



# University of the Future: Genesis, Challenges and Potential

**Berhane Bein Sertu**

## Abstract

Although the University of the future will insatiably chip away at some opportunities from the University of today, although the advent of the ever-innovating technology will make the former more viable and the later more vulnerable, although the inevitable wave of changes that have swept other older industries loom, although the MOOCs and online delivery will increasingly utilize pedagogically sound approaches, the University of today and the University of the future will complement, not undermine each other.

*Keywords:* MOOCs, University of the Future, University

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## Introduction

The University of today has evolved from its humble Medieval roots. Moreover, after Cardinal Newman penned his influential book: *The Idea of a University*, the German University model, research at its heart and at odds with Newman's idea flourished in Canada, England, and the USA.

The University of the future will be the continuation of the evolution of the University of today— that is, I believe at its peak, in its desire to improve access and meet demand, it will rejuvenate Newman's idea of the University—the separation of knowledge generation and teaching.

In this paper, I will explore the idea of a University of the Future, its roots, its setbacks, and its potential. In the first part, I will trace, albeit briefly, the origins and evolution, and history of the University of today, from Medieval to Newman to Humboldt to Flexner to Kerr. In the second part, I will trace the history of distance education/correspondence education as a precursor concept to a full-fledged Open University — a watershed moment in the origin and evolution of the University of the future.

In the third part, I address MOOCs (Massive Open Online Courses) as the next iteration in an attempt to expand access to higher education. Next, I describe some of the reasons why MOOCs failed to live up to their hyped promise. Finally, to envisage what the University of the future will look like and to argue that it will be a hybrid of the old university model and emerging models,

I will describe the innovative solutions proposed to rectify the challenges as epitomized by a specific and emerging example: The Minerva Project that culminated to Minerva University.

## A Brief History of the University of Today

The first universities in the western civilization germinated in the cities of Bologna and Paris in the Medieval epoch circa one thousand years ago, predating the modern European states. These early institutions sprouted organically as an assembly of guilds of masters and students. Similar to the various professional guilds that existed during the same era, they were devoid of any formal authorization as teaching institutions (Rashdall, 1987). With reciprocated recognition between members of the guild, with Latin as a common language, and a shared common goal of inquiry (Barnett, 2000, p.72), groups of scholars formed themselves into self-governing guilds to later become established as formal foundations with vested powers to award degrees. Pope Gregory's recognition of the University of Toulouse was a milestone for the business and concept of the university as a place of learning and teaching (Rashdall, 1987). Although early university precursors as a spin-off from the original assembly of guilds and students had existed before; the Pontiff's approval and the official recognition became an indelible and durable precedent for the autonomy of a university that would have a millennium of impressive longevity. Almost six centuries after the first Medieval university secured Papal authorization, Cardinal Newman penned his famous treatise: *The Idea of a University* and in it, he reinvigorated the liberal education component that was a small part of the Medieval University, advocated and immortalized the

ideas for a different kind of university— one that was unburdened by the demands of utility and knowledge generation, but that was solely focused on a nobler moral and philosophical ideals through its liberal education (Kerr, 1982). Considered the Bible of universities (Fallis, 2007) Newman's book is invariably invoked by scholars and summoned in higher education lecture halls and discussions.

Newman never pooh-poohed the need for training professionals nor did he oppose research, he believed that other institutions, not the university should be responsible for these (Kerr, 1982). This assertion was profoundly anchored in the belief that scientific and philosophical contemplation through research impeded the role of the university as a center for learning and teaching liberal education (Newman, 1996). The Medieval University that was the assembly of guilds and knowledge seekers was mainly utility oriented, and it emerged to cater for the practical needs of society, but it included a liberal education component (Fallis, 2007). Educating students and turning them to be critical thinkers, problem solvers through liberal art education were the sole functions that should concern the university (Newman, 1996). Newman thought that the university should not be concerned with the demands of the industrial revolution for specialized knowledge (Fallis, 2007). Newman thought liberal education was superior, not for its utility but for its own end and pleasure and therefore an institution in the stature of the university should not be a place for practical learning.

While Newman's idea of a university was gelling, the German model, which advocated for the unification of research and teaching, for freedom to teach and learn

was taking hold and by the 1900s, this model, that was the opposite of Newman's idea and one that aspired to amalgamate practical education and research was getting traction and threatened Oxford and Cambridge, which were mostly the implements of Newman's idea of a university.

In 1930 Abraham Flexner wrote about the emerging modern university. A brainchild of the Prussian Humboldt, this model could not be viewed in isolation from the changes in society (Flexner, 1930) and despite Flexner's angst about the trend to depart from Newman's model and his worry about the university becoming too many things and with too many missions, the new model became prominent in the USA and Canada.

Clark Kerr, the master of the California Master Plan, elucidated his ideas of the multiversity that was the combination of the models of the Medieval, the Newman, and the German, "The Multiversity draws on many strands of history to the extent it can be identified....." (Kerr, 1982, p.9). Encouraged by the land grant of 1862 when the USA Federal government allocated land to the states to create universities (Scott, 2006), the states increased access and offered degrees in agriculture and business (Kerr, 1982). But, instead of differentiated institutions serving different purposes, the American universities evolved to conglomerates of undergraduate and graduate and professional education and research (Kerr, 1982). These institutions adjusted with the demands and the needs of society as they increasingly became more flexible and responsive by expanding enrollment in new professional schools—undifferentiated and unspecialized (Fallis, 2007).

## Distance Education: The “Gestation” Period for the University of the Future

Modern distance education is not a novel way of delivering courses to learners whose circumstances do not allow them to be in the classroom. It can be traced back to as early as the 18th century. Its evolution and progression over three centuries moved in tandem with innovations in communications technology (Kentnor, 2015). Isaac Pitman, recognized as the pioneer of distance education, began teaching shorthand by correspondence in 1840 in Bath, England (Verduin & Clark, 1991). Pitman mailed postcards to students and instructed them to transcribe passages from the Bible into shorthand and to mail them by post for correction and feedback (Verduin & Clark, 1991). By the 1870s, the foundation for correspondence education was firmly laid, and several USA colleges followed suit to offer correspondence education. In 1873, Anna Eliot Ticknor founded the Society to Encourage Studies at Home in Boston, Massachusetts. “Based on the same model, Illinois Wesleyan College became the first academic institution in the USA to offer degree programs in absentia.” (Emmerson, 2004, p. 2).

Commencing in the late 1800s distance education bloomed in late 1990s with the advent of the online technological revolution. The evolution of distance education beginning with correspondence and the use of parcel post, to the radio, then to television, and finally to online education bequeathed access to so many people, who were unable to attend the traditional classroom.

## The Birth of the University of the Future: A Watershed Moment

While the offering of distance education increased with

every new technology since the advent of parcel post and rail-road when course materials were mailed to learners, they were limited to trade skills and in scope (Kentnor, 2015) and although the number of institution offering degree programs through distance education swelled over time, providing people more access to higher education, I believe the solid roots for the University of the future started in 1969 with the founding of the Open University in the UK, when it became the first university in the world to offer higher education to people without the need to have a campus. On July 23, 1969, Geoffrey Crowther, the inaugural chancellor of the just founded Open University with a goal to provide an alternative to traditional higher education addressed a gathering and said: “We are open, first, as to people... We are open as to places... We are open as to methods. We are open, finally, to ideas...” (Crowther, 1969, p.1). The Vision of the British Open University and the speech by its founding chancellor about being “open to people, free from cloister, open to methods and ideas” (Crowther, 1969, p.2) were powerful unto themselves, but he further invoked the words inscribed in the Statue of Liberty: “Give me your tired, your poor, your huddled masses yearning to breathe free. Send these, the homeless, tempest-tossed, to me: I lift my lamp beside the open door....” (Crowther, 1969, p.2)

In today’s higher education parlance Crowther and the Open University were confronting the issue of access to higher education, when UK was at the cusp of crossing the chasm from elite to mass participation in its higher education access, “Since the Robbins Report of 1963, higher education in the UK has undergone major expansion, changing it from an elite to a mass system” (Bathmaker, 2003, p.1). In addition, like Clark, Moran,

Skolnik, and Trick, 2009 point out, the idea of an open university, is not only how it delivers its programs, but also how it admits students into its programs.

With the birth of Open University, the invocation of the words inscribed in the Statue of Liberty and Crowther's emphasis of open to people, open to places open to methods and open to ideas, the idea of a full-fledged, truly open university of the future that would open more access and democratize higher education was born.

## MOOCS: The University of the Future in "Adolescence": An attempt to Break Barriers

Building on the concept of correspondence education, powered by the vast reach of the Internet, augmented by the ubiquity of the web, the next evolution of the University of the future predicated on MOOCs was poised to give unprecedented access to millions of people around the globe from the comfort of their homes. The Open University has served as an inspirational model for the pioneers of MOOCs as the premise of the MOOC model was both as commendable and democratic as that of the Open University: quality education should not be a luxury good. The idea of using the available technology like radio and television to transmit knowledge that the Open University seized on, was about to dramatically change when Tim Berners Lee created the web in 1989. The vision of the Open University that was the hallmark of Lord Crowther's speech would, however, not reach its pinnacle until the web became ubiquitous almost fifty years after his speech and thirty years after the creation of the web.

After Sal Khan opened his Khan Academy and Bill Gates

endorsed and supported it through his foundation, it inspired academics from Stanford and Harvard to create their own MOOCs. Sebastian Thrun created Udacity, Daphne Koller and Andrew Ng; two Stanford professors launched Coursera. Not to be outdone, Harvard and MIT jointly established their own MOOCs, edX. And these innovations promised to reach millions and break access barriers. And reach millions, they did. But break access barriers, they did not.

Although Lord Crowther crystalized the vision of the University of the future, it would take decades before MOOCs seemed to elevate the noble vision of the Open University to reach the poor and the tired: those who cannot afford higher education, those who are tired from their day job to support themselves and their families, those who as Crowther (1969) intimated fell through the cracks “either through the fault of their own or the failures of the system or both”. And yet, even the bright dream of MOOCs had a dark side as Sebastian Thrun, the visionary behind Udacity would soon learn. While hundreds of thousands of students from all walks of life and places were able to attend quality courses taught by quality academics from prestigious schools like Stanford without attending the proverbial and traditional classroom lecture almost for free, completion rates were dismal and the dream of “give me your tired, poor and huddled” that also inspired professor Thrun and his colleagues would not be realized with Udacity and its peers. Even with the dismal completion rate, those who completed the courses were experienced learners who have accomplished prior higher education degrees (Flynn, 2013). They were not “the tired and the poor.” that the Open University and MOOCs envisioned and wanted to embrace. So like the thousand-year-old

university of today, which first served the elites, the University of the future at least in its MOOC incarnation has turned out to benefit the elites first—those with prior undergraduate and advanced or college degrees and had enough wherewithal and motivation to succeed anywhere (Flynn, 2013, Christensen et al., 2013). When Stanford University offered the Machine Language course online through its MOOC, 104,000 students joined (Flynn, 2013), but only 5% completed. Although MOOCs were exploiting the wide open Internet and reached an unprecedented number of students and 5% completion rate of 104, 000 is excellent; the numbers are superficial as they are misleading—MOOCs did not break access barriers, they still catered to the elites — experienced learners with previous higher education. When researchers from the University of Pennsylvania analyzed more than 400,000 surveys from students enrolled in over thirty Coursera courses (Christensen et al., 2013), the overwhelming majority of those enrolled (83%) had two-or four-year degrees, and of those, 44% had some graduate level education. Moreover, according to an analysis of seventeen online courses offered by edX, only 2.7% of the students had mailing or IP address from the least developed countries as listed on the United Nations (Ho et al., 2014).

## The Challenge of MOOCs as a Pinnacle of the University of the Future

Without the underpinning of pedagogical science, MOOCs merely replicated the traditional university lecture at best or became mere gimmicks at worst, and the massive, lonely nature of this innovations overwhelmed, frustrated, and bored students compelling them to quit. The visionaries behind the MOOCs, exuberant and animated by the beauty of their creation,

fooled by the sheer number of students attending their courses, while they got the art right, they ignored the science of Pedagogy. “MOOC advocates also failed to appreciate the body of knowledge about learning online by innovator faculty who were attracted to online teaching for its innovative potential, such as peer-to-peer learning, virtual teamwork, and interactive exercises” (Uberl, 2017).

Furthermore, one relevant work that MOOCs ignored to incorporate in their innovation was the findings of Suppes and Atkinson. The duo was tasked with designing a course that would use the latest computer technology to teach mathematics in the early 1960s. Their work employed “control theory.” Students in the computer-based class would not all receive the same instruction. Instead, the lessons and the order in which the material was presented would vary according to their past performance and other learning metrics and become either harder or easier depending on how the learner is doing, stopping for a reassessment and summary of materials at different intervals. The approach combines leveling (presenting the same content at different learning and reading levels, depending on the student) with dynamic learning (which involves playing around with the manner and order in which information is presented, so that students don’t get bored or frustrated).

Furthermore, early MOOC founders ignored pedagogical revolution that was already under-way in universities as active learning approaches were supplanting the traditional lecture as professors, and tech-maven students embarked on active learning approaches. As early as 2005 MIT introduced Technology Enabled Active Learning (TEAL) classroom in its introductory

physics courses. While the first MOOCs were being deployed, traditional lectures were on a revolutionary trek as TEAL was piloted, empowering students to collaborate and to engage. As Active Learning was gaining prominence one research study looked at 200 studies, which compared standard lectures to active learning for undergraduate STEM courses and the results were clear: As Freeman et al, (2017) found out, average test scores increased about 6 percent in active-learning groups, while students in traditional lecture classes were one and half times more likely to fail than their peers in active-learning classes (p.1). And what are MOOCs except for glorified and massive lectures, professors still pontificate and students still take notes, but in their silos, devoid of the comfort, encouragement, huddle of their peers, and counseling of student development professionals in the traditional setting.

MOOCs inherently capitalize on the reach of the global Internet, for example, the 160, 000 students who initially enrolled in the Udacity artificial intelligence course came from 190 different countries (Flynn, 2013) but the MOOCs did not consider language and cultural barriers. But to be fair to the MOOC visionaries and evangelist, their excitement and exuberance were not unprecedented. Long before the advent of MOOCs; the famed American inventor, Thomas Edison, excited by the invention of motion picture and its potential to change education said, “Books will be obsolete.... Scholars will be instructed through the eye. It is possible to teach every branch of human knowledge with the motion picture. Our school system will be completely changed inside of ten years” (Smith, 1913, p. 24). Reminiscent of Edison’s comments, a century later, another Thomas, Thomas Friedman, an NY Times Columnist and the author of the

book, *The World is Flat*, rhapsodized the following:

There is one big thing happening that leaves me incredibly hopeful about the future, and that is the budding revolution in global online higher education. Nothing has more potential to lift more people out of poverty — by providing them an affordable education to get a job or improve in the job they have. Nothing has more potential to unlock a billion more brains to solve the world's biggest problems. And nothing has more potential to enable us to reimagine higher education than the massive open online course, or MOOC, platforms that are being developed by the likes of Stanford and the Massachusetts Institute of Technology and companies like Coursera and Udacity (Friedman, 2011, para 1).

## The Minerva Approach: The Hybrid Solution

The solution appears to be in a hybrid system, and a new project called the Minerva Project, which evolved to become Minerva University by collaborating with Keck Graduate Institute (KGI) to fast-track its accreditation is promising to solve the problem (The Minerva Project, 2014). Minerva, aptly named after the Roman goddess of wisdom integrates the traditional university and the University of the future concepts and ingrains pedagogical science that the MOOCs ignored. Minerva, a private university, admits its students through the untraditional, but a rigorous process. It interviews applicants through skype and asks them to write essays during the interview. It does not consider the USA SAT scores because it believes rich people can hire tutors to coach them and to score higher; it does not restrict itself to local students and shops for talented students internationally and although lecture is forbidden,

seminars are conducted remotely through its propriety software. Students have a residence, living in a two-person room with communal kitchens.

Although a private university, Minerva, tuition is fee is 50% less than the prestigious USA schools. It conducts its seminars by programming its pedagogy in the curriculum. It is not an Online University, but it is not the traditional university either, it is a hybrid. It infuses new and old ideas to create a unique university. Minerva University leverages the strength of MOOCs as students are expected to learn the basic concepts of the subject matter from the freely available and reputable MOOCs and the class time is used to explain the advanced concepts. “The sage on the stage” is not relegated “to a guide on the side.” The sage still imparts their knowledge, pontificating from a virtual stage, but they constantly challenge and force students to think by relentlessly and quickly assessing them, receiving feedback in real-time. Well informed about how many of their students understood the concept, armed with instantaneous insights, they can reinforce the concepts utilizing the pedagogical science they were trained on. Students are engaged, they learn actively with less chance to drift away or doodle. “What differentiates Minerva, what is strikingly unique about it, is its proprietary, none generic online platform specifically developed to “apply pedagogical practices that have been studied and scrutinized by one of the world’s most eminent psychologists, previous Harvard dean, Stephen M. Kosslyn, who joined Minerva in 2012.” (Wood, 2004, para 2).

Furthermore, “Minerva stripes the university to its bare bones by eliminating the library, the dining hall, the

gym.... the university experience is stripped down to the aspects that are only shown to contribute directly to student learning.... What is left is leaner and cheaper” (Wood, 2014).

## Conclusion

MOOCs will increasingly partner with established traditional universities to deliver many of their courses as Coursera and Udacity have already done with a dozen universities in the USA. I envision the conventional university and university of the future collaborating instead of undermining one another. The initial competition will lead to collaborating, each of them lending their unique strengths, the traditional university mostly specializing in generating the knowledge and the future university primarily conducting the teaching by partnering with the traditional universities to deliver their curriculum for them through the innovated MOOCs. We will have more differentiated, improved system— with innovated and pedagogical science underpinned MOOCs, the Minerva approach, and the traditional university.

The University of the future started yesterday, and while it is not yet thriving today, with innovation on MOOCs to infuse pedagogy and the new approach that Minerva University has embarked upon, the University of the future is upon us— improving on the ideas of the thousand-year-old university. With pedagogically sound practices that will be baked into their delivery of teaching, MOOCs will transcend their “adolescent” exuberance to maturity. However, the “sage” will still saddle the “stage.” albeit a virtual one. The professor will still pontificate, but increasingly untethered to the classroom.

Moreover, at long last, Cardinal Newman maybe granted his wish when the University of the future as epitomized by Minerva and innovated MOOCs focus on teaching liberal arts for its own end and the traditional university specializing in research. If Cardinal Newman would virtually walk the halls of the University of the future, after fumbling with the “strange” device that connects him to the new university, he would catch himself addressing the virtually gathered as “gentlemen” when he sees assertive women roaming the virtual halls to teach and learn. He would blush but be delighted at the divorce of teaching and research. The irony would be apparent — a cardinal advocating for divorce.

The University of the future as MOOCs and Minerva have so far indicated will follow the trajectory of the old university— the first beneficiaries will be the elites. Access, Quality, Funding, and student development discussions will still be prevalent and relevant to the University of the future.

The University of the future will not be built on the rubbles of the traditional university as the later will be the foundation of University of the future or to paraphrase Sir Isaac Newton: the University of the future will stand on the shoulders of the traditional university to ameliorate and innovate and educate members of society with hunger for knowledge.

Although MOOCs did not live up to their promise due to the multiple non-technical flaws in their initial design, the revolution they have sparked will blaze and their founders should be proud and should recite the 15th-century Spanish poet, Jorge Manrique:

And, though the warrior's sun has set,  
Its light shall linger round us yet,  
Bright, radiant, blest.

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