOCs as any commentator, states:

MOOCs are often criticized for just transferring a ‘sage on stage’ pedagogy from the lectern to the computer screen, scaling up the worst aspects of oversized lecture classes. But as my year of MOOCs went on, I saw a new visual language developing, as single talking heads were supplemented (or replaced entirely) with conversations among colleagues (this visual style of one of my favorite courses: HarvardX’s ‘Ancient Greek Hero’), interviews with experts, on-location shots, and even on-screen performances. Such creativity helped to make lectures one of the most engaging and, ironically, intimate components of massive online courses, while also raising the bar for all other forms of online learning (most of it far duller than your average MOOC).

At their best, MOOC presentations are as engaging as the best television news magazine programs. And this is not surprising, as the universities providing the best MOOCs are investing in cutting-edge production studios and media professionals. The best MOOC segments are more akin to short essay segments of ‘60 minutes’ than like talking heads. We may question whether producing ‘edutainment’ of this sort is the best use of scarce educational dollars, but that is another critique, and one that undermines the complaint about ‘talking heads’.

### *The Discursive Dimension*

Even ardent MOOC fans acknowledge that MOOC discussion boards are far from adequate substitutes for live discussion. Significant discursive

learning for understanding cannot be built up by reading and writing posts alone; it requires discussion where concepts are used in novel and shifting circumstances, with occasional feedback and criticism from relative discipline or field ‘insiders’.

Fortunately, MOOCs have moved beyond discussion boards, and some now include live conversations with teachers, tutors or other insiders in physical as well as virtual spaces. Reflecting on the MOOC failures of 2013, Andrew Miller states that (2014) ‘We can no longer continue with the “factory farm” model of online education and push students through it without the close relationship and coaching of a teacher.’ Miller noted that some MOOCs had already started to add course mentors and 24/7 support specialists. Noting that ‘education is about relationships’, Miller added: ‘We know this, and the creators of MOOCs have started to adjust based on this.’ Indeed, some MOOCs now build in social relations and personal contacts for discussion through collaborative online learning, MOOC camps, MOOC meetups and roadshows.

New software packages, such as the Novoed platform developed at Stanford, were developed specifically to bring learners together in collaborative problem-solving. Professor Amin Saberi and Ph.D. student Farnaz Ronaghi created a course on technology entrepreneurship that attracted 40,000 students from over 150 countries. They created Novoed as a MOOC platform to make it easy to break down those 40,000 students into smaller groups to promote discussion and help students improve the group learning skills that have been neglected in previous x-MOOCs (Empson 2013).

MOOC camps are facilitated discussions of the materials in massive open online courses. The State Department started offering facilitated MOOC camps at their embassies and consulates. The camps, led by participants in the Fulbright program and U.S. Embassy staff, have been offered in more than 60 countries. Courses are drawn from major MOOC providers, including Coursera, edX and Udacity (U. S. Department of State n.d.). According to Evan Ryan, assistant secretary of state for educational and cultural affairs, the Department’s MOOC camps ‘aim to provide a high-quality, American-style learning experience. This program allows young people in particular to improve their English language skills, and by experiencing U.S. higher education, they may become interested in studying in the United States’ (Haynie 2014).

‘Meetups’ are regular meetings of people sharing a particular interest who have connected through a social-networking website, the most familiar of which is Meetup.com. The website ‘online course’ reported in early 2013 that ‘Coursera, Udacity, and edX all have meetup groups through Meetup.com. Coursera is currently leading the way with meetups, or at least its students are. There are more than 2,000 meetup communities for Coursera participants in 1,800+ cities. Udacity has 523 communities in almost 500 cities, and edX has 35 communities around the world’.

MOOC learners also started early on to meet up in libraries, which eagerly provided learning spaces with facilitators for them (Schwartz 2013). The city of Boston teamed up with edX in 2013 to initiate Boston-x, a project providing Internet computers and meeting places for MOOC learners (City of Boston 2013). Other cities have emulated Boston-x, dedicating space in libraries and other public buildings for MOOC study. The New York Public Library system, for example, has teamed up with Coursera to create MOOC social learning spaces in several library branches, using advanced graduate students as facilitators (Enis 2014).

A ‘roadshow’ is a touring show of performers (e.g., rock musicians or political candidates) moving to a series of locations to connect with fans or supporters. Given the large number of participants in popular MOOCs, some MOOC professors have achieved celebrity status, taking their MOOC performances on the road. These ‘shows’ help their students connect face to face in real time to form local communities. They provide opportunities for the professors to discuss MOOC content with live audiences. Professor Michael Goldberg of Case Western Reserve University in Cleveland, Ohio, developed a six week MOOC, ‘Beyond Silicon Valley: Growing Entrepreneurship in Transitioning Economies’, for the Coursera platform in spring 2014. The MOOC attracted more than 23,000 registered students from 183 countries, more than 85 % of whom were from outside the United States (Goldberg 2014). Goldberg has subsequently traveled to several overseas cities where large groups of his MOOC students are concentrated to host discussions. In 2015, for example, he was in Heraklion, Greece, to meet students and record a TEDx talk and ‘awaken listeners to two ideas: Dreaming should not stop, even if living in an economically unstable environment, and anyone can create something in one’s place’ (CWRU 2015).

The key point demonstrated by all of these examples is that even in their free or low-cost iterations, MOOCs can provide regular opportunities for group discussion even in live settings.

### *The Heuristic Dimension*

Academic critics claim that the heuristic ‘I can do’ element of MOOCs is restricted to auto- or peer-graded problem sets. Many actual MOOCs, however, have moved way beyond such mechanized problem sets, and some have even reached beyond the ordinary limits of instruction by making project-based performative learning central to the MOOC experience. Here is an example:

### *Heuristic Learning Through Virtual Internships*

At the University of Virginia’s Darden School of Business, Professor Michael Lenox has offered several iterations of his ‘Foundations of Business Strategy’ MOOC on the Coursera platform. Lenox uses ‘Coursolve’, a crowdsourcing software program, to connect his course with partner organizations where students work to solve real-life challenges. ‘Entrepreneurs don’t always have the resources to hire external support to address their needs, but we’ve seen firsthand that students are hungry for the chance to apply their knowledge to real-world problems’, Lenox says. ‘By collaborating with organizations, students can strengthen their skills development while potentially providing businesses and nonprofits with valuable insights.’

In the final course project, Lenox invited students to complete a strategic analysis of one of the partner organizations. More than 400 students completed analyses in partnership with 100 different organizations, including established businesses, start-ups, resource-strapped nonprofits and social enterprises (Charles 2013); 78 % of those students ended up participating directly with senior managers in the strategic decision-making of their organizations. Reporting on the second iteration of the MOOC, Lenox (2014) added, ‘Hundreds of in-person study groups formed in over 50 countries. Students included young entrepreneurs and mature small business owners; nonprofit organizers; a study group of Mongolia students led by a Peace Corps volunteer; a group of unemployed women in Ohio looking to improve their job prospects; a group of students in Bolivia led under a program from the U. S. State Department; and a group of Arab and Israeli students participating

through the YaLa Young Leaders program building détente through education.'

### MOOCs NEED NOT BE ISOLATING – AND ISOLATION IN LEARNING IS NOT ALWAYS BAD

The social isolation criticism overlaps the heuristic learning criticism, as many arts and practices can only be enacted in social contexts. As the State Department and New York Library MeetUps, Michael Lenox's Business Strategy MOOC and Michael Goldberg's roadshow demonstrate, MOOCs need not be isolating. Students can work together in both real-world and virtual groups, with one another, group facilitators or even business leaders, on both academic and real-life tasks. The following is another example – one that focuses on heuristic learning through mass collaboration:

#### ***Collaborative MOOCs***

Cathy Davidson has been pushing the x-MOOC format in more collaborative directions. Her well-publicized 2013–2014 MOOC, 'The history and future of higher education' on the Coursera platform, preenrolled 18,000 students, and the number of students has grown to 25,000.<sup>11</sup> In announcing the course, Davidson stated:

I'd like to turn the class' weekly forums into an opportunity for a massive, global, collaborative, constructive, peer dialogue about how higher education got to its current dilemma. And from there, I hope we can come up with some creative, innovative, and workable ideas to make a better future.  
(Davidson 2013)

Her large MOOC student cohort was able to embrace projects of a scale not possible in conventional residential courses. In one project, her students created a rich, multimedia transnational timeline of higher education since 1800. Each participating student reported on significant historical events in his or her own countries, states and municipalities. Davidson coached the students on historical research methods and skills in reporting historical events. Many institutions previously neglected by historians of education, including those long closed, have been entered into the accessible historical record.<sup>12</sup>

### *Isolation in Learning*

The bottom line is that MOOCs need not be isolating. But the question arises whether isolation in learning is always a negative? Perhaps the problem of isolation is specific to particular learners, with their particular capabilities and motivations. We have all experienced days when we have stayed home, pulled down the shades and concentrated on our tasks – academic and otherwise – all by ourselves. In learning, there are roles for both togetherness and solitude – not all learning is dependent upon interaction. Consider this from Athabasca University's Terry Anderson ([2003](#)):

Despite the high degree of rhetoric from constructivist and feminist educational theorists of the value of interaction in creating interdependence in the learning sequence... there is also evidence that many students deliberately choose learning programs that allow them to minimize the amount of student-teacher and student-student interaction required... (There is a need for) synchronous and asynchronous activity, and also a strong desire for variety and exposure to different modes and modularities of educational provision and activity.

## MOOC PRODUCERS HAVE JOINED THE LEARNING SCIENCE AND EDUCATIONAL TECHNOLOGY COMMUNITIES

The response to the fourth criticism can be brief. While the early MOOC producers worked in isolation from the learning science and educational technology communities, and thus overlooked many instructional possibilities and made exaggerated and arrogant claims, by the end of 2014 the MOOC leaders had joined the learning science community and began to base their pedagogical innovations on serious research (Kim [2014](#)). Joshua Kim from Dartmouth, who has followed this development closely, spoke of an ‘emerging convergence between that the worlds of traditional online teaching and learning... and the people involved in the MOOC initiatives’. Kim notes that while educators involved in online learning had for many years used ‘theoretical frameworks grounded in research based practices in how people learn, the biggest MOOC evangelists... were never part of the larger learning and pedagogy communities of practice’. By November 2014, however, Kim saw encouraging changes, reporting that at an edX Consortium meeting in that month ‘it was refreshing to hear lots informed

discussion on designing open online courses from the learner's point of view. Backwards course design. Courses designed around learning... rather than content coverage'. EdX and Coursera, in different ways, became more serious in their educative efforts.

Not much more than 1 year has passed since then (I am writing in Spring 2016), and it remains too early to make any generalizations about MOOC quality improvement. But after the marriage of the MOOC and Learning Sciences/Ed Tech communities, the MOOC hype has died down. A sense prevails among those attentive to MOOCs that slow progress is being made in their primary educational value. Among the questions that remained open, those about the occupational value of MOOCs loomed large. This should not surprise us; regardless of their eventual primary educational value, MOOCs will be broadly rejected by learners as a significant component of their educations if they cannot contribute to their prospects for remunerative employment. I now turn to these questions.

## NOTES

1. See Arum, R. and Josipa Roksa (2011). Arum and Roksa's research found that 45 % of students made no significant improvement in their critical thinking, reasoning or writing skills during the first 2 years of college, according to the study. After 4 years, 36 % showed no significant gains in these so-called 'higher order' thinking skills.
2. <https://www.edx.org/high-school-initiative>
3. See description at <https://www.canvaslms.com/news/press-releases/canvas-network-announces-minecraft-moocs>
4. <https://www.coursera.org/course/chemprep?authMode=login>
5. See the description at <http://newsroom.unsw.edu.au/news/science/unsw-launches-physics-mooc>
6. 'The group scores increased, on average, in the Basic category from 460 to 604, and from 433 to 506 in the Algebra category. Both of these results were found to be statistically significant using a paired t-test (with each p value less than 0.0001), and perhaps more importantly, all but one of the students were able to improve their placement scores sufficiently to allow them to enter college-level math and science courses.' <http://www.uwlax.edu/mathmooc/about-the-course/>
7. <https://www.futurelearn.com/courses/preparing-for-uni>
8. <https://www.coursera.org/course/succeedincollege>
9. <http://news.csu.edu.au/latest-news/education/higher-education/new-mooc-will-promote-tertiary-education2>

10. President James A. Garfield, a student of Hopkins at Williams College, is said to have defined an ideal college as ‘Mark Hopkins on one end of a log and a student on the other’. University historian Frederick Rudolph has stated: ‘no one can properly address himself to the question of higher education in the United States without paying homage in some way to the aphorism of the log and Mark Hopkins’.
11. Davidson, personal twitter communication, March 29, 2016: @CathyNDavidson ‘18 k at the time and now up to an 25 k @ljwaks’
12. Davidson lays out her plan for this course and its rationale in an interview with Jonathan Haber ([2013](#)).

## MOOCs and Career Qualifications

### Certificates, Credits, Diplomas and Beyond

**Abstract** Higher education offers ‘secondary educational benefits’ – credits and diplomas – which serve as job and career qualifications providing access to advantageous careers and social positions. Critics argue that MOOCs cannot provide such benefits. Developments since 2012 blunt these critiques. The first section of this chapter considers the contribution of MOOC certificates to diploma-based credentials when accepted for transfer credit. The second section then considers stand-alone MOOC-based qualifications such as Udacity ‘nano-degrees’, ALISON ‘diplomas’, Coursera ‘specializations’ and edX ‘mini-masters’. The chapter ends with an examination of MOOC certificates and badges as components of digital capability portfolios. The conclusion is that bundling of learning experiences including MOOC certificates in personalized portfolios may fit the occupational credential needs of many learners better than college diplomas in the emerging ‘gig economy’.

**Keywords** Occupational qualifications · MOOC certificates · Transfer credit · Competency-based learning · Nano-degrees · Digital portfolios

### INTRODUCTION

In addition to their primary benefits of knowledge, understanding and capabilities, colleges and universities also offer ‘secondary educational benefits’ – credits and diplomas – which serve as job and career

qualifications. These in turn often provide access to remunerative work, and thus access to all money can buy: food, clothing and shelter, but even more significant, social position and recognition.

In this chapter, I discuss potential secondary educational or socioeconomic benefits of MOOCs. Regardless of the primary educational value of MOOCs, the question arises about how they provide these secondary benefits?

The chapter is divided into three sections. The first, and longest, considers the contribution of MOOCs to secondary educational benefits *within the entrenched system of higher education via conventional degrees and diplomas*.

This section is followed by an interlude where I indicate how MOOCs have begun to move beyond the entrenched system in two major but overlapping ways: by providing *free-standing qualifications* on their own – often also referred to as ‘degrees’ or ‘diplomas’ – and by contributing to *capability portfolios* that can be used *in place of* standard qualifications.

After the interlude, I discuss in the second section the stand-alone MOOC-based qualifications. I focus on Udacity’s ‘pivot’ from education to career training with its nano-degree programs, on ALISON’s ‘diploma’ programs and on the specialization series of Coursera and edX. As the ALISON diploma courses have been developed with the educational needs of developing nations in mind, I also consider the quite different crisis of work and education now experienced in the developing world. Finally, in the third section, I discuss MOOCs as components of capability portfolios.

MOOCs started as moves within the entrenched educational system. They met obstacles there that led them to move beyond that system. MOOC-based educational efforts via alternative micro-diploma qualifications or capability portfolios may fit the new labor context of the global economy better than efforts intended for credit-transfer within the entrenched educational system. The bundling of multiple educational experiences, including MOOC certificates in personalized digital portfolios, may also fit the educational needs of many learners better than would a college diploma. Much will depend on how potential employers will value MOOC-based qualifications and digital portfolios certificates. Much will also depend on possible changes in the funding of standard college education – currently a major political issue.

## THE EDUCATIONAL SYSTEM: DEGREES AS QUALIFICATIONS

### *MOOCs for College Credit*

X-MOOCS appeared on the scene in 2012 – the Year of the MOOC – while the crises in work and education were emerging as major public issues. While the economy had recovered from recession, full-time jobs were increasingly being replaced by contingent ‘gigs’ offering less job security and lower total income. As the economy grew, wages remained stagnant or fell.

Meanwhile, 2011 had marked the first year when total college enrollments and tuition revenues began to decrease; many colleges found themselves facing financial exigency, with their credit ratings downgraded. Due to rising tuition costs, many students graduated – or simply dropped out – suffering from unsustainable levels of debt. MOOCs first caught public attention because they promised a way to reduce college costs and ‘level the playing field’ in education.

MOOCs were thus framed as an element *within established arrangements for education* – a way to preserve access to college and hence access to the social and economic benefits afforded by a college diploma. The MOOC pedagogy, moreover, emulated the college lecture course. MOOC providers turned to the ACA to certify that MOOCs were credit worthy as college courses.

### *Credits Are the ‘Coin of the Realm’*

A crucial question, however, remained unanswered: how would MOOC certificates be transformed into college credits counting toward diplomas. Regardless of the primary educational value of MOOCs, which remained controversial, how would they provide the secondary educational benefits attached to college diplomas?

Commentators supposed – and some explicitly claimed – that the fate of MOOCs depended on the acceptance of their certificates for transfer credit – the ‘coin of the realm’. Justin Pope (2012), writing in *Huffington Post* in November 2012, asked

What will MOOCs ultimately achieve? Will they simply expand access to good instruction (no small thing)? Or will they truly transform higher education, at last shaking up an enterprise that’s seemed incapable of

improving productivity, thus dooming itself to ever-rising prices? Much of the answer (Pope stated) depends on...course credit. Credit's the coin of the realm in higher education, the difference between knowing something and the world recognizing that you do.

Note that for Pope the relationship between college credit and recognition of knowledge appeared in 2012 to be a natural fact – like the law of gravity – rather than an outgrowth of impermanent human decisions that can be reconsidered and reversed. Clearly, it is the latter.

The MOOC founders argued, moreover, that their certificates *should* and *would* be counted for credit, because of their primary educational value. Some of the initial MOOCs were rapidly certified by the American Council on Education, the established body for evaluating college courses – as educationally sound. The MOOC founders argued that if colleges routinely accepted courses from ‘minor league’ community colleges for transfer credit, they would have to accept courses from ‘world-class’ university leaders like MIT, Harvard, Princeton and Stanford.

MOOC critics immediately pointed out that none of these ‘world-class’ universities were themselves accepting even their own MOOC certificates for transfer credit. Presumably, the MOOC leaders thought that the ‘minor league’ schools would be grateful to accept MOOC-based credits from the ‘big leagues’. This presumption ignored both the economics of college credit generation and the role of the educational system itself. Colleges that attract and retain students obtain tuition payments. In state schools and many lower level private ones, these revenues are now absolutely essential for survival. Colleges are in the business of selling college credits, and even a small decrease in sales – as the post 2011 decline in tuition revenues reveals – can push many of them over the financial cliff. In asking such schools to grant credits for MOOC certificates, the MOOC providers were, in essence, asking these colleges to give away what they were in the business of selling. Not surprisingly, they found few takers.

### *The ‘System’*

But why, then, do just about all colleges and universities – regardless of prestige or educational worth – accept transfer credits from each other? The simple answer is that they are all integrated in a ‘system’ – the system

of schools and colleges regulated by law and governed by accreditation agencies – within which credits are the *units of exchange*. The system serves all of its member organizations in various ways. The 2-year colleges and small religious and liberal arts schools, for example, can make the pitch to potential students that the credits they generate can be transferred to more prestigious colleges and graduate and professional schools. The latter, in turn, gain from having an enlarged recruitment pool for tuition paying students at later stages in their educational careers. MOOCs, despite their provision by ‘world-class’ universities and their emulation of college courses, lie outside this system and their certificates are not accepted as valid currency. Of course, the system itself can evolve in unpredictable ways. And forms of currency outside the system – like bitcoins in the world currency market – can emerge and circulate in the larger occupational qualification economy. (More on this below in parts 2 and 3 of this chapter.)

## MOOC CERTIFICATES FOR TRANSFER CREDITS

I said above that the MOOC founders have not been very successful in getting their certificates accepted for credit. There were, however, early exceptions worth reflecting on, because in each case the MOOC strategy of the institution became part of, or reinforced, its marketing mix.

### *First in the Nation*

The first college in the United States to grant credit to students who passed a MOOC was Colorado State University-Global Campus. The university announced the MOOC option in the fall 2012 semester. Students received their credits ‘on the cheap’ – \$89, the cost of the required proctored exam – compared with the standard Colorado State tuition of \$1,050 for a comparable three-credit course. Their marketing pitch: *very cheap* and *first in the nation!*

### *The National Model*

Georgia State University was also straight out of the gate in its willingness to consider MOOC certificates on the same basis as other experiences put forward for transfer credit. By January 2013, even before the ACE had approved any MOOCs, Georgia State was accepting MOOCs for transfer

credit, stating that it already grants credit for Advanced Placement courses and classes taken at other institutions, and it would evaluate MOOCs using similar criteria. Philosophy Professor George Rainbolt, chair of the University Senate Committee on Admissions and Standards, said that this ‘represents a decision by Georgia State to consider MOOC courses in the way we consider every other course – whether they provide a good education for our students’. Georgia State sought to *gain national recognition* for the move, stating that to encourage students from all backgrounds to aspire to college education it *wished to establish its approach as the national model* (Jaschik 2013).

### *Credit for Life Experiences*

In another example, University College, a school for adult learners at the University of Maryland, stated that as it had long accepted ‘life experiences’ for college credit, it would also consider MOOCs for transfer credit. Here, the decision appears to have been shaped by the *longstanding mission* and entrenched policies of the school *to serve adult learners by offering credit for life experiences*. Other schools built on this model and serving similar clients may also find it difficult to deny consideration of MOOCs as ‘life experiences’.

### *Fulfilling State Policy Goals*

A fourth case is Charter Oak State College, an online public college in Connecticut, which came under the administration of the Connecticut Board of Regents for Higher Education in 2012. It is worth noting before considering the Charter Oak case that the aims of public policy makers often diverge from those of actors within the educational system. Policy makers respond to voter concerns such as the demand for more efficient and less expensive college education. Colleges and universities, working within established organizational constraints, may be unable to respond in a timely or effective way. In particular, several state governors and legislators have pushed for the public universities in their states’ systems to accept MOOC certificates for transfer credit, and met resistance from faculty and administrative leaders.

Charter Oak has aimed explicitly to fulfill policy objectives by assisting adult students who have accumulated college credits to complete their degrees. Ed Klonoski, President, Charter Oak State College

explains that ‘Charter Oak has a solid history of awarding credit for certifications, credentials and college-level examinations, as well as non-collegiate courses evaluated by ACE..., We have long believed that recognizing learning by evaluating it and awarding college credit is a game changer for non-traditional students seeking to finally finish college’ (Charter Oak State College 2015a). In 2016, the college has partnered with edX to offer MOOCs for transfer credit (Charter Oak State College 2015b). Given the policy goal – assisting adult students in the state *rapidly to complete their college degrees through inexpensive online courses* – this arrangement makes institutional sense and other universities will emulate it.

### *Survival for Bottom Feeders*

An interesting comparison case is Ashford University, a private for-profit academic organization owned by Bridgepoint Education, which has until recently had both a campus in Clinton, Iowa, and a large and profitable online degree operation. The university recently agreed, according to the *Chronicle of Higher Education*, to accept certain ACE-approved MOOCs from Coursera and Udacity, for transfer credit (Biemiller 2014). Ashford University depends for its tuition revenues largely on students with federally guaranteed student loans. Relatively few of its students complete their degree programs. According to Wikipedia, ‘as for-profit colleges have come under increasing scrutiny, a U.S. Senate report in 2011 listed Ashford’s parent company, Bridgepoint, as having one of the highest withdrawal rates of any publicly traded school in the industry’. Senator Tom Harkin of Iowa has said of Ashford ‘I think this is a scam, an absolute scam’ (see the Wikipedia article Ashford, n.d.).

Ashford may be onto something! According to its website, ‘The mission of Ashford University is to provide accessible, affordable, innovative, high-quality learning opportunities and degree programs.’ Let’s first focus on ‘affordable’. Ashford’s 2013 website states prominently that students can transfer in up to a very generous 90 credits. On the face of it, the policy implies that Ashford is willing to forego tuition revenues for these 90 credits. But consider that this leaves 30 or more credits in the degree pathway – for Ashford to sell – 30 credits worth of tuition that the university would not, without its generous transfer policy, otherwise hope to collect.

Turning to ‘accessible’, more than 95 % of Ashford’s students since 2005 have been enrolled in its anywhere/anytime online degree programs consisting of high margin, readily scalable online courses. Students will be paying tuition for courses with low marginal costs per student. The generous transfer policy is thus a pretty good deal for the university, and an attractive deal for some students.

Ashford is aggressively defending its policy of accepting ACE-approved MOOC certificates for credit as a boon to students, and its defense makes a lot of sense. ‘Requiring students to assume debt and repeat course content they have already mastered does not serve the individual student, the future employer, or the community’, said Dr. Lori Williams, Ashford University provost. ‘Our job as an educational institution is to maximize learning and facilitate development for each student. In turn, students are more likely to complete their programs, have greater independence from debt, and ultimately get into the workforce more quickly’ (Ashford University 2014). Significantly, Ashford closed its high-overhead Iowa campus in 2016 because it could not maintain adequate enrollment.

Ashford and its students may not be the only ones to find this deal appealing. Many lower-level colleges and universities are facing financial exigency. Why would they not follow in Ashford’s footsteps? This may offer their only hope for survival. Early signs suggest, nonetheless, that at least in the early stages of MOOC adoption, students have not found the MOOC for credit option very appealing.

## MOOCs AND COMPETENCY-BASED EDUCATION

A different approach to using MOOCs to gain college credit is using MOOC-based learning to prepare for credits based on internal or external assessments. This approach is often referred to as ‘competency-based education’ or CBE – variants include competency-based learning (CBL) and competency-based training (CBT). According to the Glossary of Educational Reform, ‘Competency-based learning refers to systems of instruction, assessment, grading, and academic reporting that are based on students demonstrating that they have learned the knowledge and skills they are expected to learn as they progress through their education.’<sup>1</sup>

CBE has already been widely used in K-12 education. Its use at the postsecondary level is now expanding as educators search for ways to reduce college tuition costs. Writing in *University World News* Rahul

Choudaha (2014) noted that as the student debt crisis has accelerated, pressure for efficient higher education delivery is ‘meeting technology-enabled learning innovations to create a new value proposition for a segment of students who are...cost-conscious and seek...to learn at their own pace...’ and as a result, CBE ‘seems to be higher education’s “next big thing.”’

While some colleges now offer few credits – or in rare cases none – for passing competency-based exams, others have generous CBE policies. The College Level Examination Programme (CLEP) is a national system for gaining college credits through competency-based exams. The Advanced Placement program of the College Board is widely known. CLEP is also administered through the College Board. CLEP offers competency-based exams in 33 basic college subjects, and students who pass these exams can gain credit for some or all of them in almost 3,000 colleges and universities. As the College Board exclaims in the CLEP website: ‘Average College Course – \$700. CLEP Exam – \$80. You Do the Math!’

Some reformers are now urging students to prepare for CLEP exams by taking MOOCs. For a somewhat extreme example, consider the strategy laid out in *One and Done* (Warburg 2015), for completing college in a single year using the MOOC + CLEP strategy at a total cost of less than \$10,000. The basic idea is simple: students select a college for its generous CLEP policy, and then map out a course of study via CLEP that meets many diploma requirements for that college. They then get as many CLEP-based credits as possible, and finish up with the smallest possible number of paid courses. Charter Oak State College in Connecticut, noted earlier for its acceptance of MOOC certificates for transfer credit, has a very generous CLEP policy. Western Governors University, with the similar mission of easing college completion for adult learners – is another – and there are many others.

The 33 available CLEP subjects provide many choices for meeting both basic distribution requirements and more advanced courses in many fields. Once the course of study is mapped out, students can then choose from among the several thousands of MOOCs currently available and use them – in whatever manner is most efficient – to prepare for the CLEP exams. While MOOCs were initially associated in the popular mind with computer science and programming, they are now distributed more or less evenly across the entire spectrum of college subjects: while 9.7 % of available MOOCs are in computer science and 7.4 %

in programming, 16.8 % are in business and management, 9.4 % in the humanities, 10.8 % in the social sciences, 11.3 % in the natural sciences and 4.1 in math%. For every CLEP subject, a plethora of MOOCs exists. And students don't even need to complete the MOOCs or earn certificates – or pay a certificate fee – to use this strategy! Passing inexpensive CLEP exams is sufficient to earn the credits. To follow Warburg's 'One and Done' strategy, students can accumulate CLEP credits during high school, in a gap year, while working, or when serving in the military, and then complete their degrees by taking the remaining courses at their selected college – either on campus or online – and paying the residual tuition fees.

Of course, this approach can only work for highly motivated self-directed learners. Few students graduating from today's high schools fit that description. This may, however, be an artifact of our entrenched system of schooling, which relies on tightly scripted conventional instruction with little room for self-directed learning. Like the college diploma as job credential, this conventional approach to high school teaching also results from human decisions that can be reconsidered.

## MOOCS 2 DEGREE

MOOCs have also been converted into college credits through what have become known as 'MOOC 2 Degree' programs. In these, colleges and universities offer MOOCs as *entry points* into their tuition-based degree programs. The MOOCs are offered as *loss leaders* to lure students. Those who do well in the MOOCs and express interest in the standard degree programs are blasted with marketing messages; they are offered college credits for the MOOC courses – usually upon payment of a discounted tuition charge and a matriculation fee. Some fragment of the MOOC students enroll, and the colleges and universities are able to harvest tuition revenues. This was an early MOOC business model. Several variants have been tried.

### *Course Waivers*

In July 2013, Temple University offered Quantitative Methods for Business, a foundation course in its business major, as a MOOC – the university's first – on its Blackboard platform. Students who completed the course received either a certificate of completion or a waiver for a

subsequent course – if they enrolled in the business major they passed out of the foundation course and could add an additional advanced course without additional tuition (Lausch 2013).

### ***Cut Rate Credits***

The same month, the University of Alberta offered its first MOOC, on dinosaur paleontology – a university specialty – on the Coursera platform (Collins 2013). Like Temple's MOOC, the course was open to all for free, and completing students could import the certificate for credit toward an Alberta degree for \$263 – *half the standard tuition price*.

Again that same month, Deakin University in Australia, an innovation leader in higher education, introduced its first MOOC, Humanitarian Responses to 21st-Century Disasters (Deakin 2013). Unlike most other MOOCs, this one is merely a ‘taster course’, sampling several other Deakin courses; it was designed explicitly to promote its fee-paying courses and programs and the MOOC offers a pathway to earning academic credits. Like most MOOCs it will be freely available, but for a discounted fee it offers students a way to be assessed and earn credit in Deakin’s graduate certificate and master’s programs in international and community development. But listen up!! the credit option is limited to only the first 100 students!

In a similar move, Florida International University in May 2014 produced its own MOOCs, but students seeking credits toward an FIU degree would have to both complete a MOOC and then stand for an additional examination. On the marketing side, Susan Clemmons, associate dean of University College, stated that one of the aims of the University’s venture was to ‘capture the magic of FIU’. University authorities noted the similarity of their effort with the MOOC + CLEP approach. Students passing the exam, however, cannot simply transfer in the credits – as in Alberta, they have to pay half price for them (Herrera 2014). Given that the university bears no marginal instructional costs, you do the math!

Penn State, in May 2104, attempted another variant of this strategy: *MOOC + Additional Coursework + Exam = Cut Rate Credit*. The university made their MOOC Sociology 201, ‘Presumed Innocent? The Social Science of Wrongful Conviction’, available without cost on the Coursera platform, and as a credit course with at half price (Jacobs 2014). Credit

students, however, had to do more than complete the MOOC and pass an exam; they also had additional assignments graded by TAs.

### ALL MOOC DIPLOMA PROGRAMS

The MOOC 2 Degree concept has been extended include all MOOC degree programs. The best-known MOOC-based degree program is Georgia Tech's master's degree program in computer science on the Udacity platform (Georgia Tech 2014). Georgia Tech provided the expert faculty, Udacity the expertise in educational technology and course management, and AT&T – which needed a ready source of engineers with industry specific knowledge – \$2 million in funding and two-thirds of the first cohort – 230 students. It also plans to employ many of the program's graduates.

Some prominent leaders in developing nations see the Georgia Tech ALL MOOC Degree program as a good model for scaling up higher education in the global south, because of the large gap between emerging growth opportunities there and workers with job-ready skills in these nations (Jain and Balasubramaniam 2014).

### ALL MOOC COLLEGES AND UNIVERSITIES

If there can be all MOOC programs, why not all MOOC colleges and universities? Apparently nothing stands in the way – though it remains hard to predict how attractive they will be to students or what value their diplomas will have in the occupational marketplace.

The University of the People (UofP) offers an instructive example. The university was launched in 2009, as the world's first completely Open Educational Resources (OER) university; it is accredited by the Distance Education Accrediting Commission. While it is not precisely an All MOOC university, the growing library of MOOCs adds significantly to its OER learning materials. The university draws on what Clay Shirky (2010) has labeled 'cognitive surplus' – its courses rely on a pool of more than 3,000 volunteer peer tutors – supported by a small paid administrative staff – who teach small online courses. Student learning is assessed by competency-based examinations. Students pay no tuition or materials fees, but pay \$100 per exam. A 40-course bachelor's degree thus costs \$4,000, though scholarships are available (Guttenplan 2011). UofP appears to be devising its own CBE exams, even though CLEP exams are

already available in many standard university courses at a lower price point. This suggests that exam administration will be a key source of revenue for UofP.

Founder Shai Reshef has stated that hundreds of millions of people around the world seek higher education but cannot afford it. He states that UofP has ‘opened the gate to these people to continue their studies from home and at minimal cost by using open-source technology, open course materials, e-learning methods and peer-to-peer teaching’. Reshef has partnered with distinguished organizations and leaders, including Yale University, Oxford University, New York University, the Gates Foundation and the Carnegie Corporation. According to Wikipedia, by November 2015, the University had accepted more than 2,500 students from 170 countries.

### CONCLUDING COMMENTS ON MOOCs AND THE COLLEGE DIPLOMA PATHWAY

To date, MOOCs have hardly lived up to the hype as revolutionary, game-changing entries in higher education. In particular, the founders’ early visions of MOOCs ‘levelling the playing field’ in higher education by introducing free or low-cost ‘world-class’ university courses for transfer credit throughout the world have not been fulfilled.

Earlier, when discussing college credits and degrees as the link to employment, I noted that this link was based on institutional habits that could be reconsidered. In the next section, I consider new outside-the-system qualifications that challenge the monopoly of college credits and degrees.

### MICRO-QUALIFICATIONS: MICRO-DEGREES AND SPECIALIZATIONS

When one looks at a chart of economic returns on years of education, one is struck by the jumps, for example, after grades 12 and 16; 12 years of schooling in the United States signifies high school graduation and 16 years, college graduation. While very little additional benefit accrues from passing through grades 8–11, there is a jump in the benefit at grade 12. There is then little additional benefit until grade 16. The reason is not hard to find. The diplomas awarded at the end of high school and college serve as recognized educational credentials. Students are awarded for their

credentials, which can be verified – not for the knowledge and skills they have acquired, which are arguably more difficult to determine. Of course, the diplomas mark more than knowledge and skill acquisition; they are marks of persistence and docility – demonstrations of what school people refer to as ‘self-control’.

Firms, for their part, use educational credentials as a filter in hiring decisions. But degrees and diplomas in themselves are not reliable markers of knowledge and skill. To consider just schools in the single state of New Hampshire, for example, Dartmouth (Ivy League University), University of New Hampshire (Flagship Public University) and Colby-Sawyer College (private 4-year college) all offer degrees in a broadly overlapping array of disciplines and fields. Dartmouth is highly selective, UNH less so, Colby-Sawyer offers open admission. All three are accredited by NEASC – the New England Association of Schools and Colleges. Degrees from all are valid markers of college graduation ‘within the system’. Firms that maintain a college filter for employment will accept degrees from all three as credentials.

But no one thinks that graduates of Colby-Sawyer and Dartmouth are ‘equal’ in educational experiences, knowledge, skill, or employment prospects. Though illegal, firms often hire based on class and race bias. They hire ‘who gets in’ more than ‘what comes out.’ Dartmouth (rejection rate 90 %) filters out most students from disadvantaged groups; less exclusive schools filter out fewer. The college filter removes those from disadvantaged groups, serving a tool of occupational discrimination.

### MOOC CERTIFICATES AS STAND-ALONE CREDENTIALS

The obstacles in the way of using MOOC certificates for transfer credit in the college diploma pathway has led MOOC platform firms to create programs issuing explicit stand-alone, outside the system, *diploma-like* qualifications instead of wishing for their certificates to transfer to colleges.

Employers were slow to discover MOOCs. A March 2014 study by researchers at Duke University and RTI International found that less than one of three employers even knew about MOOCs, but that ‘once they read a description, most were very receptive to the possible use of MOOCs in recruiting and hiring decisions. And they were especially positive toward their potential use in professional development training’ (RTI International 2014).

In this section, I focus on three professional development efforts: (i) the Udacity ‘pivot’ away from education to career training and the growth of its nano-degree programs, (ii) ALISON’s ‘diploma’ programs and (iii) Coursera ‘specializations’ and edX ‘XSeries’ and ‘MicroMasters’ programs.

### *Udacity and Nano-Degrees*

After the highly visible disaster of its college math MOOC at San Jose State in 2013, Udacity founder Sebastian Thrun declared that his college course MOOC was a ‘lousy product’, and made his famous ‘pivot’ from college education to corporate training (Chafkin 2013). In 2014, the firm partnered with AT&T to create its first ‘nano-degree’ program, an entry-level software programming course sequence, aimed at training students specifically for programming jobs with AT&T. Udacity manages the program and provides personalized coaching and career services, while AT&T provides direction on course content (AT&T 2014). Since then, Udacity has developed additional nano-degree programs in partnership with other firms, including programs in front end development, machine learning engineering, website development, android development and data analysis.

The Udacity nano-degree is a new entry in the occupational training space outside the official educational ‘system’. Learners do not require prior credentials, and Udacity nano-degree certificates are not intended for transfer credit. This new pathway addresses many pressing problems. It is brief, inexpensive and equipped with coaching that aids student completion. Tuition debt is thus reduced or eliminated. The skills conveyed are in demand, so the nano-degree can lead rapidly to employment – primarily with the partner firm. As Udacity leaders see it, a nano-degree can lead to an entry-level job, which in turn provides both a salary and opportunities for job advancement, which in turn will require further training – provided in some cases through additional nano-degrees. For students seeking an occupational credential, and for firms seeking workers with specific skills, the nano-degree may be a better fit than the college pathway.

### *ALISON Diplomas*

ALISON (for ‘Advance Learning Interactive Systems Online’) began offering something akin to x-MOOCS even before the term ‘MOOC’

was invented – as early as 2007. The courses are supported by advertising aimed at ALISON's North American and European students, and ALISON then uses the ad revenues to distribute the courses actively in the developing world.

The world's poorest countries tend to have vastly underdeveloped secondary and tertiary education infrastructures. As investment capital has become more available, commercial and industrial growth has been limited by the lack of educated workers with necessary skills. ALISON founder Mike Feerick created his firm to solve this problem. Like cell phones, which expanded rapidly in nations with underdeveloped ground telephone infrastructure, MOOCs have grown rapidly where education infrastructure is underdeveloped.<sup>2</sup> According to Wikipedia, the great majority of ALISON users are from third-world countries, and ALISON is one of the biggest MOOC platforms outside the United States, with more than 5 million users. ALISON offers roughly 750 courses offering certificates or diplomas. ALISON'S courses are based on widely recognized standards, such as those of Microsoft (IT), the Health and Safety Authority (Health and Safety) and the Australian High School Standards (school curriculum). Diplomas are offered in such fields as project management, business management and entrepreneurship, HR, web design, psychology, customer service, programing, social media marketing, children's studies, nursing and patient care, social work, IT management, statistics, mental health, Six Sigma, teaching skills for educators, carpentry, supply chain management and international tourism. Because of the shortage of educated third-world workers, firms have been attracted to ALISON diplomas in hiring and promotion (Murray 2014).

### *EdX XSeries Sequences and Coursera Specializations*

Earlier I noted that while MOOCs failed to find a large audience among North American and European college-age students, they proved attractive to employed early and mid-career learners with bachelor's and advanced degrees. The reason is not hard to grasp. In today's rapidly changing technological situation, the skills required for emerging tasks change, and skills acquired through diploma programs become obsolescent. Until recently, workers had to return to school for retraining, even though they had already attained a diploma at the appropriate level for the jobs they were seeking. In many cases, MOOCs provided the

specific training they sought, so they could bypass additional – and now unnecessary – diploma programs.

The largest MOOC platform firms then followed the lead of Udacity and began to offer programs intended to convey in-demand skills. Like the Udacity nano-degrees, these programs were built as sequences of individual courses. On top of the certificates for the individual courses, the platforms offer ‘super-certificates’ indicating completion of the entire sequence.

### *XSeries Sequences*

In Fall 2013, edX announced the first two of its XSeries Sequences, Foundations of Computer Science and Supply Chain and Logistics Management. The sequences represented a break from the college course format for edX. MIT Senior Lecturer Chris Terman noted that with the series program ‘We are no longer constrained to structure course material in 14-week units to fit the academic semester.’ While the series sequences are the equivalent of two to five or more standard courses, the materials are split into small modules focused on key concepts, and then assembled in programs accessible for general audiences (EdX 2013a). Subjects range from Aerodynamics and Agile Development to Water Management.

EdX is now marketing ‘MicroMasters’ sequences. The Micromasters sequence in Supply Chain Management consists of five courses: Supply Chain Analytics, Supply Chain Fundamentals, Supply Chain Design, Supply Chain Dynamics and Supply Chain Technology.<sup>3</sup> At a total price of \$750, the program costs a small fraction of a standard master’s degree. For students with advanced degrees, an xseries sequence or micromasters simply fills in the knowledge they lack for specific job opportunities.

### *Coursera Specializations*

In January 2014, Coursera announced their ‘Specializations’ program. The program consists of courses on a single topic sequenced to provide mastery. Forbes magazine announced Coursera was flirting with ‘diplomas’ as the specializations were ‘blurring what used to be a very sharp distinction between full-fledged universities and the anything-goes ethos of massively open online courses (or MOOCs).’ Andrew Ng, Coursera cofounder, stated ‘I fully expect that this is something employers will look for’ (Anders 2014). The Coursera website now features hundreds of specializations in fields from business and computer science to life sciences and engineering.<sup>4</sup>

The bottom line of this section is that MOOC platforms are now directly challenging the educational system's monopoly on occupational qualifications, by offering their own stand-alone diploma-like credentials in high-demand skills, shaped for specific firms or industries.

## MOOCs AS COMPONENTS OF DIGITAL PORTFOLIOS

Finally, the very idea of a degree, diploma, or static form of job qualification may not fit the new occupational structure – the ‘gig economy’ of global network society – very well. The ratio of full-time jobs with benefits to part-time and limited tenure contract jobs or ‘gigs’ has been declining since the 2008 financial crisis. Firms have hollowed out, retaining command and control functions but outsourcing many tasks, or assigning them to temporary in-house teams composed of contract workers. Firms in every industry are seeking gig workers for an ever-increasing range of tasks. Because they are hiring only for tasks at hand, they are more focused on specific task capabilities than on the all-around knowledge, skills and attitudes associated with diploma holders considered for full-time employment.

As explained above in [Chap. 2](#), Web 2.0 enabled the gig economy. As Clay Shirky ([2008](#)) explained in his classic *Here Comes Everybody*, Web 2.0 has enabled everyone with an Internet connection to do two things: (1) make him or herself visible online and (2) to rapidly be located through search procedures and assessed on the basis of multimedia online products and demonstrations – digital portfolios. Shirky labeled this situation ‘dual visibility’.

YouTube, LinkedIn, Blogger, Facebook and Twitter all offer efficient channels for demonstrating capabilities directly to online audiences and firms. This is starting to impact higher education, as dual visibility enables *everybody*, regardless of diplomas, to demonstrate capabilities and lower barriers to work opportunities. That is precisely what Shirky meant by his catchy title: ‘here comes *everybody!*’ Two dual-visibility stories that demonstrate the power of MOOCs have already been recounted in [Chap. 2](#): those of Guarev Guyal, the hydrologist who became an information technology manager, and Laurie Pickard, the un-MBA. Both used the web to acquire high-level capabilities through MOOCs and to make themselves and their ‘qualifications’ visible to employers.

The bottom line of this section is that the combination of MOOC-based learning + dual visibility + the spread of the gig economy is seriously undermining not merely the entrenched role of college and university

diploma-based occupational qualifications but also the very notion of a ‘diploma’ as a career qualification. Instead of pursuing a diploma, whether from the official educational system or the new alternatives offered by MOOC platform firms, learners can now free themselves from compulsory formal education treatments and build digital portfolios of demonstrated learning and documented real-world accomplishments. Using Web 2.0 technologies, they can then make themselves visible to firms, which in turn, can assess them for specific task capabilities without relying on diploma filters.

This new situation raises the stakes for young people even during their secondary school years. For the last century, an increasing number have spent their high school careers preparing for college, expecting their college and postgraduate studies to provide entry into the professional workforce. While many pursued interests from the arts and music to sports and technology with a passion, most considered these pursuits as ‘avocational’ even when they devoted the proverbial 10,000 hours to them. Today, given the availability of badges and certificates, and the capability of documenting academic and real-world achievements and making them visible online, these same activities can contribute to digital portfolios. Young people can then grow and curate these portfolios throughout their postsecondary years, and make them visible to future employers. If they matriculate in college and earn diplomas, these can be added – as additional high value elements of their portfolios. Building and curating their lives in this way gives young people greater control of their educations and occupational futures. Instead of following a pathway laid out by others to a professional career that may no longer even exist, they can be continually growing – building capabilities that suit them and build on their passions for tomorrow’s unpredicted opportunities.

## NOTES

1. <http://edglossary.org/competency-based-learning/>
2. This is a good example of Trotsky’s law of uneven development: the most advanced technologies will spread most rapidly in the least developed nations, because that is where we find the smallest installed base of competitive previous technologies – for example, the rapid spread of cell phones in nations with undeveloped ground phone systems.
3. See, e.g., the Supply Chain ‘Mini-Masters’ at <https://www.edx.org/mitx-micromasters-credential-supply>
4. [https://www.coursera.org/browse?languages=en&utm\\_medium=topnav](https://www.coursera.org/browse?languages=en&utm_medium=topnav)

## Three Contributions of MOOCs

**Abstract** MOOCs can add value to higher education in three ways. First, MOOCs can benefit students and their families by improving the ‘value proposition’ of the investment in higher education. Second, MOOCs can help colleges and universities cut costs and generate additional revenues, and thus improve their financial condition. Third, MOOCs contribute to the shift from the conventional paradigm of higher education to a ‘Higher Education 2.0’ paradigm where outside-the-system learning, documented by badges, certificates and nano-diplomas, and other verifiable experiences are packaged in searchable digital portfolios. Higher Education 2.0 offers a revolutionary pathway to employment that augments or even bypasses conventional universities and their associated costs – and MOOCs can play a significant role in this higher education revolution.

**Keywords** Value proposition · Rate of return · University revenues · Higher Education 2.0

### THREE CONTRIBUTIONS: RETURN, REVENUE AND REVOLUTION

Reflecting on the painful lessons of 2013, much has been learned in 2014 and 2015 – often under the media radar – about where MOOCs can contribute to the crisis in higher education. In this book, I have been reviewing the MOOC drama as it has unfolded. I conclude by identifying three areas where MOOCs

can add positive value in higher education. I organize these contributions under three headings: Return, Revenue and Revolution.

The first two – return and revenue – are the contributions MOOCs can make to students and universities within conventional higher education. The ‘return’ category includes various ways MOOCs can provide *benefits* for students and their families by improving the ‘value proposition’ of the investment in higher education. The ‘revenue’ category includes the ways that MOOCs benefit colleges and universities by generating revenues and hence improving their financial condition.

The third area – ‘revolution’ – refers to the shift from this conventional paradigm to the ‘Higher Education 2.0’ paradigm – the revolution of outside-the-system learning documented by badges, certificates and nano-diplomas or simply experiences in searchable digital portfolios. Higher Education 2.0 offers a revolutionary pathway to employment that bypasses conventional universities and their associated costs – and MOOCs can play a significant role in this revolution.

Compared to the claims of the early MOOC leaders, these three contributions may be somewhat modest. They do not ‘level the playing field’. The young people who attend Harvard or other prestigious universities retain many educational and occupational advantages relative to those who take MOOCs from the same institutions. But the benefits are nonetheless significant.

But let’s be clear: MOOCs remain in motion – they are continually changing – evolving to meet new real-world challenges. And they will continue to change. Recall those statements from MOOC leaders, that ‘MOOCs will continue to change so you can’t base a policy argument on current MOOC models’ (Jonathan Haber); that ‘There is no reason why a future MOOC should resemble anything we are currently familiar with’ (Keith Devlin); that soon ‘we will be talking about something other than MOOCs’ (George Siemens). So rather than speaking in the abstract about MOOCs, I will in what follows be illustrating my argument – as I have all along – by pointing to actual MOOCs, including ‘cutting edge’ MOOCs pointing to future developments.

### CONTRIBUTION I: BETTER RETURN ON STUDENT INVESTMENT IN HIGHER EDUCATION

Let me start with Return on Investment. Daphne Koller, founder of Coursera, recently stated that colleges which do not clarify their value proposition, and then execute on it, will suffer (High 2013). I agree.

The promise of college, in itself, is no longer that attractive; families are now carefully weighing costs and benefits, and withdrawing if the value proposition doesn't add up. Colleges can offer a better value proposition – a better benefit/cost ratio – by significantly reducing costs or increasing educational or occupational benefits. MOOCs can help in both ways. In this section, I show how they can do so through (1) tuition reduction, (2) instructional improvement and (3) new high-value curriculum content.

### *MOOCs Can Help to Reduce Tuition and Fees*

MOOCs can help reduce costs by reducing tuition and fees – this is particularly important in the United States and those other advanced nations that impose high tuition fees for university study that impede access and saddle students with crippling debt. They can also do so by enabling students to reduce food and lodging costs by living at home while studying, and by reducing the opportunity costs of education by making it easier to study while gainfully employed. These ‘helps’ are useful everywhere, but perhaps particularly so for those students in lower income groups and in developing nations. In earlier chapters, I have discussed some of the ways MOOCs can help to reduce tuitions and fees. Here I review those and then add some others.

#### *Transfer Credits for Certificates*

First, they can enable students to obtain certificates that can be accepted transfer for credit in degree-granting universities. While the early MOOC leaders were quite mistaken in their belief that colleges and universities would accept their certificates, some institutions – as documented in the last chapter – have accepted them. While this is not likely to become general practice any time soon, opportunities are already available for those seeking a diploma from an accredited college to pass through the college job filter – and more will appear.

#### *MOOC + CLEP*

Students studying with MOOCs and passing CLEP exams can gain credit in almost 3,000 colleges and universities.

#### *High School Advanced Placement Courses*

MOOCs are now offered – by the University of Houston and others – to *augment* high school Advanced Placement courses and help students raise

their AP scores to attain college credit. Some MOOCs offer *entire* AP courses; students take these MOOCs *in place of* AP courses, and gain college credit for passing AP exams. MOOCs are also now available to *train teachers* both to teach AP courses better and to raise their students' AP test scores.

### *Cut-Rate Credits*

Some universities now offer cut-rate credits for MOOC-based courses. The University of Alberta offers its MOOC in dinosaur studies for half of the normal tuition fee for those who take the MOOC instead of the face-to-face version.

### *Course Waivers for MOOC Certificates*

Some universities now accept MOOC certificates as *course waivers*. Temple University's business school now offers the first three foundation courses in its business school as MOOCs. Students who complete the MOOCs and pass the final exams 'pass out of' these courses and can thus take three additional courses for the regular total tuition cost.

## *MOOCs Can Improve College Instructional Effectiveness*

Three of the important lessons learned since 2013 have been that (i) less academically prepared students rarely learn college-level material successfully from MOOCs, (ii) effective use of video – animations, on-location shoots, interviews and demonstrations – is more effective for and welcomed by learners and (iii) learning is social – students who learn together in flipped classrooms or learning hubs do much better than isolated MOOC learners. These lessons can improve MOOCs while also improving conventional college instruction – one of the original guiding aims of edX. Here's how:

### *Better Precollege Preparation for University Studies*

Underprepared students pay dearly when they flounder in college. They pay extra by failing to complete and thus by foregoing the benefits of a diploma while undergoing greater – often unsustainable – debt. Or by extending their years of study – and their total tuition expenditures. Improving readiness for university study alleviates some of these burdens. MOOCs can help in these ways:

### **College Prep Subject-Matter MOOCs**

First, some MOOCs offer supplemental materials for conventional secondary-level subject matter courses needed for college success.

### **College Orientation MOOCs**

Some good examples of this genre include East Anglia University's 'Preparing for Uni' MOOC on the FutureLearn platform, and Charles Sturt University's 'What's Uni Like?' MOOC.

#### *Blended Learning in Flipped, Wrapped and Backed-Up Classrooms*

I have not addressed the use of MOOCs in residential college instruction to this point, because this topic does not fall within the scope of my argument in [Chap. 1](#) through [5](#) – focused on no-cost and low-cost alternatives to college. Now that I am turning to the overall contributions of MOOCs, however, I will say a few words about their uses in college instruction.

### **Flipped Classrooms**

Flipped classrooms use MOOCs for the didactic components, and then devote most classroom time to discussion and guided practice – they break the grip of 'instructivism'. For example, Khosrow Ghadiri, a professor of electrical engineering at San Jose State University, piloted a flipped classroom model for his course on circuit design. His goal was to enrich the content and increase the pass rate, which rose to 91 %, as compared to a 59 % pass rate in the previous year's unflipped lecture class (Ghadiri et. al., [n.d.](#)).

### **Wrapped Courses**

A variation on the flipped course is the *wrapped* course, where instructors offer a period (perhaps a week) of conventional F2F introductory classes, then use MOOCs for course content with weekly F2F sessions for discussion and problem-solving, and conclude with a period (perhaps another week or two) for summary discussions and exam preparation. The wrapped course has a good division of labor between live and MOOC instruction, with each component used for its highest value function (Bruff, Fisher, McEwen and Smith [2013](#)).

#### *Video as a 'New Visual Language of Instruction'*

A major complaint against college education is its reliance on large lecture classes where a 'sage on the stage' delivers impersonal content. Jonathan

Haber has argued that MOOCs have created a ‘new visual language of learning’. Another good example of the new visual language is the ‘Lean Launchpad’ MOOC<sup>1</sup> taught by Stanford’s Steve Blank on the Udacity platform.<sup>1</sup> Its first iteration took Blank’s classroom lectures and sliced them into six-minute segments – the length that research showed to be optimal for student attention. Students found it boring. The second iteration, presented as a series of visually engaging animations of the main concepts and processes with a voiceover by Blank, has become a classic MOOC hit.

### *Increasing Social Interaction*

Learning is social. Early MOOCs failed to engage isolated, online learners. MOOC leaders have responded with social features. Coursera established face-to-face MOOC learning hubs. EdX has also partnered with the New York Public Library system to create MOOC learning centers at branch libraries. Facebook, Twitter and LinkedIn have been used to organize MOOC learning hubs in coffee houses, pubs and libraries – a trend known as ‘Starbucks University’.

### *MOOCs Can Help to Add High Value (21st-Century) Experiences and Outputs*

In preparing this chapter, I examined several lists of so-called 21st-Century Skills and discovered significant overlap; 21st-century skills appear to be those skills and attitudes most desired by employers in the contingent workplace, including Capability, Entrepreneurship, Marketing, Networking, Initiative, Self-Management, Listening, Amiability, Flexibility and Collaboration – the skills needed to market freelance services and perform in short-term jobs or ‘gigs’. Firms now want those they hire to *good at gigs*. These skills have not been the focus of conventional high school or college education, because education was linked to employment through diplomas as credentials. When employers today complain that college graduates aren’t ready for the workplace, they are to some extent wide of the mark. When firms hired students out of high school or college for long-term employment, they expected these learners to grow on the job and many to move to higher levels in the organization. It thus paid the firms to invest in training. They didn’t expect new hires to be ‘task ready’. In the gig economy, however, these employers have a point; changes in the workplace have made the standard knowledge conveyed

in the curriculum less relevant, and the expectations for professional careers bred by college life less appropriate. Firms hire for tasks at hand. MOOCs, unlike college curricula, can be produced rapidly to adjust to changing skill demand – for the technical value now in demand. MOOC platforms can respond to the need for such emerging skills. MOOCs already exist in abundance to address every 21st-century skill. Here are some examples:

#### *High Tech, Entrepreneurship, Team-Building and Collaboration Skills*

Many MOOCs offer training in computer programming languages and high-tech basics. I've already mentioned Steve Blank's 'Lean Launchpad MOOC' on Udacity, providing step by step guidance for entrepreneurs creating start-up firms. Similar 'start-up' MOOCs can be found on most platforms.

#### **Innovation and Team Building**

At Harvard Business School, Professor Regina Herzlinger uses her Project Lever software to link students with those with complementary interests and capabilities in her 'Innovating in Health Care' MOOC on edX in virtual working groups with virtual advisors. The students meet up through video-conferencing to form innovative business projects. Project Lever has been described as 'e-harmony for business groups' (Choi 2014).

Some MOOCs transform their inchoate massive learner cohorts into large working teams. In Cathy Davidson's MOOC on the 'History and Future of (Mostly) Higher Education' on the Coursera platform, mentioned earlier each learner was assigned to a team to conduct research on a niche historical or contemporary topic in higher education.<sup>2</sup>

#### **Collaboration**

Other MOOCs focus on collaboration. Stanford University, which spawned both Udacity and Coursera, has introduced a new MOOC platform, NovoEd, focusing exclusively on innovation and collaboration. Designed by Stanford professor Amin Saberi and Ph. D. student Farnaz Ronaghi, the NovoEd platform claims to facilitate the division of massive learner cohorts into small collaborative working teams (Empson 2013).

#### *MOOCs for Experience in the Real Economy*

Some MOOCs package these skills together by placing students in real-world virtual 'gigs'. The Business Strategy MOOC from the Darden

School of Business at the University of Virginia employs Coursolve software to crowdsource small- and medium-size businesses offering virtual internships; 73 % of the student interns became virtual ‘consultants’ in their firms’ strategic planning efforts (Charles, 2013).

In Buck Goldstein’s ‘Big Idea’ MOOC from the University of North Carolina on the Coursera platform, learners can select the practicum option, and receive guidance in creating a start-up firm and competing for real venture capital. Those winning the competition are then funded and trained in a virtual business incubator run by Goldstein at the university.<sup>3</sup>

My point here is hardly to glorify either the gig economy or the 21st-century skills that support it. Some of these 21st-century skills and attitudes are superficial – like the amiable smile on the face of the McDonald’s associate asking whether you want fries with that Big Mac; or soul-destroying – like the skill of networking with people to use them or marketing worthless goods and services to vulnerable people. Some, however, can be beneficial in securing and then performing well at dignified work. MOOCs are better positioned than slow-moving conventional university programs to focus directly on these skills – and thus add to the value proposition of advanced education.

## CONTRIBUTION 2: MOOCS CAN ENHANCE UNIVERSITY REVENUES

Academic leaders have worried that MOOCs would cut into the revenues for universities and force many of them to shut their doors. Faculty have worried that their jobs would be eliminated or de-skilled. While MOOCs have been touted primarily as tools for reducing student costs, they can also contribute to university revenues – by attracting tuition-paying students, government and corporate grants, and private donations, though at this point we are in no position to predict how MOOCs will net out for universities. They can also promote new, more varied, and in some cases more attractive forms of academic work.

In this section, I consider three ways that MOOCs can contribute to the revenue side of the higher education equation. First, MOOCs offer a relatively inexpensive tool for positioning and niche marketing of universities and their specialized educational programs. Second, MOOCs can be instruments for profitable special projects. Finally, MOOCs can be used

as tools for retraining and reorienting faculty members to make them more economically productive in current circumstances.

### *MOOCs Can Help with Positioning and Niche Marketing*

#### *Positioning*

Universities are caught up in the reputation game. They are subject to ranking by *U.S. News and World Report*, among other reputation shapers to which tuition-paying students and their counselors attend. Universities thus need to *position* themselves to preserve and extend their reputations to tap into both tuition revenues from lucrative domestic and overseas markets and to acquire the best and the brightest students, (2) to obtain government and corporate grants and (3) to get generous donations from alumni.

By ‘positioning’, I mean situating an organization in its competitive landscape in way that makes it visible and thus ‘well-positioned’ both to attract unpredictable opportunities and to market goods and services. Positioning is about broad market visibility and differentiation in a shifting competitive landscape. It prepares the organization to make specific marketing offers.

The term was first used in the business literature by Jack Trout (1969). Trout argued that in such landscapes, consumers and other revenue sources are overwhelmed and develop a defensive posture toward any information not already possessing a comfortable place in their minds. Positioning establishes such a place, and thus renders prospective revenue sources deaf to competitors’ communications. As Trout and his coauthor Al Ries put it in their subsequent book (Ries and Trout 1981) positioning is ‘an organized system for finding a window in the mind’. Positioning differentiates the organization as the best, or the first or the fastest, or the least expensive.

We can view MOOCs as positioning efforts intended to create revenue streams through reputation management. With edX, MIT and Harvard positioned themselves as MOOC *pioneers* – further cementing their reputation for innovation and excellence. Stanford did likewise with Udacity and Coursera, both based on in-house Stanford software. Other prestigious universities jumped on board to prevent being eclipsed by these leaders. EdX and Coursera rapidly acquired the most visible and highest ranked universities globally as partners, and positioned themselves as

*dominant.* With their MOOCs, Wharton and Johns Hopkins positioned themselves globally as top business and health sciences schools respectively. The United Kingdom, Europe, Australia and Asia, sensing that they were losing out to the United States, established competitor platforms, the most successful of which were soon dubbed the ‘Coursera’ or the ‘EdX’ of their respective regions. The UK entry, FutureLearn, was created explicitly to sell the concept that the UK is the world leader in higher education – though FutureLearn’s failure to recruit Oxford and Cambridge as partners has undercut that effort. Other regional platforms are competing on specialized knowledge and unique relevance to regional needs.

Karl Ulrich, Vice Dean of Innovation, Wharton, and Christian Terwiesch, Wharton Research Professor, conducted a cost/benefit analysis of MOOCs. They concluded that relative to any other form of global positioning, MOOCs are very cheap. In a recent joint interview Terwiesch stated:

We elite universities are in the business of creating reputation. Reputation will drive our demand; it will drive how our graduates are viewed in the market. How do you create reputation? The traditional vehicle of reputation building was research. It takes us somewhere around \$300,000 to \$400,000 of research investments to just get one scholarly article out. For that money, for one single paper, we can basically create somewhere around three, four, or five MOOCs...

Ulrich added:

MOOCs are actually not very expensive. MOOCs cost about \$70,000, but we reach with a MOOC several hundred thousand students. If you look at it on a per viewer basis – it runs to about 50 cents per person. That’s cheaper than almost any other form of outreach. Fifty cents for that kind of engagement is very, very inexpensive. (University of Pennsylvania [2014](#))

### *Niche Marketing*

Few universities in the world can compete with MIT, Harvard, Stanford, Wharton, Hopkins, Oxford, Cambridge and so forth for *general* reputation. But the higher education landscape is littered with niche programs that can claim comparable visibility and authority in their narrow fields. And these organizations have also rapidly moved into MOOC production as they seek to solidify their reputations globally.

Some examples include the Berklee College of Music in Boston, a school specializing in jazz and pop music; the Writers Workshop at the University of Iowa, the top U.S. writing workshop; HEC Paris's program in French Language Business Management and many others. All of these have been early leaders with MOOCs in their specialties. Many less visible organizations have also produced MOOCs to call attention to their special curricula: for example, Southern Mississippi State University's Faulkner Studies program.

A 'me too' attitude, however, cannot position a university and must be avoided. Southern Birmingham University for example, offered a 'History of Terrorism' MOOC in Spring 2014 on Coursesites by Blackboard – a platform any university with a Blackboard contract can use. The 'school is hoping to show the rest of the world that its faculty members are true "All Stars" in their fields' (Canning 2014). Professor Randall Law, the course leader, is no doubt a fine scholar – the press release notes his recent book published by an academic press – but that does not differentiate the university sufficiently to draw even regional students to its programs. In the United States, given the glut of doctoral graduates from leading universities, talented and well-trained professors visible in their specialized fields can be found just about everywhere.

Another caveat: MOOCs are proliferating exponentially and like new blogs, new MOOC platforms and courses have to compete for a MOOC audience whose rate of growth is slowing. Each new entry will have to be calibrated carefully to its potential markets. Even Harvard – yes HARVARD – can no longer count on 'massive' audiences for its MOOCs. Lisa New, who teaches two poetry MOOCs for HarvardX, made a video of Harvard men's basketball team reading poetry about basketball to market her MOOCs, and posted it on sports blogs with millions of monthly visitors. 'HarvardX and its public affairs people are often looking for creative and interesting ways to let the world know what we are doing', New said (Bernhard & Rothberg 2014).

### *MOOCs Can help with Special Projects*

There are several kinds of MOOC-related revenue-enhancing special projects. I will consider four: Special MOOC-based degree programs, Media-Tie-Ins with Super-Star Professors, Government-Sponsored Economic Development Projects and Corporate Partnerships. I'll provide an example of each.

### *Special Degree Programs*

MOOCs have been used as courses in new university degree programmes sponsored by external organizations. The courses have been aimed at providing high quality job-specific training at greatly reduced cost. The best-known MOOC-based degree programme is Georgia Tech's Master's Degree Programme in Computer Science on the Udacity platform. Some leaders in developing nations see Georgia Tech's programme as a model for the global south (Jain & Balasubramaniam 2014). Many similar opportunities present themselves.

### *Super-Star Professors with Media Tie-Ins*

Many universities have distinguished and media savvy faculty who can draw external grant funding to produce engaging courses for mass audiences. Larry Sabato at University of Virginia's Center for Politics, is a leading expert on the Kennedys and an Emmy award winner (University of Virginia Center for Politics 2013). Sabato produced a Kennedy MOOC – 'The Kennedy Half Century' – with tie-ins, including a PBS Documentary, a book deal and major foundation funding. The MOOC won both visibility and profit for the university. Columbia University's superstar professor Eric Foner, a Pulitzer Prize winner who makes frequent television appearances, produced a Civil War MOOC. Aware that many of Columbia University's most famous lecturers – from Lionel Trilling and Meyer Shapiro to Jacques Barzun – were never filmed, Foner wants to preserve Columbia's legacy and his own by getting his lecture courses on video for future generations (Colman 2014).

### *Government-Sponsored National Development Projects*

Governments and government-funded agencies around the world draw on their universities to achieve National goals. MOOCs provide new opportunities for both.

### **Promoting the National Language**

The British Council has partnered with UK's Open University and the FutureLearn MOOC platform to produce 'the world's largest English class'. The Council, an Independent Agency funded by the UK government's Foreign and Commonwealth Office, was founded prior to World War II to engage in 'cultural propaganda' to promote British interests globally by offering instruction in the English language and British culture. The Council's English language MOOC has enrolled more than 440,000 students (FutureLearn 2015).

### **Recruiting Security Agents**

GCHQ, the British Spy Service, has produced a MOOC on Cybersecurity for the FutureLearn platform. The service is eager to build a strong base of cybersecurity skills throughout the population and to encourage young people to consider careers as spies (Department for Business 2014).

### **Building Cutting Edge National Industries**

Singapore's Infocomm Development Authority is depending on MOOCs to achieve the national goal of making Singapore a 'Smart Nation and a global leader in "big data"' (Yu 2014). The 'Smart Nation initiative' aims to improve government, business and the lives of ordinary citizens (Prime Minister's Office Singapore, n.d.). Singapore has developed a suite of Big Data MOOCs for university students and knowledge workers, to spread Big Data Analytics skills throughout the nation (iDA Singapore, n.d.).

Many opportunities exist on national, regional and global for similar uses of MOOCs. If nations want to 'position' themselves by educating large fragments of their populations in specialized areas of national or global need, MOOCs – with their unlimited cohort sizes – are ideal vehicles.

### *Corporate MOOC Partnerships*

MOOC production has spread after 2013 from universities to business firms, government agencies and nongovernmental organizations. Some corporate MOOCs have been produced without university partners.

### **Educating Clients and Suppliers**

SAP, a multinational software firm in Germany that has been an early leader in corporate MOOCs, relies on its suite of software MOOCs to train employees and outside contractors, to educate clients and supply chains in order to fuel demand, and to position itself in global marketplace. SAP has turned to MOOCs because of their broad reach and low relative cost (Open SAP, n.d.).

### **Building Goodwill Through Repurposing Internal Documents**

M&S, a large British retailer, offers a Futurelearn MOOC through a partnership with the University of Leeds on innovation in business.<sup>4</sup> Like all corporations, M&S has a large inventory of documents and training materials that can be repurposed for broad educational use. Corporations lack internal resources for designing engaging courses for general

audiences. Like M&S, they can partner with universities to produce MOOCs that will provide visibility and goodwill for both.

### *MOOCs Can Aid in Faculty Retraining – Making Faculty Better at Emerging Academic Tasks*

Earlier, I spoke of the shift from the job economy to the ‘gig’ economy – to what Daniel Pink calls ‘Free Agent Nation’. ‘21st-Century Skills’ are those needed for adjustment to the gig economy – a shift which has already occurred in higher education. Academic units are increasingly pressured to cut costs and generate revenues by functioning as ‘project shops’ – hustling for dough while adjuncts handle the teaching.

Professors, like other workers, are adjusting to the gig economy and most need some 21st-century skills of their own. Making and using MOOCs can help develop these. Rather than merely de-skilling professors – the fear of the San Jose State philosophers – MOOCs can make professors *better at* contemporary academic work. To make a MOOC – or even to use a MOOC in a blended classroom – requires imagination and a willingness to experiment with new modes of behavior. Most faculty members started out with negative attitudes about MOOCs, though those who have produced them are largely positive, with about half thinking they can be as effective as face-to-face classes (Lederman & Jaschik 2013). Making a MOOC is like producing a movie and can be challenging and invigorating. Faculty MOOC makers have to relate to many other professionals: writers and editors, designers, videographers, journalists and other media professionals, as well as faculty from other ‘silos’. They also have to adjust to new teaching environments – media studios on campus or off. Some universities are explicitly using MOOCs to generate 21st-century faculty skills.

### *Building Multidisciplinary Across the Campus*

Johns Hopkins University, which has positioned itself as the leader in health and medicine, is using its MOOCs to bring faculty together from every college in the university.

### *Retraining the Faculty*

The University of Pittsburgh is using MOOCs and blended classrooms explicitly to move its faculty toward ‘learning how to use technology to enhance learning.’

### *Revisioning the Organizational Mission*

The University of Georgia System has produced a MOOC for faculty and other members of the university community to brainstorm together about the future of the university. The university's officers present content about current trends and uncertainties in higher education, and university stakeholders think collaboratively about future possibilities. The goal of the MOOC is to call attention away from the urgent crisis of today and toward collective positive visions the community may realize by 2030.

### *Imagining New Possibilities*

At the University of Pennsylvania, faculty members have been recruited to offer a blended course for high school students based on Penn Prof. Peter Struck's MOOC on Greek and Roman mythology. One goal of the program is to make faculty members aware of the creative possibilities of online education.

New opportunities in the lucrative online education and training industry open up once these tech skills are broadly distributed throughout the faculty. MOOCs and blended classrooms are the training grounds for revenue generating research and consulting projects for elementary and high schools, 2 and 4 year colleges, government agencies and corporations – where online learning is trimming millions of dollars from training budgets. I expect universities to compete more aggressively in the online education and training industry; if they don't firms like Udacity will 'eat their lunch'.

## CONTRIBUTION 3: TRANSFORMATION – HIGHER EDUCATION 2.0 FROM JOBS TO 'GIGS'

I now want to carry the discussion beyond the conventional higher education paradigm – to Higher Education 2.0. As I noted in [Chap. 2](#), today's higher education paradigm only came into existence in both the United States and Great Britain in the late 1870s – rather late in the industrial period – when the scale of production, distribution and administration reached continental and global scale and organizations needed a large and steady flow of technical and commercial workers with a standard level of knowledge and skill to perform standard professional tasks. A new paradigm of university education as professional training emerged. Even scholarship was reconceived as a scientific profession requiring a Ph.D.

Once a sufficient number of college graduates were available, organizations could adopt the college diploma as a filter for professional employment. Universities produced more and more graduates, and more occupations were redefined as ‘professions’ requiring a diploma. Aspiring young people *had* to go to college. In the developed world today, as a result, a large fragment of the youth cohort has diplomas.

The employment of professionals is, however, costly to organizations. Those identifying themselves as professionals – and possessing professional degrees and qualifications to prove it – demand high wages, professional discretion, job security and benefits. Firms have to keep their full-time employees occupied even when they have no tasks demanding their highest value professional skills – even when outsiders can perform these tasks more efficiently at lower cost. Firms bear these costs because the alternative is continually attempting to acquire capabilities as needed in labor markets. The transaction costs of hiring on that basis outstrip the costs of employing full-time professionals.

The World Wide Web, however, has changed this equation. Firms can now find highly skilled workers through social networks like LinkedIn or YouTube or Facebook, with or without diplomas – and hire them to join their firms’ work teams on limited contracts for particular projects, and then get them out the door as soon as those projects are completed. Because of the greatly reduced transaction costs of bringing workers on board, firms no longer have to pay a premium of higher wages or steady work or benefits. And because of the increased costs of keeping workers occupied – paying high wages and benefits even when the workload is light – firms will avoid long-term employment contracts when they can.

### *A New Vision*

The concept of investing in college to gain steady professional employment with decent wages, job security and benefits is no longer valid. The costs are too high, and the jobs are disappearing. The situation is thus ripe for a new vision of higher education in tune with contemporary realities. Here I want to outline such a vision.

Many free or inexpensive learning opportunities have always been available. These opportunities, however, become devalued when diplomas are used as job filters – a prime cause of inequality in modern societies. The rich have more opportunities for formal education and get richer; the poor get trapped in a catch up game, and by the time they get their diplomas,

at great cost, the pay-offs are meager. This is what Thomas F. Green (1980) called ‘the law of last entry’ – those who arrive later at any level of the educational system get fewer benefits, and those who arrive last get little or nothing because their diplomas differentiate them from nobody.

Today, it is possible to acquire personally meaningful educations and high demand capabilities online at little or no cost. Education itself is no longer scarce; it has become a commodity if not an entirely free good. With ‘dual visibility’, learners can make themselves and the capabilities they have developed known, and firms can find them. Employers hiring workers don’t need to concern themselves with the standard knowledge represented by university diplomas because they are not making long-term commitments. All they need are ready capabilities for the tasks immediately at hand.

MOOCs contribute to the knowledge and skill mix both by providing coherent learning experiences and by offering certificates or badges upon completion. These certificates – or sequences of them – can be bundled into stand-alone ‘diplomas’ (ALISON), ‘nano-degrees’ (Udacity), ‘specializations’ (Coursera) or ‘series’ and ‘micromasters’ (edX). Both documentable knowledge and skill claims and badges or certificates can all be bundled with other forms of documentation in searchable digital portfolios. The portfolios can also contain goal statements, papers and reports produced during academic course work or self-directed study or work projects; statements of specific and documented capabilities claimed, multimedia presentations demonstrating possession of those capabilities, reference letters from teachers, prior employers and coworkers – especially coworkers who have worked at targeted firms.

These forms of documentation are already engendering new forms of low-cost higher education. Here is one interesting example:

The NGO Enfants du Mekong in Cambodia finds poor students with high academic potential and brings them to its Centre Docteur Christophe Mérieux in Tuol Kork, where they receive housing, educational and financial support while they attend the local university. Their studies are augmented with MOOCs. The center’s director says that the MOOC format is ‘exactly what we need’. Some students are using MOOCs to prepare for exams to obtain competency-based degrees. Others are relying on MOOC certificates for courses not available in their universities (Murray 2014).

Grant Knuckey, chief executive of ANZ Royal Bank in Cambodia, says his company may consider MOOC certificates in hiring decisions if they

grow more common in the Kingdom. Like college diplomas at the end of the 19th century, MOOC certificates have to reach a critical mass before they can be institutionalized as qualifications. Knuckley notes that MOOCs are getting ‘increasingly sophisticated and relevant and cannot be ignored’ and adds that firms in the United States and Australia are beginning to take them seriously (Murray 2014). Indeed, as noted earlier, while few firms know much about MOOCs, they become increasingly interested in their potential as they learn more about them.

As discussed in [Chap. 5](#), many nations in Africa and Latin America suffer from underdeveloped educational infrastructure at both secondary and postsecondary levels. Thus, as these nations are brought into the global economy through increased foreign investment, firms cannot find enough capable young people to meet their labor needs. In response, MOOC-based education from ALISON, Udacity and other providers is filling this need with basic short courses with ‘badges’ for completion.

The Higher Education 2.0 revolution is not likely to take off most rapidly in the most developed nations. As Trotsky’s law of uneven development predicts, cutting-edge technologies – including socio-technical systems – will expand most rapidly where the installed base of the previous generation of technologies or systems is least developed – as is illustrated by the spread of cell phones in nations with underdeveloped ground phone systems. MOOCs are in motion. If we in the developed world are looking for hints about the future of MOOCs in advanced postindustrial nations, we would do well to attend closely to their employment, expansion, augmentation and institutionalization in the developing world.

## NOTES

1. <https://www.udacity.com/course/how-to-build-a-startup-ep245>
2. <https://www.coursera.org/course/highered>
3. <http://www.unceminor.org/about/news/goldstein-and-thorp-launch-mooc-whats-your-big-idea>
4. <https://www.futurelearn.com/courses/innovation-the-key-to-business-success>

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