

The Innovative University

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A Summary

Preface + Introduction + Part 1 : Reframing the Higher Education Crisis

Innovations are of two kinds

- Sustaining innovations : which make the present offering bigger, better, faster or cheaper (bbfc)
- Disruptive innovations : these disrupt the bbfc cycle by bringing to market a product / service that is not as good as the best traditional offerings but is more affordable and easier to use.

The theory of disruptive innovations asserts that in industries ranging from computers to cars to steel, those entrants that start at the bottom of the market selling simple products to less demanding customers, and then improving from that foothold, through their own sustaining innovations, drive the prior leaders into a disruptive demise.

We have not seen evidence of exit of institutions in the higher education space due to disruptive innovation (as has typically occurred in other spheres such as steel, technology etc). There are many reasons for this

- High quality teaching is in many senses non-substitutable and non-replicable.
- Given that the quality of the product can be rather hard to measure, the lack of any definite measures to estimate what universities produce for their students mean that well-respected institutions have an advantage. Because they have been admired in the past, they are presumed to be the best choice for the future. Thus the reinforcing power of prestige in the education marketplace.
- Many parents and students see immense value in a physical campus. They still seek the assurance of traditional university names and the benefits of campus life
- Graduates (alumni) as well as bureaucrats/ politicians see immense value in keeping alive even declining institutions or propping up / supporting those facing challenges - alumni to ensure that the declining brand doesn't impact their own and the bureaucrat / politicians to make sure that jobs / votes aren't lost due to closures.
- Barrier created by accreditation, a process by which representatives of established universities periodically participate in judging the fitness of would-be newcomers. In doing so, they apply the standards of practice in their own institutions. Thus conformance to tradition became the price of continued accreditation and of entry to the industry.
- Lastly, the absence of a truly disruptive technology (until now) has been

another factor. Since the time universities began, the fundamental learning technologies - lectures, textbooks, exams - have remained the same. Even when computers have been introduced, they were used to enhance existing instructional approaches than supplant them. Lectures were jazzed up with ppts and computer graphics, but they were fundamentally lectures. It is only now with the emergence of online learning and MOOCs, we have begun to see the first clear signs of disruption.

Even if the traditional university is not doomed to die, there is a need to change more quickly and fundamentally. Its invaluable strengths notwithstanding, its institutional design, till recently unchallenged and unaltered is increasingly making it vulnerable to new forms of competition especially from online and for-profit models.

The vulnerability of the traditional school emerges from the fact that the strategy of most schools in the higher ed space is one of imitation, not innovation. Little-known schools try to move up in ranks by adding students, majors, graduate programmes, research initiatives, student facilities so as to climb the 'Carnegie Ladder'¹ and emulate the larger prestigious universities.

The result of this competition-by-imitation is a significant increase in costs, deriving partly from higher faculty salaries but otherwise mostly from factors unrelated to classroom instruction such as construction of high-tech labs to facilitate scientific research, competitive athletics, football stadiums, student amenities (gyms, pools etc). This makes traditional universities increasingly more expensive, but not fundamentally better from a learning standpoint. They thus get stuck in a dangerous middle-ground, neither high in quality nor low in cost.

The problem is not unique to higher education. In industries ranging from computers to breakfast cereals, history reveals a pattern of innovation that ultimately exceeds customer's needs. Hoping to get an edge on their competitors, companies offer new features, such as faster processing speeds in computers or increased vitamin fortification in cereals. These enhancements are sustaining innovations rather than reinvention : the product becomes better while its design and uses remain the same. Eventually these performance enhancements exceed even the most demanding consumers' needs, and most customers find themselves paying high prices for features they don't actually need.

Even as industry leaders focus on better serving their prized customers and matching their toughest competitors, two things are likely to be occurring. One is growth in the number of would-be consumers who cannot afford the continuously enhanced offerings and become non-consumers. The other is the emergence of technologies, that in the right hands, allow competitors to serve this disenfranchised group of non-consumers.

This is precisely what is beginning to happen in higher education today. As costs

have risen to unprecedented heights, and with the rise of a disruptive technology, online learning, we have started seeing the entry of new competitors such as for-profit universities who are seeing growing demand for their services. This is forcing many traditional institutions to rethink the entire traditional higher education model.

In performing the critical task of change, the university's administrators would do well to not only understand current realities, especially the threat of competitive disruption, but also how universities have evolved over the past several hundred years. Most universities have emulated a handful of elite American schools that began to assume their modern form a 150 years ago. Prominent among them were Harvard, Yale, Johns Hopkins, Cornell and MIT. Together, they have evolved to share common institutional traits, a sort of university DNA.

University DNA is not only similar across institutions, but it is also highly stable, having evolved over hundreds of years. There is evolution in the university, but within fixed bounds, and certainly revolution of the type seen so often in politics and business. In some sense this steadiness is a major source of universities' value to a fickle, fad-prone society.

Yet the universities' steadiness is also why we cannot make it more responsive to modern economic and social realities by regulating its behaviour. The genetic tendencies are too strong. A university cannot be made more efficient by simply cutting its operating budget, any more than a carnivore can become a herbivore by constraining its intake of meat. For example, forcing universities to take underprepared students is unlikely to result in a proportional number of new college grads. It is not in the typical university's genetic makeup to remediate such students, and neither regulation nor economic pressure will be enough, alone, to change that.

The most important institutional trait that binds universities together has been the trait for becoming 'bigger and better' - in terms of more courses, drive towards quality, more facilities etc. Proposals for focusing effort or economizing, by contrast, are rare. This tendency towards bigger and better is also seen in other industries such as auto, retail, hospitals etc. For example, Toyota took on GM from the bottom-end and has become the leader, and is itself being attacked in the bottom end by Hyundai. They are all obsessed with becoming bigger and better, and all but paralyzed from moving towards simpler and affordable.

Over the next chapters, we will study Harvard and its evolution, to not only explore typical university DNA, but also to discover what has been lost in the process of institutional imitation. We will also study an institution, BYU-Idaho, that has adopted an unique version of 'bigger and better', and has in the process adopted a genetically re-engineered version of the traditional university DNA.

By making unusual decisions about the three choices that determine the

productive output of the university - students (BYU focuses on undergrad over others), subject matter (a focused set of courses) and lastly what type of scholarship it pursues (teaching and learning rather than traditional discovery research). The administrators at BYU Idaho also chose unique success measures to align their activities and incentives with these strategic choices. BYU's most watched statistic is the percentage of students admitted, rather than the percentage denied. Likewise, BYU-Idaho's goal is to decrease tuition relative to inflation than to increase it. The university is designed at the cellular level to achieve these goals. Serving more undergraduate students at higher quality and lower cost is an objective built into the university's organizational design such as year-round academic calendar, course catalogues, elimination of inter-collegiate athletics, standards for admitting students and promoting faculty, the focus on online learning etc.

BYU is thus designed to play a complementary role to the traditional elite university, serving students who seek a distinct kind of educational experience. The key to successful innovation is not to imitate what BYU-Idaho or any other university has done. To the contrary, success in an increasingly competitive education environment requires each institution to identify and pursue those things it can do uniquely well. A strong sense of uniqueness has long been a driving force behind Harvard's success. Even when Harvard borrowed traits from others such as the great European universities in the 1870s, it did so with innovative twists that accounted for its unique strengths and needs. Harvard succeeded in becoming Harvard in large part because it never tried to become anything else.

To see both the dangers of imitation and the potential to innovate and thrive in the new higher education environment, we will move back and forth between Harvard and BYU-Idaho. Having abandoned its early strategy of Harvard imitation, it is now focussed in its choices of students, subjects and scholarship, and is designed to produce effective learning at low cost. By selectively borrowing the best practices of others while pursuing its own unique mission, BYU-Idaho has established a sustainable competitive position and has secured a bright future. BYU-Idaho is representative of institutions that are pursuing models that blend the traditional, Harvard-inspired model and the disruptive approach of the purely online educators.

Neither Harvard nor BYU-Idaho alone is a practical model for most established universities. Yet their unique missions and traits notwithstanding, the evolutionary histories of Harvard and BYU-Idaho illustrate the type of strategic choices for traditional universities to consider and provide examples of alternative ways in which they might be made.

Part 2 : The Great American University

In its initial years, Harvard (founded 1636) provided a religious education

primarily, whether you wished to join the clergy or not. Having been founded by Puritans, this was not entirely surprising. It was focused entirely on teaching and not academic discovery. The quality of instruction was quite mediocre as none of the tutors had any advanced degrees. It gradually moved away from Puritan ideology and clergy education in the early 1700s. The education continued to be narrowly focused on the classics; latin and greek being mandatory. Recitation and rote restatement of of reading and lecture material continued as the dominant pedagogy.

Gradually beginning in the 1820s, the curriculum was broadened, with greater choice for students in courses and a move away from Greek and Latin. But it was the ascension of Charles Eliot and his able administration over four decades (1868-1909) that transformed Harvard into an extraordinary institution. Charles Eliot's key contributions included

- formal introduction of the elective system, thus providing curricular freedom of choice for both students as well as professors
 - Offering a large number of elective courses have a disadvantage. They lead to curricular bloat - many courses are taught even with low enrollments as courses are rarely taken down - thus driving up costs. While Harvard thanks to its generous endowments was still able to afford these high costs, not all colleges which seek to emulate Harvard in this approach can.
- encouraging specialization in academic offerings
- moving away from classics decisively and modernizing the curriculum
- creation of new graduate schools (inspired by the great German universities) such as law, medicine, business, divinity and doctoral / graduate programmes.
- other minor contributions / innovations included
 - inter-collegiate athletics
 - faculty-friendly policies including tenure till retirement and option to take an academic sabbatical for those who wish to take one

Eliot presided over a 4-fold increase in students and a 12-fold increase in faculty during his stint. Teaching began to be done increasingly by graduate students, not professors as the latter began to devote more and more time to research. Increasingly there was little monitoring of students. It became a place that was easy to graduate from, with little effort by students.

One of Eliot's key achievements was also to set standards for high schools feeding students into Harvard (typically the New England prep schools), as well as suggest the curriculum and academic focus. He was also able to institute an entrance exam.

Eliot's successor Lawrence Lowell (1909-33) focussed his attention on correcting key evils that he perceived as having crept in during the Eliot years, such as

- loss of collegiate way of living : as demonstrated by the rise of private dormitories ("gold coast") to which affluent students gravitated to, reinforcing a growing class distinction amongst students

- elevation of leisure pursuits over studies : even serious students spent little time studying. Many students employed paid tutors or crammers to help them win passing marks.
- loss of coherence in the degree thanks to the elective system, either leading to extreme specialization or arbitrary selection of courses by students

What Lowell saw in the aggregate was the loss of much of what he cherished in his Harvard college education - strong social ties, competitive spur to excellence, a broad foundation for success in fields such as maths, law and political science. In general, he felt the need to take Harvard back to its roots, by refocusing on undergraduate students and their learning experience, as opposed to the growing focus on graduate schools in Eliot's model, inspired by the leading German universities.

Lowell's strategy to revitalize Harvard revolved around the following

- recreate through college dormitories, the collegiality of old Harvard with freshmen, sophomores, juniors and seniors could all live, study and interact in an informal setting under the tutelage of a master, resident dean, faculty members, tutors and graduate students. This system of commingled living and learning was adopted by only a few other colleges because of the high financial costs of building dormitories.
- introduce a system of honours designation - cum laude, magna cum laude, summa cum laude - to stimulate healthy competition in academic achievement. He also introduced the grading curve in order to take on a culture of lenient grading but was less successful with this.
- introduce changes in college curriculum that would provide both german-style professional preparation and also English-style liberal education - to enable this, he created a combination of distribution and concentration requirements / majors aimed at producing men "who knew a little of everything and something well". Of the 16 full-year courses required to graduate from Harvard, a student had to take at least 6 in his area of concentration, and at least 4 in other subjects. This system of distribution and concentration became the curricular model of choice in American-style universities. It needs to be kept in mind that the distribution system did not imply or lead to true cross-disciplinary courses but courses unrelated to the student's concentration / major.
- foster the university's links with the immediate community through the creation of the Harvard extension school, enabling those living nearby to take evening courses and gain certification.
- championed academic freedom in and outside the classroom (during WWI many professors spoke out on both sides, and Lowell stood out for their right to speak

When James Conant (1933-53) took over as President, he saw an inbred academic system - students and faculty drawn from the same narrow schools - students from a clutch of New England prep schools, and faculty from Harvard's own graduate programme. Admissions were far less democratic than was desired.

To enable a more meritocratic Harvard, Conant introduced a series of measures

- a standardized entrance test (which became the SAT) replacing the old entrance test which emphasized greek / latin / classics as the admissions began to widen beyond New England, encompassing traditional high schools which did not offer greek / latin / classics.
- the up-or-out tenure (Assistant Prof to Prof in 8 years or out) to foster increase competition amongst faculty and to enable selection and retention of higher-quality faculty. This however also led to faculty focussing on research and scholarship (as measured by publications in academic journals) over teaching. Most of the teaching began to be done by junior professors and graduate assistants. Another fallout of the tenure system was a spurt towards a larger number of specialized course offerings, as the course content began to reflect the research interests of the professors.
- a recalibration of the academic offerings based on definition that the fundamental purpose of education is to promote freedom. In order to inculcate certain common traits and outlook that made for a humane and progressive mindset, a general education programme was suggested (by a committee of 12 professors who brought out a report *General Education in a Free Society* or the 'Redbook' as it was published under a red cover) and introduced. This general education programme specified that students take courses in each of three areas - humanities, social and natural sciences. There was also a focus on introducing syncretic course offerings such as 'Principles of Physical Sciences' or 'Western Thought and Institutions' in order to create a "comparatively coherent and unified background for an understanding of some of the principal elements in the heritage of western civilization".

Apart from the above he also

- dropped Harvard from collegiate football and athletics programmes, replacing it with much less expensive competitions between the Ivy Group - this helped save on financial costs considerably both on sporting infrastructure as well as salaries of coaches and support staff
- enabled Harvard to compete successfully for government research grants, which began in the WWII years, and grew post that as the Cold War increasing government spends on defense, atomic energy and space.

Collectively, Conant, Lowell, and Eliott imbedded in the University's DNA the decision to serve fewer of the country's typical undergraduate students, to make the curriculum expansive in the aggregate but narrower and more arcane at the level of individual courses, and to focus faculty attention more on research scholarship, leading gradually to an abandonment of Harvard College's early blend of rationality and moral values. For students, universities fashioned after this model are expensive and difficult to access; they also provide preparation more appropriate to advanced study in graduate school than to the workplace. For most faculty, particularly the untenured, such universities are pressure cookers that tend to inspire apprehension, envy, and a sense of organizational and intellectual fragmentation.

The Redbook committee's suggestion (in the context of high schools but relevant for colleges too) that easy books cannot be educational and vocational training is

inferior, indicate that they had lost sight of a large portion of the potential higher education market that was below them, in which ordinary high school graduates, and non-graduates need remedial liberal education and practical career preparation.

Part 3 : Ripe for Disruption

After Conant, Nathan Pusey (1953 - 70) took over as President. He focussed significantly on fundraising, raising the university's endowment from \$442m in '55 to \$1bn by '65. During the same time, federal funds (research grants etc) multiplied, growing from 8% of the university's income to 25%. Undergraduate tuition tripled to \$2,600 per year during Pusey's term having doubled under Conant's term. The incoming class size increased from 1,000 to 1,500 students in Pusey's term without any accompanying drop in standards.

The triple bounty of increased donations (endowments), research grants (federal funds) and tuition increases was invested in more endowed chairs, more research positions and research funding, higher salaries and benefits, and greater faculty perks, such as leaves of absence for focused scholarship. Soon by the 1960s, the university's operational complexity had grown with over 50 departments & schools and over 1600 courses, one for every four undergraduate students. As operational expenses outpaced endowment growth, there were many who questioned both the sustainability and the justifiability of the growth.

During this period, faculty increasingly consolidated their hold on power, controlling faculty appointments and curriculum, thanks to measures such as decentralized fundraising giving them greater autonomy. This greater faculty autonomy affected the classroom, as it became difficult to compete for star scholars without promising light teaching loads. This was particularly true in sciences and medicine, where faculty effectively paid their own way with research grants.

Pusey's successor Derek Bok (1970-91) focussed his efforts significantly on two areas

- Instruction - he encouraged the creation of a new core curriculum ('core') to replace the old general education. The major goal of the new core was not to ensure a common grounding in knowledge and values but rather to impart common capabilities for acquiring knowledge. This was consistent with Bok's view that the way things are taught matters more than what is taught. He also promoted high-quality instruction through tenure decisions that required serious consideration of teaching ability.
- Diversity - On both gender and racial diversity, Harvard made considerable progress. The number of female undergraduates rose by 50%. Voluntary affirmative action led to rise in blacks and women across the student as well as faculty base. Need blind financial aid policies also helped significantly, as well as university's soaring prestige which attracted larger applicant pools from which Harvard could recruit minority and female

faculty and students without lowering standards of merit. During Bok's tenure as Harvard became a billion-dollar operation with \$5b endowment, he started to expand the administrative / operating manpower considerably. This led to tensions with the faculty who disliked the higher pay packages that the administrative staff were getting, as well as the management intrusion into their affairs.

Increasingly Bok found the faculty narrowly focused on scholarship to the exclusion of other initiatives - teaching or otherwise. Large salary gaps between the sciences and humanities faculties started to emerge, as the former were able to attract grants and endowments thanks to their research and scholarship prowess, further incentivizing them to focus on research. Bok lamented that the senior faculty increasingly avoided teaching undergraduate courses (even as many students were attracted to the university by these names). There was also a culture of tolerance of poor teaching, much of which was done by junior professors and graduate assistants.

Most of the things Bok lamented were beyond his control, all natural consequences of the university's DNA and the bigger-and-better tendency. Eliot's desire to overlay the german-inspired graduate schools over the english-style college led to the curriculum narrowing and faculty interest in undergraduate instruction waning. The academic freedom championed by Lowell then reinforced these trends. And the tendency to neglect teaching grew exponentially when James Conant introduced up-or-out tenure, based on scholarship. Teaching took still more hits with the externally funded research and outside consulting activities Conant pioneered. All roads led away from the undergraduate classroom.

These teaching-related problems were exacerbated by Pusey's introduction of big-time fundraising to the system, the new money flowing significantly into academic specialists in commercially relevant fields, leading to significant competition amongst individual faculty members and departments. By the end of Bok's tenure, many scholars considered undergraduate education a diversion from a research university's central mission.

Increasingly it looked as if Harvard was operating two fundamentally different enterprises under a single corporate roof. The resources and activities required to produce world-class scholarly research bear little resemblance to those necessary for teaching undergraduates at an affordable cost. The same faculty can perform these two functions, but a first-rate scholar is a tremendously expensive teacher. Moreover the departmentalization of the university even though it serves the scholars well, tends to produce narrow curriculum, and also leads to higher coordination cost in extra-departmental activities such as the creation of general education / core programmes. Absent countervailing investments in residential houses, tutors and specially funded curriculum development projects, the result is an undergraduate learning experience of a quality not justified by its high cost.

By the end of Bok's presidency, undergraduate tuition had risen from \$2,600 to \$14,860, provoking questions and criticism. Still tuition only covered 20% of the university's \$1b operating budget, slightly lower than when he took office. The cost problem had its roots in Eliot's vision to have it all and have the best. It was one thing to do it in Eliot's time when academic disciplines were relatively few, and the competition for faculty and students was limited. But as disciplines proliferated and the competition to be the best took on global dimensions, the price of Eliot's vision skyrocketed.

The growth in new obligations was beyond the university president's control. Entrepreneurial (and typically powerful) faculty regularly proposed new programmes, often with (partial) support from specially cultivated donors. A university president, who wished to keep good relations with such powerful faculty said yes, and then sought to raise or allocate the balance money. These cost problems, faded away as the bull market of the '90s offered terrific returns on the endowment funds, but when the markets collapsed in 2008, the cost problem would return with a force few imagined. And increasingly the problems of instruction, faculty division and distraction, and politicization would continue to plague Bok's successors, Neil Rudenstine, Larry Summers and Drew Gilpin Faust.

Even with the loss of nearly \$11b in '08, Harvard's endowment remained the highest of any university (\$27.4b in summer '10). Despite having sacked 275 people (and another 500 through buyouts), the university employed nearly 16,000 people. Its brand still remains preeminent, and still the leading choice for the world's most gifted students and faculty.

The recession of '09 also impacted the University of California, part of what is called "the greatest system of public learning the world has ever seen". The genius of the California higher education system designed by its Chancellor Clark Kerr in the '60s was that it integrated, while keeping distinct, three different types of institutions : research universities, teaching universities and community colleges. Through Kerr's plans the brightest 1/8th of California high school graduates were guaranteed a slot at a UC campus such as Berkeley or LA. Graduates in the top third of their classes could go to one of the state universities, which lacked PhD programmes, and thus were focussed on undergrad instruction. All high school graduates could attend a community college, with the promise, contingent on performance there, of transferring to a state university.

This system gave every high school graduate a shot at a degree while keeping the cost of scholarly research and graduate programmes limited to a small number of UC campuses (initially 8, but 10 as of 2010). However Kerr and his fellow designers underestimated the cost of 9 state-supported research universities trying to become like Berkeley. At all 10 campuses, instructional cost per student reflects the high price of giving professors time away from the undergraduate classroom for research and graduate instruction. This, and the fact that 23 state universities that began to engage in many activities like those of the research

universities, such as granting master's degrees and producing scholarship, is what resulted in a funding gap of \$1.2b for the 2010-11 fiscal year, leading to tuition fee increases and rising protests.

The burning question highlighted by the 2008-10 downturn is not whether the great research universities such as Berkeley and Harvard are cost-justified but whether the less powerful ones, which comprise the vast majority, can continue as they have done in the past. The schools most at risk are the more than 700 public and not-for-profit universities that grant degrees but are not among the 200 elite research institutions identified by the Carnegie Foundation, the accepted arbiter of academic standing.

These second or third-tier schools lack the power of large private endowments and the prestige needed to command high tuition rates. Yet though they possess no semblance of Harvard's wealth and reputation, these less prestigious universities' costs are structurally similar to the extent that they have pursued its bigger and better strategy (such as classrooms sitting idle during the long summer breaks, tenure track faculty splitting time between research and teaching, effectively reducing their capacity to generate tuition revenue and increasing the institutions' complexity and coordination costs. Many also have expensive competitive sport programmes, an expensive money-losing effort for all but a few of the largest universities.

These problems of cost and quality are produced not by mistake or happenstance but by design. In emulating the research university model, the trend followers adopt policies and practices that provide de facto answers to a university's three most strategic questions

- 1) what students will we serve? (graduate students and elite undergraduates over ordinary college students)
- 2) what subject matter will be emphasize? (myriad academic subjects than focused set of practical ones)
- 3) what types of scholarship will we pursue? (discovery research scholarship over more practical forms such as showing how the discoveries of others apply to practical problems or how they can be best taught to students)

The aspiring institutions learn about the policies and practices of the great ones not just secondhand through published reports, campus visits or interactions with their staff but also through acquisition of personnel, when they employ graduate students, faculty and administrative staff from these bigger schools, who use these smaller institutions as a springboard to move to the big league. These career-ladder conscious professors and administrators go to work making their new institutions more like the ones they came from. These bigger and better tendencies are reinforced by the standards of accrediting institutions, academic professional associations, publishers of university rankings, philanthropic organizations, state funding schemes who all back a model without understanding that it can only work for a select handful of wealthy and well-known institutions. The key problem is that few of the universities that have

adopted Harvard's ambitions can match its educational advantages.

In addition to the funding challenges being faced by many state and smaller third-tier universities, they are also ripe for disruption by lower-cost providers of higher education. Following a common pattern, traditional universities have let their focus on the most elite students take them beyond the needs and preferences of ordinary ones. These ordinary students are of three types

1) the student who is paying more than s/he would like for a traditional university campus experience

2) a would-be student who cannot afford to attend a traditional university, but would embrace a less expensive alternative, even without the usual amenities

3) one who lacks the educational background to succeed in the typical university but might make it with special help.

During the financial downturn that happened in 2008, powerful new competitors, including online, began to turn their attention to these dis-satisfied and left-behind college students.

Historically, online and for-profit education players faced 4 key barriers in reaching out and growing their student base

1. accreditation: members of accreditation teams, many of whom were ex-employees of traditional universities, not only subscribed to the Harvard bigger-and-better model, they also had concerns about the quality of online learning technology. Only students attending accredited institutions can access federal grants and loans for higher education.

2. measures of learning: it is not easy to prove that educational approaches such as online learning can yield results of comparable quality to those of traditional university study. Some learning outcomes can be measured, but the full effect of a higher education is hard even to define, let alone quantify.

3. online learning technology's immaturity: speeds were slow, and learning courseware had not been designed with online in mind, but was merely a reformatted computerized version of the text book.

Today, however the situation has changed. Accreditation has become more focused on learning outcomes (as opposed to physical infrastructure / face to face delivery) and more accepting of online delivery. Also online schools' struggle to overcome past accreditation barriers has given them an advantage in demonstrating learning outcomes. Further, the increasing speed of internet communications has been mirrored by enhancements in online instruction technology; online courses are getting demonstrably better, now equaling or exceeding the cognitive outcomes of classroom instruction. And lastly, the economic downturn that has forced cost-cutting at traditional universities has given the financial edge to the for-profit educators, many of which have strong balance sheets and access to capital markets.

Traditional universities' overproduction of masters' and PhD degree holders relative to their own needs for new faculty members has created a pool of qualified online instructors who are willing to work for a few thousand dollars per

course for online companies. These adjunct instructors are paid per course - thus an instructor can be contracted only when the class is likely to have enough students to generate an operating profit. Also the performance of these adjunct instructors can be easily measured and benchmarked relative to his peers.

In addition to their lower instructional cost and quality advantages, online educators have the advantage of lower physical facility costs including zero expenditure on sports team and sporting infrastructure. They also enjoy the competitive advantage of being focused purely on student instruction. Rather than operating two enterprises, a scholarly solutions shop and an instructional value-adding process, they organize their activities around the latter, thus eliminating research departments as well as faculty more focused on publishing instead of teaching. Further they operate year-round, avoiding the cost of a long summer recess. They also offer fewer courses and majors than traditional universities' do, focusing on those in greatest demand.

These advantages of low instructional cost and tight focus has allowed many for-profit educators, especially those with strong online programs, to achieve great market success. Historically they have preferred the adult education segment, where online students receive tuition support from their employers, but with the ability to price their accredited degrees at a fraction of the cost of a traditional university degree, they can even chose to target the 18-22 year segment who have grown up digital native, and sans memory of the online educators' past perception as a diploma mill.

Part 4 : A New Kind of University

BYU Idaho was originally founded as a high school by a group of Mormon Pioneers led by Thomas E Ricks in 1888. Originally called Bannock Academy, from a neighboring indigenous Indian tribe, it was called Ricks Academy after its founder in 1900. A 2-year college programme was added in 1916 and Ricks Academy slowly shed its high school avatar (by 1923) to become Ricks College.

Barring a brief period (1948-55), from thence on until 2000, Ricks College operated as a 2-year college conferring Associate Degrees. Given links to the Mormon Church, a large portion of the students were of the faith. The focus was on serving as many students as they could. Selectivity was not desired, and the administration focussed on expanding the student base to meet the demand for education.

By 1970, the college had an enrollment of 5,000 students with 200 faculty. This number expanded to 6,000 students by '78 and 7,500 students by '88. As demand continued to increase, and since the Mormon Church which oversaw Ricks College, did not desire the school to fall prey to selectivity thus failing to serve ordinary academic achievers, Ricks Academy had to innovate to make sure it didn't leave out these students.

There were two innovative ideas used by Ricks (around 1997) to increase the number of students it could serve -

- Students were encouraged to take Advanced Placement or Community College courses in anticipation of coming to Ricks, so that they could quickly graduate with an Associate degree in two traditional semesters (Fall & Winter) and one or more summer terms.
- Accompanying the above was a proposal to admit students to one of three calendar tracks. The student could join the traditional fall semester and stay on for winter and spring-summer semesters, or s/he could join in the Winter semester and stay on for the succeeding spring-summer and fall semesters.

The goal of the above initiatives was to fill the summer and spring terms to a level closer (at least 3,000) to that of the fall and winter semesters, enabling Ricks to enhance enrollment without hiring additional faculty or building more classrooms. However due to faculty vacations, course offerings were limited thus reducing benefits for attending the spring-summer semester. Still these initiatives enhanced the students served to 8,600.

On June 20, 2000, Gordon Hinckley, the then 90-year old Church (of the Latter Day Saints) President, announced the following

1. Ricks College to offer 4-year Bachelor's degrees in addition to the 2-year associate degrees. There would be no graduate degrees.
2. Ricks College to be branded Brigham Young University - Idaho to give the school immediate national and internal recognition.
3. BYU-Idaho to operate on a year-round basis incorporating innovative calendaring and taking advantage of advances in technology to serve more students
4. BYU-Idaho to phase out its involvement in intercollegiate athletics

Hinckley's vision for BYU-Idaho emerged from the need to limit faculty hiring and office space costs, while desperate wanting more young church members to have the opportunity to attend one of its higher education institutions, especially the flagship BYU. This new university would not have any research mission, no up-or-out tenure or rank based on scholarship publication. In becoming a university, it would not fall prey to 'Carnegie creep', but would stay focused on student instruction.

In structuring BYU-Idaho thus, Hinckley was following the lead of Clark Kerr, effectively designing it as the Carnegie equivalent of California's 4-year colleges (which eventually became state universities). All graduate instruction and research activities were to be limited to BYU's Utah campus, thus checking costs. BYU would pay the price of selective admissions, scholarly research and competitive athletic teams and professional schools. BYU-Idaho would benefit from these brand-building investments while keeping its costs lower and its access wider.

The following emerged as key elements of the BYU-Idaho DNA.

1. A focus on key disciplines : While originally the desire was to have around a

dozen majors (or concentration tracks), in order to keep costs low and educational quality high, gradually the number of majors proliferated to over 50. The key issues with proliferation of majors is that it leads to smaller classrooms thus increasing cost of instruction, and it comes at the expense of breadth in the curriculum. The number of credits required for a major also adversely impacts the graduation time, as the student has to manage both distribution and concentration requirements optimally to graduate on time. Interestingly Harvard has amongst the lowest number of majors / concentration tracks, and moreover its concentrations typically require fewer hours than their equivalents in other universities. These choices by Harvard - to have fewer majors and require fewer major hours spare the institution and its students significant cost.

2. Raising the quality of the educational experience at BYU-Idaho and serving more students, while lowering the relative cost of education. These somewhat mutually exclusive set of goals were stated by the new President Kim Clark in 2005, when he took over as President of BYU-Idaho from David Bednar.
3. Creation of a three-semester academic calendar : Kim Clark was able to push through with the help of senior faculty and administrators a true three-semester academic calendar (each semester 14 weeks long) with a six-week summer break for all, where the faculty would teach year-round. No special importance was given to any semester, and each was made academically comparable. This enabled students attending the new spring semester to get the complete academic experience (as against the earlier spring-summer semester where many faculty were on leave impacting course offerings). Students could now genuinely take three tracks - Fall/Winter or Winter / Spring or Spring / Fall.
4. A shared instructional framework dubbed the 'learning model' : as defined on the BYU-Idaho website is based on three key steps - prepare, teach one another and ponder & prove. Students come to each class prepared to learn by studying assigned readings, completing required homework and participating in online discussions and study groups. Through instructor-led discussions in class, students teach each other what they have learned - honing and refining their own understanding in the process. Later, students internalize their learning through review, reflection and application. Under the learning model, students are held responsible for their own learning and teaching one another. (*"Great teaching not only engages students but makes them partners with the instructor in the learning process"* - Roland Christensen, HBS Professor. This partnership requires a teaching and learning contract running between the instructor and the students, and between students themselves. It embodies the expectation that students and instructors will come to class prepared to teach one another in an environment of mutual trust and respect).

 - Instructors need to move beyond the lecture method, and need to become responsible for dual competency - mastery of the subject matter as well as the art of conveying it for maximum student learning. As stated by Steve Hunsaker, a spanish teacher "I taught

for a long time before I learned the difference between teaching and creating learning experiences."

- As adoption of the learning model progress there was also a problem of teachers relying too much on students to instruct one another without first having conveyed enough foundational information or having established the necessary framework for class discussion. The balance between too much control and too little took some time to achieve.

5. Foundations, BYU-Idaho's multi-disciplinary general education programme (equivalent of Core). Foundation classes are divided into five groups - Eternal Truths, Academic Fundamentals, Science, Cultural Awareness and Connections. Under Foundations Science one of the courses offered is FDSCI205 which uses DNA as the lens to understand genetics, evolution, disorders, cancer, ethical issues around stem cell cloning, dna fingerprinting etc. Course methods include lectures, discussions, and hands on exercises related to the subject material. 40 out of the 120 credits were for Foundations. A Dean of Foundations was also appointed to oversee this, a mark of how much importance Kim Clark assigned to Foundations. Clark also cleverly used the creation of these Foundation courses to infuse them with the learning model pedagogy, thus setting the standard for its application in majors. Clark also hoped to use the Foundations curriculum to stimulate interdepartmental collaboration, as well as spark discussions beyond the classroom by students who now shared a common curriculum. The class size of the Foundations courses were set at a upper limit of 85.

6. Internships - creating internship opportunities for undergraduate students amounted to another alteration of traditional university DNA. An internship was required as part of each integrated major (major of 45 credits + a 24-credit minor or two 12-credit clusters in related fields). A student attending the Spring and Fall terms would perform the internship in Winter. Along with this, the university created an internship office and established formal relationships with employers in a dozen hub cities such as NYC, Chicago, Washington DC, Atlanta, Seattle etc. The internship program was positioned as providing a steady stream of workers year around (thanks to the track system) and found appeal amongst accountancy firms who could count on BYU-Idaho students working in the busier fall and winter seasons when clients close their books and finalize their taxes.

An interesting feature of BYU-Idaho's academic offering was the Heber J Grant scholarship which provided financial support to disadvantaged applicants (children of single parents, first in their families to attend college). To remain a Heber J Grant scholar, a student had to spend time studying financial budgeting, time management and academic / career planning. These courses were taught by fellow Grant scholars who had been at BYU-Idaho for a year or more. That was the other part of the scholarship bargain : giving back by mentoring others.

In early 2008, Clark Gilbert, an ex-HBS Professor was tasked with driving BYH-

Idaho's online learning efforts. Clark Gilbert was aware that good online courses would require first-rate course designs and innovative strategies for engaging students. At this point, nearly 50 online course offerings were being offered in response to a requirement that each student had to complete at least one online course before graduating. Like most online courses at that time, this essentially consisted of putting an existing course online. Beyond allowing the student to work at her pace, it did nothing else (certainly no student-to-student interaction etc).

Just as Eliot had created smaller sections led by junior instructors, to enable attention to individual students that would have proved difficult for the course head in a large lecture, and Lowell had encouraged the system of tutorials to augment lectures, both milestones in Harvard's hybrid system of instruction, Gilbert saw the potential to marry online and face-to-face instruction to create an intimate immersive learning environment. Such a combination of online and in class instruction is today considered to be the best form of learning, allowing various learning activities to take place via the most effective medium. Listening to a lecture / test taking can be done online; interaction can be done online (benefiting shy students) or in class, thus enabling both students and instructors to make more focussed and optimal use of their time. A hybrid course thus more effectively reaches students with differing learning styles.

The team under Clark Gilbert also recognized the potential of the teach-one-another principle used in class (learning model) as well as the Grant Scholars program. They found a mounting body of evidence that sometimes the best learning (including Math and Science) occurs peer-to-peer. One of the highest profile advocates of peer-to-peer instruction is Eric Mazur, a Harvard Physics Professor, who discovered that a student who has just mastered a complex concept, such as Newton's 3rd law of motion, or financial interest rate compounding can often better explain it to a novice than a professor in this field, who may have long since taken the concept for granted. His research showed that with help from their peers, even less competent students can make great gains, equal to what well-qualified ones do in traditional lecture environments.

Thanks to advances in computational and communication technology, Gilbert and his team were able to design online courses of higher quality than earlier, with increased interactivity and production values. In their online courses, they began by specifying, what students were to learn, a fundamental step often overlooked in the development of face-to-face courses. That omission is likely one reason why online offerings produce equal or superior cognitive outcomes.

In creating its online course production systems, the university chose not to establish an autonomous organization, but to rely on a cross-functional heavyweight team drawn from various departments, supported by instructional design experts. Given that the university was trying to serve all its students - in campus and at a distance - via online courses, these online courses needed to be consistent with their face-to-face equivalents and thus the benefits of

collaborating across organizational boundaries outweighed the costs.

Persuaded that the investment of time and effort by full-time faculty was critical to assuring common course content and online offerings, more than 40% of full-time faculty members had participated in online course development. Well-staffed by trained and well-qualified online adjunct instructors, and structured more systematically than typical traditional courses, these online offerings produced outcomes comparable to face-to-face interactions. The best online courses couldn't match the best face-to-face experience but the lowest online-course was better than the poorest of what was occurring in the classroom. The constant correcting and culling of low-performing online instructors (who are typically hired for the course) meant that the lower tail of online performance distribution was relatively short.

Even as BYU's cost-reducing and access-expanding online learning initiative progresses, a hidden cost problem in the university's curriculum required attention. By '08, the typical graduate was completing his degree not in the minimum required 120 credits but in 139, which meant nearly 2 extra semesters ($120 / 8 \text{ semesters} = 15 \text{ credits per semester}$). The reason was that the required number of major credits (credits required for the subject the student was concentrating in) was operating independently of the overall credits to graduate. The typical college student was hitting 120 credits, but had major credits left to complete, and hence had to continue beyond 4 years.

Unlike in a Harvard or comparable elite college, where a student was paying a premium, or was covered by precious endowment dollars, there is an incentive not to let the student stay any longer than s/he wishes to. To enable this the university ensures proper academic planning and counseling. However due to underinvestment in counseling, aided by poor academic planning (midway change of majors, leading to wastage of credits accumulated thus far), and lack of pressure from the college's end (many public universities have state funding linked to enrollment - so there is an incentive to keep the student enrolled) we are seeing statistics such as 65% of US college grads taking over 4 years to complete their degrees. Mind you, this is out of the overall 55% graduation rate (BYU-Idaho 62%).

In order to enable the student to plan his academic selection better and encourage him to complete in 120 credits without violating major credit requirements, BYU-Idaho did the following

1. Drag and drop computer based academic course planning system, so as to enable the student to understand the implication of the course / major selection, e.g., certain courses have prerequisites and hence it means you are actually taking 2 courses. This software enabled the student to understand impact of the course selection on his graduation schedule.
2. Reduction in credit requirement of majors, and reducing the number of prerequisite courses to a minimum (Harvard for instance had amongst the lowest credit requirements of a major, 33 - 50% of the overall graduation

credits.

3. Elimination of minor credit requirements

4. Introduction of modules within majors, e.g., product development or supply chain within Mech Engineering, as well as interdisciplinary majors, e.g., web technology combining instruction from fields as diverse as computer science, graphic design and communications.

The paring back of major credit requirements as well as creation of interdisciplinary majors was also a break with the traditional university DNA.

With all the above initiatives, the cost of educating students at BYU-Idaho was the same as it had been at Ricks (approximately \$8,700 in 2010 dollars). Deviations from the traditional university DNA had offset the introduction of 2 extra year courses, internship infrastructure etc thus allowing BYU-Idaho to avoid the cost increases typical of institutions that make the move from 2 to 4 years.

In an attempt to fulfill Kim Clark's vision of serving more students in campus and online without increasing costs, the university started exploring initiatives that would help them serve more customer (students) via a fixed resource base. Some of these initiatives were

- use of operational research tools such as fishbone diagrams to understand cause-effect relationships and know which are the constraining factors impacting higher enrollment and graduation rates. Out of this came a campus wide classroom scheduling process and system which enhanced optimal utilization of classrooms. This was also aided by the refurbishing and conversion of computer labs (an anachronism) and other underutilized spaces into classrooms.
- introduction of the Pathways program : Offered in US and some international countries, the Pathways program is a hybrid online + face to face programme which meets once a week at the local Institute of Religion (a Church facility). The onsite mentoring / facilitation at these sites is done by volunteer husband and wife couples serving as missionaries at that location. The Pathways Program has a unique curricular path making it ideal for working adults. Pathway students first work towards getting a specialized certificate and only upon the gaining of this specialization (which can help them enhance earnings, get better jobs) do they move on to acquiring an associate degree, and then to general education / graduate requirements. This inversion of the traditional curricular pathway makes it ideal for at risk students (who are most likely to drop out), who stand to gain at least something of direct technical relevance for the time spent. The traditional approach of distribution before concentration makes sense only when a student is very likely to graduate, which is not the case here. As the student completed this preparatory courses, s/he could chose to move on to other community colleges or transfer to BYU-Idaho to complete his / her associate or bachelor's degree.

Thanks to these above initiatives, by 2010 BYU-Idaho had nearly doubled its enrollment from 10,160 (2000) to 18,355 (2010). Faculty members meanwhile

had only increase by 50% (411 to 628) and operating cost per student had moved from \$5,771 to \$6,155 (less than 10% which is remarkable considering the inherently higher cost of providing a 4-year degree). The building sq ft per student had declined from 153 sq ft per student in 2000 to 126 by 2010, and the number of degrees had consolidated as well (from 125 associate degrees in '00 to 17 associate + 77 bachelor's degrees in '10). By all measures these were remarkable achievements, demonstrating the success of the innovative and differentiated strategy adopted by BYU-Idaho.

Part 5 : Genetic Reengineering

BYU-Idaho, Southern New Hampshire University and others like them are pioneering new models of higher education blending Eliot's traditional university and the fully online model. The universities pursuing this blended approach lack the prestige of the great institutions and thus cannot fund that expensive model via gifts, grants and high tuition rates. At the same time their commitment to face-to-face instruction manifested in expansive physical facilities and full-time faculty prevents them from competing on cost effectively with pure online players. Rather than feeling trapped, these institutions have recognized an opportunity to create a unique model that borrows the best of these two opposite worlds. The key to doing so is to embrace the learning advantages to be found across the spectrum that runs from fully face-to-face to fully online instruction.

While the power of face-to-face instruction is truly great, so is the disruptive potential of continuously improving online education. This continuous improvement has many sources - advances in communication and instructional technology, intense competition between instructors, easy ability to cull non-performing instructors and finally the oversight role played by professional course designers driven by the goal of enhancing learning outcomes without the mixed motives of the full-time professor who favours a particular teaching style or subject matter emphasis.

Time is revealing both the potential of online learning and the importance of hybridizing it with face-to-face experiences. This is where traditional universities have a real advantage. They have the ability to effectively meld online and face-to-face experiences (both in class and outside class - informal learning that happens when students interact with one another in campus settings). The combination of online technology and the college campus has the potential to take traditional universities to new levels.

It is important to remember that the very changes that threaten traditional universities also make them potentially more valuable than before - valuable enough to justify a price premium over online disruptors. They can sustain this only if they can effectively perform the three vital jobs that traditional universities do uniquely well. These are

1. discovering and disseminating new knowledge
2. remembering and recalling the achievements and failures of the past

3. mentoring the rising generation

Understanding these jobs is the first step for universities seeking to establish a sustainable competitive position in the new higher education environment. The key job that students and policymakers need done is the bestowal of insights and skills necessary not just to make a living, but to make the most of life. A college degree creates its significant wage-earning advantage because it is designed with more than mere economic goods in mind. Among these extra-economic goals are the jobs of discovery, memory and mentoring, jobs that traditional colleges and universities perform as few other institutions can.

Discovery is built into the way traditional universities' processes and structures are designed - graduate programmes atop, up-or-out tenure, creation of specialized academic departments etc. Together these systems have enabled a large number of innovations to emerge from traditional universities. Even with private industry spending more on research more than 60% of basic research is done by universities (in USA).

Memory - beginning with the freshman year, the future scholar moves to the cutting edge only after thoroughly probing its foundations. A college general education programme exposes young students to a broad range of disciplines, with emphasis on historical development of that field. A major then brings students from past to present, from fundamental to advanced, before they win in graduate school the right to assume the scholar's role of adding to the body of knowledge in their field. This intellectual grounding or memory allows universities to help learners gain their footing in the flood of information that might otherwise overwhelm them. Universities have the collective insight and experience to answer a learner's most vital questions : how can i achieve proper breadth and depth in my formal education? What books should I read? What principles don't change? What works and doesn't work?

Mentorship is an obvious job; it goes back to the old days when colonial colleges were essentially boarding schools for teenagers. Students learned as much from living with their tutors and each other as from the formal pedagogy. Given the importance of the jobs of discovery, memory and mentoring, the vulnerability of traditional universities lie not so much in their growing costs as much as the relative performance of these jobs.

The traditional university has two unique assets for performing these three jobs

1. physical campus : forces face-to-face interaction both with tutors and with other students, and enables young people to mature into adulthood. As Mary Sue Coleman, President - University of Michigan puts it "...glorious abundance of the virtual has creed an even greater longing for the real".
2. professoriate : The PhD-trained professor who has survived tenure is a rigorous thinker with deep memory. He is not only a discoverer of new knowledge but a life-changing mentor. The most lasting transformative learning is usually personal (that is why they say "Take Professors, not Courses"), the result of an intimate lasting connection with a great teacher.

(Western Governor's University - a fully-online university has mentors who talk to students for at least 30 minutes each week)

These two unique assets are also its most expensive. They are valuable because they are unique. But because they are so expensive, the university must use them strategically and parsimoniously.

The typical university can decrease the cost of the degree it grants in two ways -

- increase percentage of students who graduate, and help do so in a timely manner
 - modularizing curriculum
 - academic advisory and personal tutoring needed to sustain students at risk of dropping out
- decrease cost of institutional resources that go into it, such as cost of facilities and instruction
 - through year-round use
 - hybridized instruction models : to optimize valuable face-to-face time, migrate lower value-adding parts of the instruction process out of the classroom

Though cost reduction is necessary for the typical university, it is not enough. They will always be more expensive than their fully online counterparts. The real challenge then is to justify the greater cost in the minds of students and parents. Hence there is as much a need to focus on quality as much as cost.

Most universities' fundamental problems are of their own making. There are many universities that are trying to be like Harvard without fully understanding the costs of what Harvard does. To perform the jobs of discovery, memory and mentoring at a competitively sustainable cost, the strategy of the university must reflect firm choices about what it will and will not attempt to do.

Long-term success requires not just satisfying customers' needs (as Theodore Levitt said) but doing so better than one's competitors can (as Michael Porter said). Porter also said that competitive success requires being different, making unique choices about what an organization will and won't do. The concept of making tradeoffs is easy to articulate but hard even for profitable ventures to consistently apply. Yet for universities to succeed today, it is imperative that it adopts a strategy differentiated from that of the traditional Carnegie climbing approach or of the purely online model. They need to carve out their own path, in keeping with their unique strengths, context and environment, where they perform limited aspects of the work the world wants done by universities at competitive levels of quality and cost. The critical choices that determine their path relate to students, subjects and scholarship.

Harvard's choice to serve both undergraduate and graduate students has been widely emulated by many universities. This system works for Harvard because it has chosen to restrict itself to the most capable and brightest amongst college students - motivated and intelligent enough to overcome any weakness in the educational programme. Harvard's undergraduates are more likely to pursue

graduate education and are likely to be more satisfied with a liberal education rather than technical preparation for a career.

The challenge for other universities is that their students are much more diverse in educational objectives and academic abilities. Since many won't attend graduate school, their college experience must include practical career preparation. Some may also need remedial education to clear college courses. That is why the most successful schools make careful choices about the type of students they serve. Focused liberal arts colleges differentiate themselves by granting only bachelor's degrees. Students at the best liberal arts colleges receive unusually focused faculty attention and intellectual stimulation. They also get the full attention of the school's career placement officers, who in a large university would focus more on serving graduate students. These liberal arts colleges have made tradeoffs that give them a unique competitive advantage relative to a particular kind of student, one who places a premium on intimate undergrad instruction and will pay a high price for it.

Community colleges are more focused on serving only 2-year degree seekers. This focus helps them meet the needs of students burdened by poor academic preparation and bearing work + family responsibilities. Institutions that are even more focused are those that grant only certificates, such as the 26 Tennessee Technology Centers, which have a 72% graduation rate, while a community college that offers both associate degrees and certificates only see 43% of students achieving a certificate in 5 years.

In addition to choosing which students to serve, universities must also recognize students as primary constituents and the job of mentoring them as being equal or more important than any other jobs including discovery research. Focused research enterprises such as Corporate R&D centers, government-financed research institutes are proving far more cost-effective than universities, as they can focus exclusively on research, unlike universities who have to split their focus between teaching and research, and further are not market-driven in their research focus. Given these lower-cost alternatives, the knowledge discovery function of the university has become comparatively too expensive to justify public and private subsidies, absent a compelling educational purpose. Traditional universities that do not prioritize students will increasingly face competition from for-profits, who after their success in the adult education space are beginning to target younger learners, who are drawn by their lower costs and career-focused instruction.

To survive increasing competition, most universities need to be more student-focused, and more narrowly focused in their academic offerings. Eliot's ideal of having all subjects at their best was always expensive. Now with for-profit education focused on the subjects in greatest demand, it is also commercially untenable. There is a need to focus on reducing the number of courses (and majors) in universities especially those that are chronically under-enrolled. However the culling should be taken with care. After all, it is the breadth of

options that differentiates traditional universities from the for-profits and facilitates performing the jobs of memory and mentoring.

However the typical university major needs to be trimmed back and modularized to allow students to combine the most essential major courses with offerings from other fields and still graduate in 4 years.

In one respect at least universities must consider broadening subject matter - on the subject of values and principles that can aid in character development. As Derek Bok mentions his book 'Our Underachieving Colleges', "students gain more in developing their values and principles from bull sessions with friends than from the classes they attend". Students thus need access to mentors who can speak both from academic training and also from personal experience as to what makes for long-term welfare, what is right and what is wrong, not only for societies but also for individuals.

Introducing moral views into higher education requires a delicate balancing act. How does one decide to introduce some ideas not subject to scholarly methods of analysis while omitting others? Yet it is precisely that kind of judgement that separates the university graduate who is merely technically competent from one trusted to make the most important decisions. Society pays outsized rewards to those who can make high-stakes judgments not subject to purely analytical methods.

Tenured professors are in such a position, paid significantly more than their untenured counterparts in for-profits who can produce on average the same cognitive outcomes. If they continue to be paid that premium in the future it will be not just for bringing new discoveries into the classroom, but also for transmitting cultural memory and for mentoring.

Students too, while they may not appreciate it fully in the moment look back gratefully on the professors who held them accountable not only for their academic performance but for their conduct, demeanour and ambition. They appreciate mentoring in personal matters. The would-be life changing professor cannot be value-neutral or laissez-faire. The university community that expects parents to pay the high cost of its expansive facilities cannot entirely refuse to act in loco parentis.

Each campus should make a conscious choice about the ethical and social environments it intends to promote. Given the relatively high cost of attending a traditional university, it cannot afford to let the quality of its campus social environment be determined randomly. Schools that set and meet our expectation, whatever that may be, will have an advantage over those that do not.

Since James Conants's introduction of up-or-out tenure, scholarship - defined as original research and publications - has been the overriding factor in tenure and rank advancement decisions. Publication is the determining factor not because

other forms of contribution such as teaching are not possible to measure reliably. It is hard to measure quality of an original piece of research and writing as well, but an elaborate infrastructure of blind peer review (complex and expensive) has been created to support this process. If a similar investment had been made to evaluate the amount and quality of the professor's contribution in class, then a reasonably reliable measure would have emerged in teaching as well.

The research-driven scholarship process has today deteriorated into a system that prizes

- quantity over quality
- narrowness of study over integration or breadth

This is inevitable for a scholarship model inherited from the golden age of scientific discoveries. Today the context has changed - researchers mostly fill the gaps in the sweeping work done by their predecessors, who were lucky enough to start their careers during times of great change and discovery.

To deliver anything original today, researchers have to focus even more narrowly. This is even more true of humanities and social sciences, where the pace of scientific discovery proceeds far more slowly than in the physical and natural sciences. These problems are accentuated by the oversupply of PhDs, both in the US as well as globally and the consequent rise in competition for limited publishing slots.

An alternate model of scholarship - beyond publications - was proposed by the former US Commissioner of Education and Carnegie Foundation President Ernest Boyer, and his colleagues, who in addition to the scholarship of discovery (academic research), added three more categories : integration, application and teaching. These latter three types would expand the traditional definition of scholarship to include putting discoveries into context, showing their application to practical problems, and sharing them with students. Boyer et al also suggested a broader definition of publication to include not only research journals but also textbooks and popular writing.

Thus as per Boyer's definition, an academic institution can use the definition to decide on its particular mix of scholarly activities. BYU-Idaho chose to focus on teaching. An alternate school, such as a Polytechnic could focus on application, and so on.

Great teachers at all universities practice the scholarship of integration, application and teaching every time they engage a learner. To effectively convey an idea, they must first answer at least three questions

1. How does this idea relate to other ideas? (integration)
2. How does it apply in practical settings? (application)
3. How can I best communicate it? (teaching)

Unfortunately the world at large never seems to hear from these great teachers. They are given neither the time nor the incentive to publish what they know about integrating, applying and teaching the new discoveries of their colleagues.

Changing that reality will require modifying the research and graduate-programme favoring incentives built into the university's organizational DNA through the tenure track. Presently the tenure path rewards only the discovery / research scholarship aspect. To perform the critical jobs of discovering and sharing knowledge universities need a diversity of tenure paths and faculty contracts that provide the essential acknowledgements and rewards. As an example, let us look at HBS which has two tenure tracks

- Research and Publication track : creates incentives and opportunities to produce traditional scholarship
- Course Development track : recognizes the focussed scholarship of teaching required to keep the institution at the forefront of business education, incentivizing the creation of intellectual content to guide and facilitate the instruction process, published in the form of cases, case teaching notes, technical notes for students, course overview notes etc rather than articles in scholarly journals.

The standard of excellence on the course development track is no less to that of the research and publication path so far as the creation of powerful new ideas go, these rigorously supported and peer-reviewed.

The publication-focussed, lengthy and too often uncertain process for winning tenure has three negative effects on the institution

1. artificially skews faculty preferences away from teaching
2. fosters unproductive anxiety and a sense of second-class citizenship among untenured professors
3. creates the risk of entitlement feelings among those who survive the protracted stressful process. The result being a reduction in the individual commitment to the institution and its students, both pre and post tenure.

It is the tenure process and not the university's guarantee of employment and individual self-determination to those who win tenure that disadvantages the institution. A flawed tenure process - one that grants tenure for activities such as mediocre research that does not substantially contribute to the institution's mission, one that is opaque and arbitrary or one that creates presumption of immunity to post-tenure performance can impose debilitating costs on a university including decreased instruction quality, faculty disunity and diminished productivity (post-tenure). An institution that operates such a process has itself, not the concept of tenure, to blame.

Even a well-designed and managed tenure process is not without its potential risks. Among those is an increase of faculty power which can be used to thwart administrative efficiency measures or even call for the removal of a president. However in reality, a faculty member who enjoys a sense of employment security is perhaps more likely to support a well-reasoned and communicated administrative proposal for change.

Given the genetic tendency to imitate the great research universities, which aspire to having everything at its scholarly best, creating alignment around unique choices of strategies isn't easy. However the choices cannot be made

tacitly or only on paper. The university must have its strategy reflected in its institutional DNA, such as its programme offerings, organization structure, policies and procedures, other systems that guide and supports its activities, and most importantly in its success measures.

The first step towards making the right choices is an honest assessment of the universities most valuable assets, its faculty and its physical campus. With these assets in mind, the question to ask is "How good are we in meeting the needs of the students, community, government and the constituencies we serve, around the jobs of discovery, memory and mentoring?". To the extent that the answer is "not very good", the members of the university community need to reassess their choices of students, subjects and scholarship. This will mean making tradeoffs, hard choices about shifting the emphasis of their activities and even ceasing some things altogether.

Several principles for successful enablement of tradeoffs apply, such as

1. put people ahead of strategy - This conclusion from Jim Collins' book Good to Great, likens a business organization to a bus, and its strategy to the destination of that bus. Collins recommends that you start not with where, but with who. It is important to have the right people (those capable and committed to "A-Plus Effort") on the bus before they decide where the company is going. Innovation may require getting key faculty members to alter their activities (discovery emphasis to instruction) but no meaningful discussion of change can be undertaken without assurances that capable members who commit to innovating can remain with the community. The university's people, especially its faculty members are both the bus's engine and its brakes. Before any new direction is charted, they must be assured of their voice and safety in the journey.
2. change is more palatable for all, when it occurs in the context of growth and quality enhancement, not shrinkage - a lot of unpalatable decisions such as the push to three-track system, closing sports teams etc could be taken at BYU-Idaho, given that it was expanding from 2 to 4 years. Growth needn't only be in the context of face-to-face students; online programs that seek out non consumers is also growth.

By evaluating different combination of students, subjects and scholarship a university can come up with appropriate business models that suits their strengths and their capabilities to do the three critical education jobs. To accompany the above the university should also choose supportive success measures. It will make little difference to focus on undergraduate students and hire great teachers if faculty tenure and promotions continue to hinge on research and publication. With regards to success measures, it is critical that the university

1. move from input measures (average SAT score of incoming students, percentage of faculty holding doctoral degrees etc) to outcome measures (percentage of students who will graduate in 5 years, how many of these students get a a good job etc), including benchmarks for productivity and efficiency. Ideally the university could develop a report card such as BYU-

Idaho did (based around the Balanced Scorecard, as devised by Robert Kaplan) that is customized to the university's specific strategic choices and incorporates performance stats defined with those choices in mind.

2. shift emphasis from parameters that matter to ranking agencies and scholars to parameters that matter to students and government bodies. In the past students and governments placed great value on prestige. They were willing to let presumed experts, academicians and rankings creators determine the meaning of prestige for them. Today with higher education costs escalating and with academic prestige becoming more difficult to trade on in a competency-oriented marketplace, students and governments want to draw their own conclusions about what the universities are doing for them rather than what scholars and ranking agencies have valued. In student's minds, the measures that matter are time to graduation, tuition cost, career placement stats etc and not quantity of research output and SAT scores of incoming students.
3. shift emphasis towards more qualitative assessments as opposed to purely quantitative ones, as many of the parameters that matter to students, employers and society is around the quality of the offering, e.g., creativity and judgement in students for the employer
4. incorporate price-to-value measures as well as efficiency and effectiveness measures relative to that of cheaper online offerings. Today students want not just high paying jobs but also an acceptable ratio of starting salary to debt.

On the whole, it is the measurement process more than the measurements themselves that shape the institution and guide its members' activities. The right success measures provoke the right kind of conversations. Ultimately it those conversations that keep the university evolving adaptively.

American universities rose to prominence in the 20th century by embracing innovation. They changed when the great European universities of the day did not. Innovation was not a defensive reaction but a strategy for success. Today the traditional university's challenge is to change in ways that decrease its price premium and increase its contribution to students and society. Its expensive campus and professoriate must be deployed innovatively against the jobs of discovery, memory and mentoring. Tough choices about students, subjects and scholarship must be made. These choices must be reflected in the university's institutional DNA and in its success measures.

In the future, the most successful universities will be those that lift their students furthest and fastest, and share their scholarship as widely as possible. The impact of their scholarship will be judged not only by those who cite it but also those who integrate, apply and teach it. Success will lie not in conforming to a one-size fits all, hierarchical classification but in satisfying the needs of its key constituencies, especially students. Every university that does this would be a winner and would be indispensable.

University communities that commit to real innovation, and to changing their

DNA from the inside may find extraordinary rewards. They need to however ask fundamental questions about what they can do well and abandon much of what they have undertaken in a spirit of imitation. The time for pruning and refocussing has come, even for the strongest of universities. By suppressing the compulsion to have everything and playing to their unique strengths, they can achieve more than they can do now. They can be the best in the eyes of their own students, faculty members and private and public supporters. By recognizing and playing to their strengths, and innovating with optimism they can have much much more.

*** **The Carnegie Classification System**

¹The Carnegie Classification System, introduced in 1967 by the Carnegie Foundation classified the US higher ed system into 4 tiers, ordered according to their focus on research and doctoral programmes, breadth of disciplines / number of degrees granted and selectivity. The original objective was to segregate the schools so that unique policies could be crafted to support each type in its unique educational mission, as the diversity of the US higher ed landscape with its community colleges, technical institutes, state universities and elite national universities and liberal arts colleges was seen as an asset to be preserved and enhances.

Over time the unintended effect of this "Carnegie Ladder" as it is called, has been to create a scorecard for Harvard emulation or "Carnegie Climbing", as the universities at the lower rungs strive to enhance doctoral programmes, breadth of majors and selectivity to catch up the elite private / public universities (Harvard / Berkeley etc) or the highly selective liberal arts colleges (Williams / Amherst). The Carnegie Ladder really was meant for students to climb - as in the California system where a passionate student could move from an associate degree at a community college to a bachelor's degree at a state university to a graduate degree at one of the research universities - not for the universities to use the ladder for their own climbs - expand beyond teaching into expensive research initiatives.

In 2006, having reassessed the effects of its classification system, the Carnegie Foundation introduced a new elective category - a 'community engagement classification'. All institutions remain subject to the standard system, but they may also decide to seek this new status, which seeks to focus the scholarly, teaching and learning activities of these institutions on the communities in which they reside, with the intent of producing mutual benefit - work the world wants done. As an example take Portland State University, whose motto "Let knowledge serve the city" makes it a prominent example of an institution that fits in the Community Engagement Classification. Utah Valley University is another such example.

Further books to read (referred to in the book)

The University - An Owner's Manual by Henry Rosovsky
Rethinking and Reframing the Carnegie Classification - Alexander C McCormick and Chun-Mei Zhao
Our Underachieving Colleges - Derek Bok
Peer Instruction : A User's Manual - Eric Mazur (He is one of the leading authorities on helping students teach one another. In this book he explains how to teach large classes interactively).
Disrupting Class - Clayton Christen, Michael Horn & Curtis Johnson