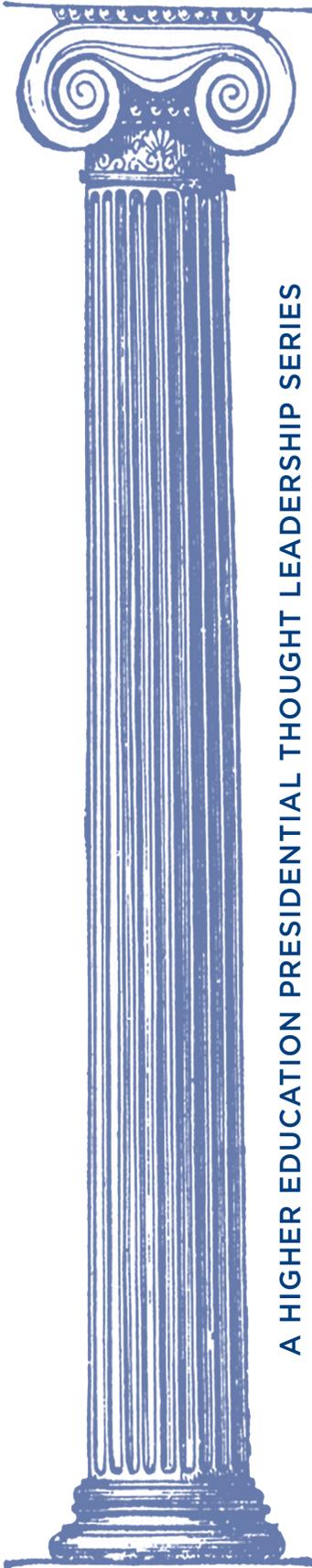
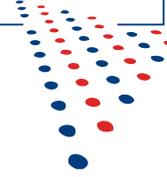


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CHAPTER

3

What is Lost:

*The Error of Reducing Complex Higher
Education Processes to Metrics and
Singular Narratives*

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What is Lost:
*The Error of Reducing Complex Higher Education Processes
to Metrics and Singular Narratives*

Dr. Vistasp Karbhari: President of The University of Texas at Arlington

“If the ladder of educational opportunity rises high at the doors of some youth and scarcely rises at the doors of others, while at the same time formal education is made a prerequisite to occupational and social advance, then **education may become the means, not of eliminating race and class distinctions, but of deepening and solidifying them.”** —President Truman, 1947

Truman’s fear has become a reality for many American students. Aspects such as escalating costs and reduced public funding have led to an increasing perceived gap between the inherent value of a classical liberal education and the immediate payback through education that focuses on preparation for the workforce. Difficulties associated with affordability have turned the promise of education as a path to a new and better life into something that seems increasingly out of reach for many and have led to increased questioning of the value of higher education in its current format.

The clamor for change and innovation in education to better match the socio-economic realities of today as well as the need to better match the abilities and technological awareness of 21st century students has grown. The availability of large amounts of information in a “Google” environment, enhanced capabilities of online learning to provide not just knowledge on demand but in individualized formats, increasing demand for competency based education, and nuances of data mining and learning analytics, coupled with reduced state and federal spending on higher education, as well as changing expectations of governing boards have made it essential that university leaders respond rapidly to an ever changing higher education landscape, while simultaneously planning for a future with an ever—shifting horizon based on technological innovations that could both broaden the scope of education and narrow its availability.

Learning technology infrastructures continue to evolve on campuses as functionality diversifies and expands to now routinely include new modalities of delivery of instruction, learning management tools, and the increased role and influence of social media. A clear temptation, in the face of growing pressure to innovate, is to blindly rely on a range of software systems to serve as the facilitators of transformation within a university. These technologies—while they can, under the appropriate conditions, improve access to learning materials and enhance student success—might also include unanticipated side effects of dampening the very creativity and innovation that we try to develop in university students. Rather than rethinking the role of higher education in a global economy and complex world, technologies frequently serve as a form of “mundane governance”¹; limiting experimentation by collapsing a range of opportunities for learning and teaching into structured software with narrowly defined parameters.

¹<http://ukcatalogue.oup.com/product/9780199584741.do>



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Systemic innovation and a determined focus on student success, rather than on the use of technology alone, is needed to overcome the dilemma Truman presents. How we respond over the next few years will determine the shape of higher education for the next century.

The following arguments are emphasized in this chapter:

- Technology is, by its nature, innovative; however, when applied to complex social systems like learning, it can become an enabler of “status quo” over innovation, and can often serve to mask the real issues that need focused effort.
- Systemic change models and complexity theory provide academic leaders with a lens to understanding the core trends impacting universities as long as they are implemented within a holistic schema rather than as a means to an end.
- The digitization of higher education provides the opportunity to rethink the role of universities in today’s society, enabling a continuum between a degree-based education and continuing education needed for professional development through a student’s career.

Learning as complexity navigation

What kinds of knowledge, skills, and attitudes are needed in today’s fast-changing world and how can universities support a range of students—from those seeking their first degrees to those already in the workforce now needing immediate access to specialized knowledge, in developing these? The answers to these questions will shape the future of higher education, particularly as to how it serves society and industry while stewarding public resources.

Learning involves complex practices of sensemaking, wayfinding, and managing uncertainty. These practices are true at both individual and system levels. For a learner to understand new knowledge domains, the sometimes-unsettling processes of grappling with ambiguity and exploring unknown spaces play critical roles in the assimilation and development of a true understanding of one’s disciplinary universe.

Digital technologies and networks now offer students access to global interactions. Online learning, open educational resources, and massive open online courses (MOOCs) deploy a range of educational options previously unavailable. Many universities now pursue a global clientele rather than serving just a local population and have formed partnerships with technology providers. Today’s educational landscape is an ever-expanding universe in which learning needs and methods have moved well beyond the confines of conventional teaching.

Only a decade ago, digital learning was seen as marginal compared to traditional classroom learning. Today, systems have shifted even more aggressively toward the former with numerous institutions establishing centers for learning innovation, digital teaching, and online consumption of educational products.

Of equal significance in the trend toward digitization is the changing student population in higher education. Fewer than half of those enrolled in college in the U.S. today are classified as full-time students. As traditional jobs become automated, requiring an education system that is configured or at least responsive to future work force needs, skills that learners develop during their formal education increasingly require education systems to adjust their teaching approaches and practices. The growing and diverse student population now requires new skills and knowledge beyond that which is currently taught. The demand for “training” is now almost instantaneous with the development of new knowledge.



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The changing labor market, modern student profile, and greater technology utilization have generated numerous and often contradictory camps. Faculty lament the decline in public education funding and the transition to managerial/corporate philosophies of college operations, while the public demands increasing accountability for lower levels of tax dollars allocated, and the business world demands agility in developing and implementing new highly specialized curricula while advocating for increased competency in decreasing periods of time of study. All advocate for disparate solutions to **their** unique perceptions of the higher education conundrum.

Within this environment deep and dramatic changes that could restructure higher education fall into five possible models:

1. Creative destruction as seen through the generation of new technologies which render existing modalities obsolete (such as through the introduction of the iPad, Google, and Netflix)
2. Disruptive innovation wherein new methods that initially appear to present no threat to existing systems gain prominence over time and ultimately threaten incumbent approaches (e.g. the use of open course ware, digital lectures, MOOCs, etc.)
3. Paradigm shift whereby new tools and approaches cause a rethinking of existing practices and assumptions (such as through social media, linked data, and the Web 2.0, social networked learning among others)
4. Long cycle of adoption practices wherein technologies cause a multi-decade process of duplicating existing organizational practices before ultimately bringing about systemic change
5. Techno-socio-economic transformation which signifies periods during which significant technology investment and social change dramatically restructure economies, societies, and institutions

These forces all impact universities today, but none is more significant than the techno-socio-economic stresses defined by information and communication technologies and the economic investments that advance their development and which, in turn, impact how people interact with one another.

Higher education plays a unique role in any modern knowledge economy—partly to prepare individuals for employment, partly to advance regional and national economic interests and competitiveness, and partly to preserve the ideals of inquisitiveness of a learned society where knowledge is the domain of all and not restricted to a chosen few. It is essential that these values be preserved and strengthened as universities continue the transition to a digital future within a knowledge economy.

Systemic change

In periods of rapid change, the best decision today is often the one that enables the most flexibility tomorrow. The University of Texas at Arlington has adapted complexity and network theory approaches to a range of existing teaching, learning, and research practices in order to create the foundations for a responsive and flexible university, which meets the challenges described earlier in this article. They include:

- Enhancing the education of the current, and future workforce, through on-line learning using both common and individualized learning modalities in the fields of Nursing, Education, and Engineering.
- Moving teaching, learning, and research to networks, and embracing collaboration across academia. The LINK Lab provides numerous examples of this such as partnerships with CMU, Teachers College, the University of Edinburgh, and Stanford to share doctoral students, create networks of post-doctoral students, and develop social competency software (ProSolo); and with the University of Memphis to commercialize and advance language technology platforms.



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- Developing the capacity of students to be participants in distributed knowledge systems, solving complex and ambiguous problems. Students of Modern Languages at UTA are trained using technology tools such as machine translation, in which learners build automated translation engines specific to their domains of study, or to support communication in their chosen fields, preparing learners for a networked, global world of complex, multilingual communications around multivariate, dynamic problems.
- Enhancing staff and faculty capacity through partnerships and collaborations with leading US and international research universities. Such collaborations have led to the development of novel programs like the International Business Languages and Cultures courses, taught jointly by faculty in Texas, the Russian Federation, China, and Brazil.

The optimum time to envision, create, and plan for the universities of the next several centuries is right now, during our current period of dramatic techno-socio-economic change. Rethinking higher education is the most important task facing academic leaders. Linear and structured planning processes must give way to complex systems that use the best of available technology while preserving the most valuable aspects of human creativity and innovation.



Dr. Vistasp M. Karbhari is the 8th president of The University of Texas at Arlington, leads the largest urban research university in North Texas in the heart of the Dallas-Fort Worth region—one of the fastest growing metro areas in the nation. UT Arlington is ranked as the fifth most diverse college campus in the country and is the highest profile Hispanic Serving Institution in North Texas. The second largest campus in the University of Texas System, a brand recognized around the world, UT Arlington recently surpassed enrollment of 50,000 students in campus-based and online programs for 2014-15. UTA's spring 2015 enrollment count of 19,703 fully online degree-seeking students is anticipated to surpass 20,000 this year.

UTA is known for its dedication to innovation, diversity, excellence, access, and student success and has one of the highest degree production ratios in the UT System. UTA awards nearly 10,000 degrees annually through 184 degree programs in the Colleges of Architecture, Planning & Public Affairs (CAPPA), Business, Education, Engineering, Liberal Arts, Nursing and Health Innovation, Science, and the School of Social Work. The institution also conducts the largest workforce safety training program in the nation, reaching 30,000 students in continuing and professional education seminars, workshops and classes.

In addition to serving as president, Dr. Karbhari is a professor in the UTA Department of Mechanical and Aerospace Engineering and the Department of Civil Engineering; earned his bachelor's degree in civil engineering and master's degree with a specialization in structures, both from the University of Poona in India; and obtained his Ph.D. with a dissertation in composite materials from the University of Delaware. He is a fellow of several pre-eminent professional organizations, including the National Academy of Inventors; ASM International; the International Institute for Fiber-reinforced Polymers in Construction; the International Society for Structural Health Monitoring of Intelligent Infrastructure; the American Society of Civil Engineers; and the Structural Engineering Institute of ASCE. He holds one patent and has served as principal investigator or co-principal investigator on more than \$37 million in research projects. He is the author/co-author of over 460 papers in archival journals and conference proceedings and has edited/co-edited six books.

