

# e-mentor

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# Change Happens

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*The advent of the Internet points out that 1:1 faculty: student experiences in a physical environment, or small classes are basically one of a number of „platforms” for the transmission of knowledge either by the scholar/teacher, or possibly by one or more forms of artificial intelligence. It has been demonstrated that, even in highly craft-oriented professions, it is possible that the „handcrafted” experience can be provided, effectively by alternatives, such as artificial intelligent systems. The idea of e-mentoring, regardless of current or emergent technology, can be considered as an interim response within the education system much as parallel efforts were implemented in other areas that undergo „disruption” in an attempt to maintain the current paradigm.*

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## Introduction

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*Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that! – Lewis Carroll, Through the Looking Glass*

It is commonly accepted that the idea of the university was born in Italy in 1088. It offered the opportunity for scholars to work and exchange ideas in a common space. And, it provided a place that those seeking knowledge could venture for study. The idea, over the centuries, has undergone numerous, fundamental, changes in sponsorship and purpose for both the scholars themselves and those who seek entrance to what is often termed an Ivory Tower, an intellectual Camelot.

Today there is the idea of a modern research institution. Much of that research conducted by the academics are not the idyllic, self-directed, pursuit, but studies tempered by funding and, often dependent on whoever inhabits various disciplines or adhere to particular philosophical positions. Often the universities, such as the Land Grant institutions in the United States, are focused on disciplines leading to practice by the graduates and research applied in certain areas deemed critical by governments, the private sector and student interest in future employment opportunities.

Like the proverbial son of the forester who returns to see the land transformed, the family, living with the change, does not perceive the radical difference. Today, the ubiquity of the Internet not only impacts the functioning of the university but also makes visible both the changes and the context within which the institutions are embedded.

While the „map of the university and its context is not the territory”, in many ways it is that picture of a post secondary universe which many carry in their mental portfolio, structure, function, purpose and anthropology.

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## The Territory

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At one point one might have considered the university as a point of light in a sea of intellectual darkness. Scholars needed to travel, like intellectual knights errant to find a supportive community, often not necessarily to bring enlightenment to the surroundings. Students, selectively, journeyed for such knowledge but not necessarily to join as intellectual monks. Today, with the increasing power of the Internet, there are cracks in the walls and content knowledge has become more accessible, not only for those of a more academic bent but, essentially, the larger population who, in the past did not seek or find necessary to pursue their lives in the intellectual community or their vocational activities.

The breach in the walls of the Ivory Tower is so profound that the academics, themselves, not only deliberately contribute to these flows but also access these flows to avail themselves of new sources. Like the crash of a truck carrying the coins of the realm, the populations both inside and outside of the Ivory Tower rush to capture this self-reproducing knowledge and often repurpose it for others to access. In other words, what had once been proprietary knowledge with limited access is now in the public domain.

Both those in the institution and those who see cost of entrance as a barrier are seeking more than the proverbial content creation and distribution. The myriad technological options presented to, for, and by the institutions are increasing. Yet, at the edge of

the intellectual universe, there are emergent options for further knowledge acquisition that transcend the content transfer experiences of the past.

We know this is happening as institutions are finding much that was theoretical or scholarly research is now located outside of the Tower. Original research is published by many international organizations including the World Bank and other development banks. Many companies such as Google, IBM, and Microsoft provide basic research documents to their respective communities. Gartner (see below) freely provides their research reports, as do many other international consulting firms. These are frequently published outside of the standard scholarly journals.

It solidifies the decrease in perceived need for „tenured” faculty and amplifies the use of more adjuncts, many, only at the master’s level, who are providing content driven knowledge distribution courses. In the digital world of the Internet it is understood, but not admitted, that live delivery is just another platform in distributing or presenting knowledge/information.

What perilously remains is the institution control over certification, now, particularly focusing on competency. The Susskinds (see below) have pointed out that if a function can be parsed into definable applications that it is susceptible to being done by artificial intelligence. Margaret Anderson, in University World News, has parsed the functions of a university which can be „outsourced” by other providers, including artificial intelligent systems.<sup>1</sup>

Competency, in many ways is a measure of mastery and a strong deference to the demands by those who employ graduates and governments that fund public universities. More importantly, and one that acknowledges the changing nature of those attending is that, in addition to competencies in the content area, is the expectation that attendance will provide the social and cultural capital that is now demanded in all areas of public participation and employment related skills. Historically, many attending, particularly medallion institutions came with such skills to be polished. Today, content driven faculty have neither the preparation in this domain nor the experience in how to generate such skills that are not automatically acquired by passing through the Ivory Tower. At one time knowledge acquisition, content, was the heart of the Ivory Tower.

Scholars trained in these disciplinary areas over the course of their education and apprenticeship are struggling with the idea that those now entering the gates, while capturing these needed disciplinary ideas are also seeking the magic supposedly conferred by passing through the institution. Of even greater concern is the increasing need for faculty to step across disciplinary departments in order to carry

out research. This weakens the idea of intellectual „guilds” defined by „disciplines”. Again, the graduates entering the world of work are faced with this needed skill, a challenge to the traditional university parsing of knowledge.

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### Enter the Magicians

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Since its inception, the university as an educational institution has largely been a „hand-crafted” industry in that most knowledge transfer was provided directly by lectures and consultation by the professorial community. While the mission of research and teaching remains the same, the subject focus and the programs in which learning and research are embodied have changed. Also, the population who come to learn and their perceived needs have changed. But, basically, the institution is increasingly labor intensive and thus dominated by costs for faculty and administrative support.

Often this has led to the determination that certain instructional functions could be devolved to „at will” faculty (adjuncts), often without benefits, particularly, tenure. Additionally, the recent external pressures from increasing costs has led to a reduction in subject areas not seen as directly relevant to the needs of students who see universities as gateways to work and to those who employ graduates. Also shifts in funds that would benefit the academic program are redirected to other activities that have blossomed and expanded on campus.

As discussed above, the rise of the Internet and concomitant applications has seen a flip to the use of technology, particularly in the arena of instruction. While the sciences have embraced these advances in their research, the idea of students using calculators, and now smart phones in classes is rapidly devolving to what is being labeled, BYOD, or bring your own device to one’s learning experience.

The Gartner consulting group has invented and developed what they term the „Hype Cycle”, HC, which they have shown track the rapidly emergent and expanding use of these various digital inventions. They, and now others have developed the HC for various applications including education. One of the more complete such cycle has been carried out for education by the University of Minnesota<sup>2</sup>.

One of the best explanations for the Hype Cycle is from Wikipedia<sup>3</sup>. What is critical to note here is that Wikipedia and its derivatives were first eschewed by the academic community and yet it is often one of the first places that many academics turn for basic introductions to ideas though its vetting is anonymous and not necessarily done by those within The Academy. It is a paradigmatic example of knowledge flow outside the Ivory Tower. Some might see this as the erosion of scholarly authority.

<sup>1</sup> <http://www.universityworldnews.com/article.php?story=20161205205340542>, [22.03.2017].

<sup>2</sup> <http://hypecycle.umn.edu>, [22.03.2017].

<sup>3</sup> [https://en.wikipedia.org/wiki/Hype\\_cycle](https://en.wikipedia.org/wiki/Hype_cycle), [22.03.2017].

The basic hype cycle from Wikipedia is described below. The technologies listed are often placed on the cycle by different researchers for individual sectors. For education in particular one might find differences for general education and that which one finds in corporate education or training or for use in marketing, research/development or management.

**Figure 1. Hype cycle**



Source: [https://en.wikipedia.org/wiki/Hype\\_cycle](https://en.wikipedia.org/wiki/Hype_cycle).

acquisition along with all the options considered in the Gartner Hype Cycle. What is critical to understand in this frame is that seekers of knowledge now have a choice not only where they might „go”, to a physical or virtual campus or a blended set of options.

For seekers, like persons released from a dark cave (basically P-12 school systems), the options can be blinding and they have not quite realized the extent of the opportunities presented nor how to effectively use this matrix to acquire what is most relevant. As suggested above, the full potential of BYOD is yet to be realized by those with the devices. Similarly, faculty and the institution itself are in a reactionary mode.

## Watson and Machine Learning<sup>4</sup>

As noted, above, it has been said that if a process can be broken into smaller pieces that it is possible for a machine to accomplish the same. A number of researchers have developed such processes for self-folding and self-assembling molecules. Similarly molecules that have the ability to set their clocks for activation rather than needing an external trigger have been developed. There are deep learning programs designed and managed by computer programmers

**Table 1. Each hype cycle drills down into the five key phases of a technology's life cycle**

No.	Phase	Description
1	Technology Trigger	A potential technology breakthrough kicks things off. Early proof-of-concept stories and media interest trigger significant publicity. Often no usable products exist and commercial viability is unproven.
2	Peak of Inflated Expectations	Early publicity produces a number of success stories – often accompanied by scores of failures. Some companies take action; most don't.
3	Trough of Disillusionment	Interest wanes as experiments and implementations fail to deliver. Producers of the technology shake out or fail. Investments continue only if the surviving providers improve their products to the satisfaction of early adopters.
4	Slope of Enlightenment	More instances of how the technology can benefit the enterprise start to crystallize and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious.
5	Plateau of Productivity	Mainstream adoption starts to take off. Criteria for assessing provider viability are more clearly defined. The technology's broad market applicability and relevance are clearly paying off.

The term „hype cycle” and each of the associated phases are now used more broadly in the marketing of new technologies.

One of the most active contributors to the development of the idea of the MOOC or massive open online courses and researcher on educational futures, Stephen Downes, has suggested that the current idea of campus classes, today, can be considered as just one possible „platform” for knowledge delivery and

that can create bioactive compounds without needing biotechnology expertise<sup>5</sup>.

While one does not discount human creative and innovation capabilities, what has been shown is that the traditional disciplinary skills that academics pride and work towards are subject to significant reflec-

<sup>4</sup> Hansen R., *The Age of EM*, Oxford University Press, New York 2016.

<sup>5</sup> <https://www.youtube.com/watch?v=t4kyRyKyOpo>, [22.03.2017].

tion. There are numerous applications in almost all traditional disciplines. This challenges the currently calcified knowledge structure of the university.

It does not suggest that research pursuits are not of significant importance. Rather it raises the question of what makes a professional academic in both the research and education arena. As suggested above, the entrance of intelligent systems and new „platforms” accessible for both research and learning, suggests that much that has been held sacred because of subjective perceptions of an individual’s worth is being challenged. The Susskinds, in their book, *The Future of the Professions*<sup>6</sup>, indicates that what was considered personal and intuitive was also considered immune to challenge by Artificial Intelligence and Machine Learning. Areas such as health care, counseling, law, and even the humanities are now recognized as domains subject to occupational encroachment by technology.

The same applies to the function of a professor. The idea of a 1:1 relationship between a learner and a teacher is often presented as the ideal. With the advent of mass education such an ideal became an impossibility. This has been amplified in large lecture halls, often supplemented with assistants to help interpret. Given physical and fiscal resources this became a default model. Today, technology, in the form of MOOC’s makes this a global alternative at many levels. Other blending of faculty and technology present still keep the faculty-centric model as the paradigm.

In the mid 60’s Eliza, a computer program modeled on Rogerian psychology emerged and captured users who often responded as if Eliza was „human”. Half a century later, intelligent systems have transcended this capability and have even been embodied in mechanical systems such as Pepper or voice only such as Alexa and Siri on common devices such as smart phones or chips in speaker systems at home/office or vehicles.

The fact that it is estimated that, in the United States, 70% of teaching staff are non-tenure track individuals clearly shows that the idea of a handcrafted 1:1 learner/scholar relationship, though seemingly desirable, is not required for education to occur<sup>7</sup>. The arrival of intelligent autonomous systems in the practice of a university points to the fact the function of a scholar in both creation and distribution of knowledge has changed and that The Academy needs to reconsider the structure and function of its core faculty.

The case of Africa is instructional. There have been a number of proposals and even organizations that are focused on the creation and/or improvement of higher education across the continent and in individual countries. There are two interesting arguments. One is to create universities that are „ranked” internationally with the second proposed to creating a flagship institution that is focused at the country or, possibly, regional level. University World News which publishes a global and African edition tracks much of this (for example: <http://www.universityworldnews.com/article.php?story=20161213183014643>). In addition to the politics of any of these options, one is faced with the overwhelming costs for these proposals and the time needed to increase the capacity in facilities and faculty.

These issues need to be taken within the context of the problems faced by universities, globally. A possible idea has been proposed by Steve Fuller in the extended essay, *The Academic Caesar*.<sup>8</sup> Unfortunately, all of these ideas seem to be grounded in the „idea” established in the 17<sup>th</sup> century by von Humboldt, a community of scholars/teachers/researchers in a collegial matrix. As this article suggests, the times are changing, particularly with the current and future advances of intelligent systems and the increased connectivity and virtual storage of the Internet. Taking into consideration the insights offered by the Susskinds and, the specifics of deconstruction posed by Margaret Anderson, the idea of cloning new universities based on the current, western institutions or the reconstruction of existing institutions as proposed by Fuller becomes a paradigmatic example clearly articulated by Clayton Christensen in his oeuvre based on „innovation” and his examples of the efforts of existing enterprises to retain their position under the increasing competitive alternatives<sup>9</sup>. As folk singer, and now Nobel Laureate, Bob Dylan has written, „the times they are a changing.”

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<sup>6</sup> R. Susskind, D. Susskind, *The Future of the Professions*, Oxford University Press, New York 2016.

<sup>7</sup> <http://tinyurl.com/zm8ppmf>, [22.03.2017].

<sup>8</sup> S. Fuller, *The Academic Caesar*, Sage Publishing, London 2016.

<sup>9</sup> C.M. Christensen, *The Innovator’s Dilemma*, Harvard Business Review Press (reprint), Cambridge, MA, 2016.

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