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## How to Manage the Disruption of Higher Education\*

**A**ffordable access to higher education for anyone willing and able to do the work will help to insure that individuals and nations flourish in our increasingly competitive and globalized society. But American higher education—albeit the envy of the world—is mired in an expensive and outdated delivery model, one that prevents huge swaths of our population from taking advantage of the knowledge and expertise harbored by our nation’s colleges and universities, particularly by those institutions at the top. Clayton Christensen, Robert and Jane Cizik Professor of Business Administration at the Harvard Business School, draws from his extensive work on disruption and innovation in industry and health care to assess higher education’s business model. He notes that the prevailing model is being disrupted by technological advances that enable facilitated networks that, in turn, make higher education more broadly accessible and affordable. Christensen prescribes approaches to managing this disruption so that it leads to a new business model for higher education, one that is a far better match than the current model with the needs of our citizenry.

### CENTRALIZATION AND DECENTRALIZATION

The structure of most industries can be described in terms of a set of concentric circles. First, people accomplish what they want to do out on the periphery, on their own. Then technological advancements—which come in many forms—centralize the industry and where things get done. Further technological improvements lead to less dependence on the center by making it possible to do things further away from it. Figure 1 illustrates this cycle in computing.

Before the advent of the mainframe computer, we all solved our computational problems and analyzed data basically on our own, wherever we happened to be. The mainframe

\* This summary is based on the author’s presentation at the Forum for the Future of Higher Education’s 2009 Aspen Symposium and his book, *The Innovator’s Prescription: A Disruptive Solution for Health Care* (2009).

■ American higher education—albeit the envy of the world—is mired in an expensive and outdated delivery model, one that prevents huge swaths of our population from taking advantage of the knowledge and expertise harbored by our nation’s colleges and universities.

■ Simply put, higher education’s prevailing business model is a mismatch with the current educational needs of our population. It is time to rethink and disrupt that model.

■ Disruptive innovations reduce costs dramatically by providing simpler, less expensive products that are good enough for the job at hand. The overwhelming concern for costs that prevails during recessions spurs and accelerates disruptive innovation.

■ Despite the explosive growth of online learning, higher education has trapped many disruption-enabling technologies in complex, high-cost institutions that conflate two and sometimes all three business models under one roof. Business model innovation will help free disruptive technologies and make higher education more affordable, accessible and effective.

computer—which was massive, cost millions, and took extraordinary expertise to run—changed that as we took our problems to it and were delighted with the results that highly trained experts were able to produce for us. But the expense and inconvenience of having to go to the center sparked, as it does across industries, a reciprocal process of decentralization. In computing, the first step in decentralization was the mini-computer, so-called because it was smaller than the mainframe (although still the size of a large chest of drawers). Then came personal computers, which we could use in our office and home. Next came portable laptops that fit in our briefcase, and today we have handheld computers that we stash in our pockets and purses.

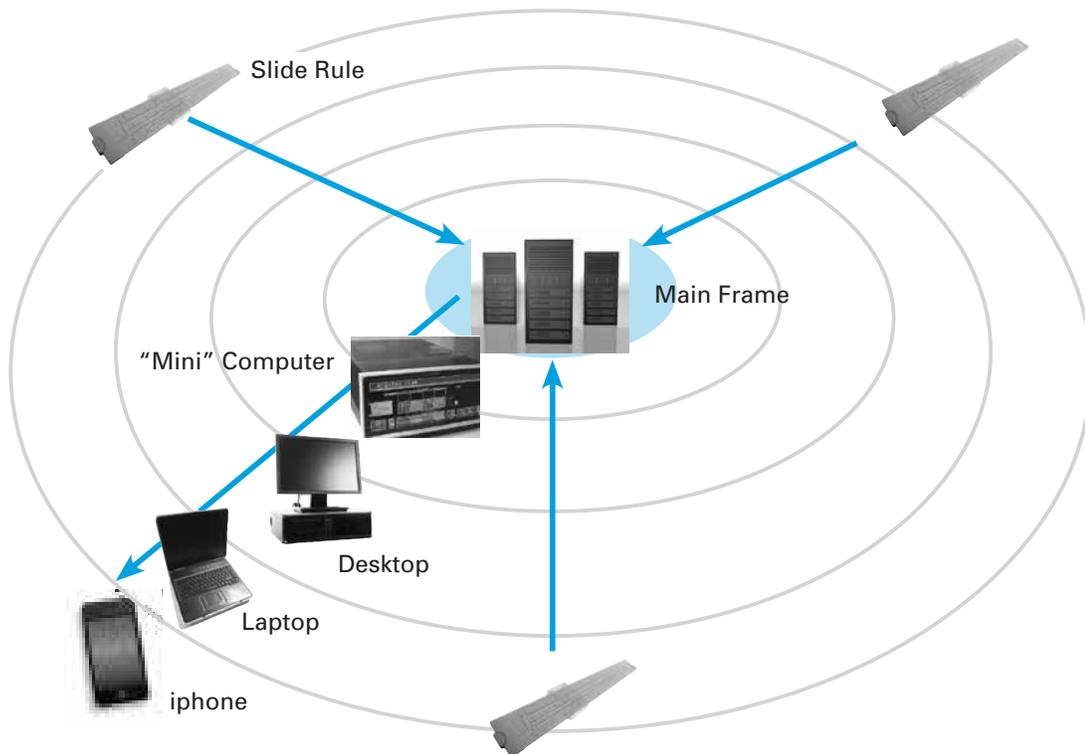
In each instance, the industry grew vastly as it moved away from the center, fueled by technological developments that simplified what had been quite complicated and made applications available to new users. Shifting business models facilitated the growth by lowering costs and, eventually, increasing quality—at first, though, the quality in successive outward rings during decentralization is lower, because disrupters always enter the industry at a lower performance point than the center. That performance point,

though, is good enough for new users and those moving from the center, which by now has overshot what customers can absorb or utilize.

This pattern, which I call *disruptive decentralization*, is very common across industries. It is true of health care, for example: the reason health care has become so expensive, with costs continuing to rise, is that the industry hasn't yet been decentralized. General hospitals at the center carry massive overhead costs and provide far more services than typical patients need. Today, technological advancements are helping to move services to less expensive clinics and offices and will be key to lowering costs. Expensive hospitals in the center simply will not be able to lower costs enough to solve the health care problems we face.

Higher education is undergoing disruptive decentralization too—Figure 1 could be drawn for higher education as well. At the center are the elite private colleges and universities, where students go to receive their education at the hands of experts. State universities enter the picture and offer higher education to a larger proportion of the population, who can't attend the institutions at the center. And community colleges serve those who don't attend the state

**Figure 1. Centralization Followed by Decentralization: Computing**



universities. Disruption of the model is being caused by online learning, which takes the learning to the student rather than the student having to go to it.

## BACKGROUND ON DISRUPTIVE INNOVATION

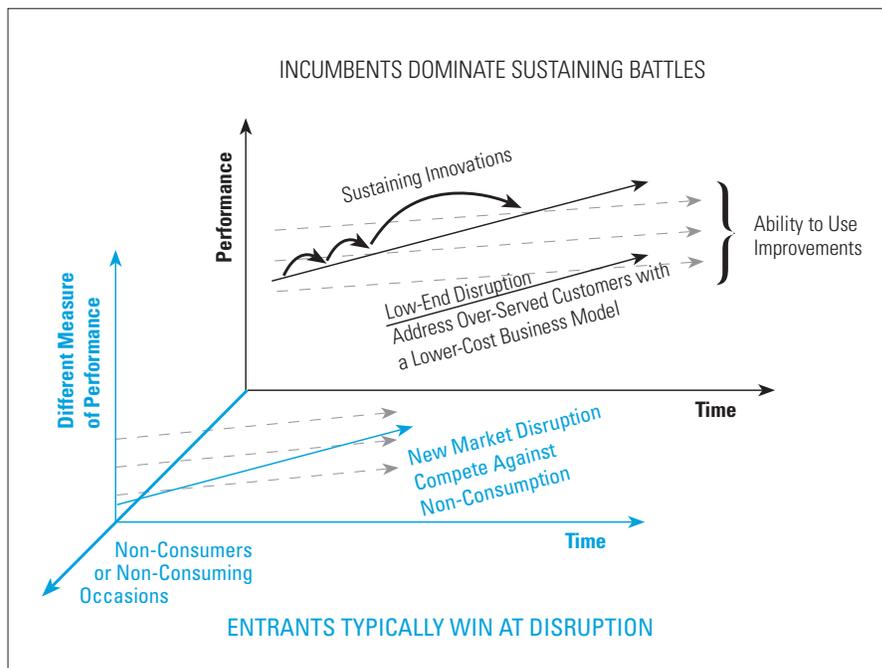
It's worth taking a brief digression to more thoroughly explain *disruptive innovation*, as this theory provides the basis for understanding the changes occurring in the higher education industry and how best to manage them.

In every market there is a trajectory of performance improvement that customers can absorb or utilize. Figure 2 illustrates how customers are distributed along different performance trajectories in terms of what they can absorb. Some customers are high end, very demanding, and willing to buy high-performance, expensive products. Others are low end and satisfied with simple and inexpensive products. Sustaining innovations move products up the performance trajectory; research has shown that as companies continually improve their products, in almost every market they outstrip the ability of customers to use that progress.

The disconnect between the capabilities of a product and the customers' ability to use them opens up an opportunity for disruptive innovations, of which there are two types. The first are new-market disruptions, which succeed because they bring previous nonconsumers into the market. The personal computer is an excellent example of a new-market innovation in that its initial customers were new consumers who had not owned or used the previous generation of products and services, which were hard to use and expensive. New-market disruptions create a new value network; their competition is nonconsumption. The second type are low-end disruptions, which go after the least-profitable and most overserved customers at the low end of the original value network. Low-end disruption has occurred repeatedly in retailing: Full-service department stores earn high margins on inventory that typically turns over about three times per year. Wal-Mart, on the other hand, provides less service and earns lower margins, but because its inventory turns over more frequently, its profitability upon entry was the same as the full-service department stores. With greater sales came greater profits.

Some disruptions are hybrids, combining new-market and low-end approaches, such as Southwest Airlines, which initially targeted customers who weren't flying—people who drove or took buses, for example—and then

**Figure 2. Two Types of Disruptive Innovation**



began to pull customers from the low-end of the major airlines' value network as well.

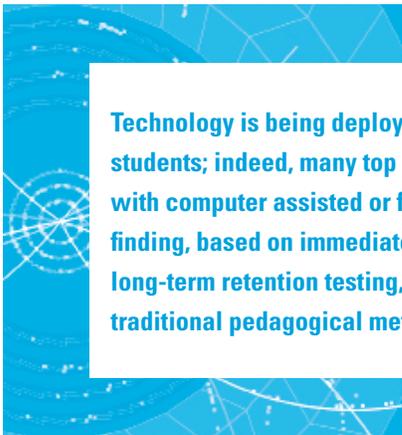
## KEY CHARACTERISTICS OF DISRUPTIVE INNOVATIONS

Disruptions take root in a new ring either because they are better than nothing or they shift the basis of competition from quality to convenience and customization. Minute Clinics, for example, are staffed by nurse practitioners rather than physicians, and serve patients for a set fee for ailments that can be quite precisely diagnosed and treated, such as earaches or poison ivy. Patients are served on a walk-in basis; the average length of a visit is 15 minutes. While those ensconced in the center tend to view Minute Clinics with disdain, from the customer's point of view the basis of competition in this case is convenience, not quality—and in any case patients' care needs are met at Minute Clinics, as opposed to exceeded by hospitals or physician's offices. The same could be said of those looking out at new delivery models for higher education from within the center of elite private residential college and universities.

Customers or applications get pulled into the new ring further from the center or adopt the low-end solution when performance of the product or service becomes good enough to do the job. The disruptive technology doesn't "invade" the inner circle. Today, for example, less than one-quarter of those enrolled in higher education fit the

“traditional” mold of full-time 18 – 22 year-old students. That vast majority has different aims and expectations for their education than that offered by the elites at the center and some of the established rings.

Recessions often accelerate the disruptive decentralization of industries. It is important to note—and often misunderstood—that competition that spurs sustaining innovations and moves industries up the performance trajectory typically results in higher costs, not lower. Consider the facilities arms race in higher education: opulent dining halls, student centers, and athletics facilities raise costs and yet have a negligible effect on the quality of education. Disruptive innovations, on the other hand, reduce costs dramatically by providing simpler, less expensive products that are good enough for the job at hand. The overwhelming concern for costs that prevails during recessions spurs and accelerates disruptive innovation.



**Technology is being deployed not just for non-traditional students; indeed, many top institutions are experimenting with computer assisted or fully online teaching and are finding, based on immediate testing results and, importantly, long-term retention testing, that it can be superior to traditional pedagogical methods.**

Finally, once they leave or start in a new ring, customers rarely go back toward the center. Those left in the center that are unwilling to change their business model continue to move up the performance trajectory, increasing quality and costs and serving a smaller and smaller niche of the growing market.

## **ENABLERS OF DISRUPTIVE INNOVATION**

The products and services offered in nearly every industry, at their outset, are so complicated and expensive that only people with a lot of money can afford them, and only people with a lot of expertise can provide or use them. Only the wealthy had access to telephones, photography, air travel and automobiles in the first decades of those industries. Only the rich could own diversified portfolios of stocks and bonds, and paid handsome fees to professionals who had the expertise to buy and sell those securities.

At some point, however, these industries were transformed by disruptive innovation, making their products and services so much more affordable and accessible that many more people could purchase them, and people with less training could competently provide them and use them.

At the outset, quality higher education also was limited to the wealthy who could pay for it and the elite professors who could provide it. That too, has changed dramatically—although further change is desperately needed. Simply put, higher education’s prevailing business model is a mismatch with the current educational needs of our population. It is time to rethink and disrupt that model.

Three key elements enable disruptive innovation. The first, technological developments, are available to higher education and, indeed, are disrupting the industry. Online enrollments have skyrocketed in the past decade and, importantly, credentials earned online have made tremendous gains in credibility and are accepted and respected by an ever-growing set of employers.

The second key enabler of disruption is business model innovation. New business models facilitate the translation of technological enablers into lower-cost, higher-quality, more accessible services.

Generically, there are three types of business models, including:<sup>1</sup>

- *Solution shops*. These are businesses that are structured to diagnose and solve unstructured problems. Consulting firms, research and development organizations, advertising agencies, and high-end law firms fall into this category. Solution shops deliver value primarily through the people they employ, and payment is almost always in the form of fee for service.
- *Value-Adding Process Businesses (VAP)*. These organizations take in incomplete or broken things (or people, in the case of higher education) and transform them into more complete outputs of higher value. Retailing, restaurants, automobile manufacturing, and colleges and universities are examples of VAP businesses. They typically charge their customers for the *output* of their processes, whereas solution shops bill for the cost of their inputs. VAP’s ability to deliver outcomes is embedded in repeatable and controllable processes and the equipment used in those processes. This precision is why restaurants can print prices on their menus and universities can set tuition prices.
- *Facilitated networks*. These are enterprises in which people exchange things with one another. Mutual insurance companies are facilitators of networks: customers deposit their premiums into the pool and they take their claims out of it; participants in telecommunications networks send and receive calls and data among themselves; E\*TRADE, eBay, craigslist and Blackboard are network businesses. The companies that

make money in this type of business tend to be those that facilitate the effective operation of the network. They typically earn money through membership or user fees.

Despite the explosive growth of online learning, higher education has trapped many disruption-enabling technologies in complex, high-cost institutions that conflate two and sometimes all three of these business models under one roof. Business model innovation will help free disruptive technologies and make higher education more affordable, accessible and effective.

The third enabler of disruptive innovation is the coalescence of a new and independent value network through which services or products are delivered. Disruptions are rarely plug-in compatible with the prior value network, or commercial ecosystem. When disruptive innovators assume that relying on the existing value network is a cheaper, faster way to succeed, they invariably find that ensconcing their “piece” of the system into the old value network kills their innovation—or it co-opts and reshapes their disruptive business model so that it conforms to that system. Vice-versa never happens. That explains why disruption in higher education, for example, has had to take root largely outside the system, beyond the reach of the accreditation process.

## INTUITION VS. PRECISION

The health care industry presents another interesting analogy to consider for higher education: When precise diagnosis of illness isn't possible, treatment must be provided through what we call *intuitive medicine*, where highly trained and highly compensated professionals solve medical problems through intuitive experimentation and pattern recognition. As patterns in these patients become clearer, care evolves into the realm of evidence-based medicine, or *empirical medicine*—where data are amassed to show that certain ways of treating patients are, on average, better than others. The technological enablers of disruption in health care are those that provide the ability to precisely diagnose by the *cause* of a patient's condition, rather than by their physical symptoms, paving the way for rules-based therapy. (Symptoms alone are not sufficient for such therapy because symptoms across illnesses can be quite similar.) These technologies include molecular diagnostics, diagnostic imaging technology, and ubiquitous telecommunication.

When diseases can be diagnosed precisely by their *cause* rather than by their symptom, therapy that is predictably effective for each patient can be developed and standardized. This domain is called *precision medicine*. Intuitive medicine is the most expensive domain, whereas precision medicine can

be practiced at far lower costs and much greater efficacy at any number of locations far outside costly hospitals—including the Minute Clinics described above. Technology in every industry goes through these stages; the products of those industries become higher in quality and lower in cost not because the intuition of the expensive experts is *replicated* but, rather, it is commoditized through scientific progress.

In a loosely similar fashion, highly trained and highly compensated faculty at elite colleges and universities offer small, seminar-like courses that reflect the mix of students in them and vary accordingly. As content and teaching methods become more standardized, less training and less personalized attention is necessary to conduct classes and—moving further along the spectrum—ultimately, students can learn themselves using computer-based courses designed to cover specific content via precise methods. Learning that occurs in the more personal, intuitive realm remains quite expensive, whereas learning online can be inexpensive and even free—MIT, for example, makes available most of its courses, nearly 2,000 of them, free on the internet through its OpenCourseWare initiative.

While many readers may quickly raise questions regarding quality as teaching moves toward the more standardized domain, the quality of education available via these lower-cost channels is, in the eyes of both consumers and employers, frequently good enough. And it can be superior: technology is being deployed not just for non-traditional students; indeed, many top institutions are experimenting with computer assisted or fully online teaching and are finding, based on immediate testing results and, importantly, long-term retention testing, that it can be superior to traditional pedagogical methods. Clearly, the question asked of health care—must it be so heavily skewed to the intuitive realm?—might well be asked of higher education too.

## HOW TO MANAGE DISRUPTIVE INNOVATION

Unlike for-profit businesses, American colleges and universities are obligated to fulfill a widely-accepted social contract mandating that they address societal needs and offer access and social mobility to all Americans. Institutions that move far up the performance trajectory and serve an increasingly smaller (and privileged) proportion of the population are at serious risk of violating that social contract. The first wave of disruptive innovation of complex, high-cost institutions needs to focus on untangling their business models so that the models match the institution's capabilities *and* the needs to be served. Depending upon their mission, it may be that institutions can harbor, for example, both VAP models and facilitated network learning models.

If universities of every sort could clearly articulate the job that their students “hire” the university to do, most would find that they aren’t integrated correctly. Most universities spend money on services and features that are irrelevant to the reasons why students are there, and are under-spending and under-providing dimensions that are crucial. Understanding the job that customers “hire” a product to do for them (all jobs have functional, emotional and social dimensions) enables an organization to know all the experiences in purchasing and using the product they must provide, so that they sum up to nailing the job perfectly. And if they know the experiences they must provide, then they know what and how they need to integrate in order to do the job.

As a general rule, products and services are easy to copy, and rarely are a source of enduring differentiability for an organization. In contrast, the experiences in purchasing and using the product that the organization provides, and the way it integrates to provide those experiences, typically comprise enduring differentiation and the consequent ability to sustain premium prices.

Most universities are integrated to optimize the ability of faculty members to interact with like-minded faculty, and to facilitate their efforts to publish in academic journals. They are not integrated to optimize the students’ experience. Rather, students bounce back and forth between faculty and departments in ways that are inefficient and overhead-intensive. And most universities are not at all well integrated to optimize the experience of their third set of customers, alumni.

## CONCLUSION

Generally, in any industry the leading practitioners of the old order become the victims of disruption, not the initiators of it. But properly informed and motivated, the leaders of the existing systems can take the lead in disrupting themselves—because while leaders instinctively view disruption as a threat, it always proves to be an extraordinary growth opportunity. In the case of colleges and universities, disruption will also help to make higher education more accessible, affordable, and responsive to the needs of our nation.

## ENDNOTES

- 1 Oystein Fjeldstad of the Norwegian School of Management developed this framework. Those interested in Fjeldstad’s framework should also read Stabell, C.B., and Fjeldstad, O.D., “Configuring Value for Competitive Advantage: On Chains, Shops and Networks.” *Strategic Management Journal*, May 1998.

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