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WHEN GIANTS FAIL

What business has learned from Clayton Christensen.

By Larissa MacFarquhar May 7, 2012

"You can tell from the way I speak I had a stroke about eighteen months ago. I've been learning how to speak English again, and you'll see I still can't come up with the right words sometimes." The most influential business thinker on earth looked up and smiled apologetically. He stood with his hands in his pockets. His hair was neatly parted on the side. He was very tall. "I have a tendency to speak to the floor," he said. "It's because if I look at you, you distract me."

Clayton Christensen liked to feel a connection with people he was trying to help, whether he was giving a talk in church or to a business group like this one, so it was too bad he had to look at the floor, but he would do his best. He was pretty sure he'd find the words, because he was going to tell a story he knew by heart. He had told it to thousands and thousands of people, ever since his first book, "The Innovator's Dilemma," came out, fifteen years ago. Yet somehow, and he was so grateful for this, still more people seemed to want him to tell it—seemed to think that the puzzle it posed, and the answer he'd come up with, would save them from ruin.

He pointed his clicker at the screen and the first slide appeared. "For those of you who haven't made a lot of steel, historically there are two ways to make it," he said. "Most of the world's steel has been made by massive integrated steel companies. The other way to do it is to build a mini mill. In a mini mill, you melt scrap in electric furnaces, and you could easily fit four of them in this room. The most important thing about a mini mill is that you can make steel for twenty per cent lower cost than you can make it in an integrated mill. Now, imagine you're the C.E.O. of a steel company somewhere. In a really good year, your net profit will be two to four per cent. Here is a technology that would reduce the cost of making steel by twenty per cent. Don't you think you'd adopt it? And yet *not a single* integrated steel company, anywhere in the world, built a mini mill. Today, all but one of the integrated mills have gone bankrupt. So here is why something that makes consummate sense can be impossible for smart people to do."

The question he'd begun with, twenty years ago, was: Why was success so difficult to sustain? How was it that big, rich companies, admired and emulated by everyone, could one year be at the peak of their power and, just a few years later, be struggling in the middle of the pack or just plain gone? He had initially assumed that technology moved on, and the older players couldn't keep up. But when he began to look into it he found that this wasn't so: as technologies grew more sophisticated, whether by small improvements or radical leaps, the established companies, with their well-funded R. & D. departments, nearly always led the way.

Some people thought it was a matter of bad leadership—stupid managers grown too cautious or complacent to change. But Christensen was a generous man; he didn't like to call people stupid, and, besides, the very same managers who were being called stupid today had been called geniuses last week, when the company was doing well and they were doing exactly what they were doing now.

"In the steel industry, as in your industry, there are tiers in the market," he said. "At the bottom of the market is concrete reinforcing bar"—rebar. "Anyone can make rebar, but steel used to make appliances and cars"—sheet steel, at the top of the market—"is really tough to make. In the beginning, the mini mills were making steel from scrap, so the quality was crummy. The only market that would buy what the mini mills made was the rebar market, because there are almost no specs for rebar, and once you've buried it in cement you can't verify if it made them anyway, so it was just the perfect market for a crummy product.

"As the mini mills attacked the rebar market, the reaction from the integrated mills was, man, they were happy to get out of rebar, because it was truly a dog-eat-dog commodity, and why would they ever want to defend the least profitable part of their business when, if they focussed their assets on angle iron and thicker bar and rod, the margins"—twelve per cent—"were so much better? So, as the mini mills expanded their capacity to make rebar, the integrated mills shut those lines down, and, as they chopped off the lowest-margin part of the product lines, their gross-margin profitability improved."

The first industry that Christensen studied was disk drives. He had started out in consulting, then co-founded an advanced-materials firm called C.P.S. Technologies, but then he decided to follow the academic track that led to his becoming a professor

at Harvard Business School. Someone told him that disk drives were the fruit flies of technology: they were ideal subjects for studying evolution, because a generation in disk-drive technology was incredibly short. He saw that the companies that made fourteen-inch drives for mainframe computers had been driven out of business by companies that made eight-inch drives for mini computers, and then the companies that made the eight-inch drives were driven out of business by companies that made 5.25-inch drives for PCs. What was puzzling about this was that the eight-inch drives weren't as good as the fourteen-inch drives—they had a lower capacity, and a higher cost per megabyte—and the 5.25-inch drives were inferior to the eight-inch drives. So why hadn't the fourteen-inch-drive companies simply started producing eight-inch drives? It didn't make sense.

Around the same time, Christensen happened to remember that in 1962, during the Cuban missile crisis, a neighbor had brought in a big, powerful steam shovel to build a bomb shelter in her back yard, and he thought, Gee, you don't see those big excavators anymore—you only see hydraulic backhoes. I wonder if the same thing happened to the excavators as happened to fourteen-inch disk drives? Sure enough, he discovered that although the hydraulic backhoe was used only for tiny jobs when it was first introduced—it was so weak, and its reach so short, that the only thing it was better than was a man with a shovel—over the years it had got better and better until, at last, it put the big excavators out of business.

In industry after industry, Christensen discovered, the new technologies that had brought the big, established companies to their knees weren't better or more advanced—they were actually *worse*. The new products were low-end, dumb, shoddy, and in almost every way inferior. The customers of the big, established companies had no interest in them—why should they? They already had something better. But the new products were usually cheaper and easier to use, and so people or companies who were not rich or sophisticated enough for the old ones started buying the new ones, and there were so many more of the regular people than there were of the rich, sophisticated people that the companies making the new products prospered.

Another example he remembered from his own life was the transistor radio that Sony marketed in the nineteen-fifties. It was a terrible radio, you could barely make out the music for the static, and it had no chance of competing against the nice big RCA or

Zenith consoles that middle-class families had on tables in their living rooms. But the transistors succeeded wildly at the bottom of the market, with the rebar of humanity: teen-agers. For teen-agers at that time, the alternative was nothing, and the transistor was better than that. Then, gradually, the transistors got better, and, by the time they got good enough to interest grownups, RCA and Zenith were too far behind to catch up. The same thing was happening now with phone cameras: when they first appeared, they took terrible pictures, but they were so convenient that people used them anyway, and over time they got better. Christensen called these low-end products "disruptive technologies," because, rather than sustaining technological progress toward better performance, they disrupted it.

Christensen was himself a low-end kind of guy. He grew up poor, on the west side of Salt Lake City, which was the wrong side of the tracks. He collected paper tray liners from fast-food restaurants. For years, he drove a 1986 Chevy Nova that he barely fit in—there was a spot on the ceiling where his head would rub that always had a few hairs stuck to it. At home, he wouldn't let food be thrown out: no matter how disgusting it had become, he would eat it, on principle. So if anyone was primed to be the champion of low-end products that triumphed because they were cheap and dumb and low-end people could use them, it was he.

The integrated mills and the mini mills were happy with each other until 1979. "That was the year that the mini mills succeeded in driving the last of the integrated mills out of rebar," Christensen said. "*Bam!*—the price of rebar collapsed by twenty per cent. It turned out that there was a subtle fact that nobody had thought about, and that is that a low-cost strategy only works when you have a high-cost competitor. As soon as the integrated mills fled upmarket, it was just low-cost mini mill fighting against low-cost mini mill. So what were these poor suckers going to do? One of them looked upmarket and said, 'Holy cow, if we could make better steel, we could make money again!' So they attacked the next tier of the market. And the integrated mills? Man, were they happy to wash their hands of that business. Because it was truly such a dog-eat-dog commodity business, and why would you ever defend a twelve-per-cent-margin business when you could focus your assets upmarket on structural steel, where the eighteen-per-cent margins were so much more attractive? And so the very same thing happened again. And as the integrated mills lopped off the lowest part of their product line their profitability improved."

Christensen didn't blame big companies for moving upmarket. They had to grow a certain amount every year, so selling bad products at low margins (like rebar) was never going to seem like the sensible thing for them to do. And venturing into markets that barely existed (like teen-age radio consumers) didn't seem sensible, either, because, without the benefit of hindsight, how could you tell the difference between a bad product poised to take over the nation and just a bad product? You couldn't invest in every dumb thing that came along—you'd go bankrupt. The sensible thing for big companies to do was to pursue higher margins, or to wait until a new product's market became visible enough to be analyzed and large enough to be interesting—but by then it was too late. Meanwhile, the big companies kept doing what they were supposed to, listening to their customers and improving their products in ways that mattered to those customers, until they had improved them too much, climbed so far upmarket that they sailed right off the upper-right-hand corner of the graph, adding more features and power and degrees of perfection than anyone could possibly use, and by that time the bad, cheap, low-end product had improved to the point where it could finally appeal to the big companies' customers, and the big companies failed.

"Toyota did not come to America with Lexuses," Christensen said. "They came with this rusty little subcompact in the sixties that they called the Corona. And then they went from the Corona to the Corolla, Tercel, 4Runner, and *then* a Lexus. General Motors and Ford were up here on the integrated-steel trajectory, making big cars for big people. They'd look at Toyota coming at them from the bottom and say, You know, we ought to go get those buggers, and they'd send down a Chevette or a Pinto. But why would they keep making little subcompacts when they could be making bigger cars for bigger people? It just made no sense."

After studying a few exceptions to the pattern of disruption, Christensen concluded that the only way a big company could avoid being disrupted was to set up a small spinoff company, somewhere far away from headquarters, that would function as a start-up, make the new low-end product, and be independent enough to ignore what counted as sensible for the mother ship. But truly independent spinoffs like these were rarely created. Why would you hire an entirely new staff—a new marketing department, for instance—when you already had a crackerjack marketing department that would keep costs down and margins up? And why would you open a new factory

far away, where its managers couldn't benefit from your expert advice? Now, having done his research, Christensen could tell you that getting away from your expert advice was exactly the reason that creating a spinoff was necessary. But why had so many managers, people just as smart as he was, failed to see what he saw? Why had they all fallen into the same trap?

After puzzling over this mystery for a long time, he finally came up with the answer: it was owing to the way the managers had learned to measure success. Success was now measured not in numbers of dollars but in ratios. Whether it was return on net assets, or gross-margin percentage, or internal rate of return, all these measures had, in the past forty years, been enshrined into a near-religion (he liked to call it the Church of New Finance) by partners in hedge funds and venture-capital firms and finance professors in business schools. People had come to think that the most important thing was not how much profit you made in absolute terms but what percentage of profit you made on each dollar you put in. And that belief drove managers to shed high-volume but low-margin products from their balance sheets, even though nobody had ever come across a bank that accepted deposits in ratios. This was why he called it a church: it was an encompassing orthodoxy that made it impossible for believers to see that it might be wrong.

One of the first C.E.O.s to understand the significance of Christensen's idea was Andy Grove, the C.E.O. of Intel. Grove heard about it even before Christensen published "The Innovator's Dilemma," in 1997. Grove had sensed that something was moving around at the bottom of his industry, and he knew that this something was threatening to him, but he didn't have the language to explain it precisely to himself, or to communicate to his people why they should worry about it. He asked Christensen to come out to Intel, and Christensen told him about the integrated mills and the mini mills, and right away Grove knew this was the story he'd been looking for. He had Christensen tell the same story to his staff, and "rebar" became a company mantra. Intel brought out the Celeron chip, a cheap product that was ideal for the new low-end PCs, and within a year it had captured thirty-five per cent of the market. Soon afterward, Andy Grove stood up at the COMDEX trade show, in Las Vegas, holding a copy of "The Innovator's Dilemma," and told the audience that it was the most important book he'd read in ten years. The most important book Andy Grove had read in ten years! A man from *Forbes* was in the audience that day,

and in 1999 Grove and Christensen appeared together on the cover of *Forbes*, and things were never the same for Clayton Christensen again.

His timing was perfect: it was the turn of the millennium, dot-com businesses were springing up all over the place, Digital Equipment Corporation, a giant of the computer age, was disintegrating, and AOL was suddenly and inexplicably worth as much as Time Warner. Obviously, everybody had to be on guard, but against what? Into this chaos and uncertainty came Christensen, telling his story about the steel industry. Not only was the story convincing; it was also what anxious executives wanted to hear. After years of being told that smart managers succeeded and stupid managers failed, here was someone saying that smart people could fail *because* they were smart, because they did everything they were supposed to do. This was not only comforting; it also made the theory sound more counterintuitive than it really was. In the end, after all, it was saying what every management theory said: managers failed because they did something wrong.

The other thing about Christensen was that his book wasn't just for geeky staffers in strategic-planning groups. He was a master storyteller, and C.E.O.s learned through stories, they remembered stories, and they repeated stories to the people who worked for them. Within a year or two, Christensen's theory of disruption was ubiquitous. Steve Jobs told people that he had been deeply influenced by Christensen's book. Michael Bloomberg sent copies of it to fifty of his friends. Bill Gates complained that Christensen's theory had become a required slide in every funding presentation, but he also invited Christensen to his house. The book sold half a million copies and kept on selling.

"Everybody talks about disruption now," George Gilder, a technology writer and onetime business partner of Christensen's, says. "Clayton inserted that word in the mind of every C.E.O. in technology. Everywhere you go, people explain that they're disrupting this or disrupting that. Every big company now tries to disrupt itself all the time, and it's not clear to me that it's always a good thing—companies that have a good business may prematurely disinvest from it because they see this inexorable process that Clayton describes."

"His ideas are pervasive," Paul Steinberg, the chief technology officer of Motorola Solutions, says. "It doesn't matter what industry, it's almost like a universal law. I've

had ideas of my own squished for just the reason he said they would be, so now that I'm in a higher position I realize there has to be a way of incubating those ideas or the company will perish. He scared the crap out of me."

Christensen is a Mormon. There have been Mormons in his family on both sides for four generations, which is to say very nearly since the founding of the church. His great-grandfather on his father's mother's side, Hans Magleby, was a carpenter in a small town in Denmark who was converted by one of the earliest groups of Mormon missionaries to Europe, in the eighteen-fifties. He travelled to America and took a train to Iowa, which was as far as the railroad went. He couldn't afford a covered wagon, so he made a handcart for his belongings and pulled it on foot a thousand miles to Salt Lake City. Utah had been incorporated as a U.S. territory only in 1850; when the first Mormons settled there, they were fleeing persecution in the United States, and the land was still part of Mexico. Most of the region was so dry as to be nearly uninhabitable, but Brigham Young sent new immigrants to farm the desert, and Magleby was sent to Richfield, a tiny outpost a hundred and sixty miles south of Salt Lake.

Christensen's mother's family emigrated from Germany and went to live on the prairie in Alberta, Canada, where Mormons had also settled in the nineteenth century. His mother, Verda Mae Fuller, attended Brigham Young University, in Salt Lake City. She graduated at nineteen and went to work as a scriptwriter for radio, and when television came to Utah, just after the war, she wrote and anchored a news show for farmers. She met Christensen's father, Robert, at a church function. He worked at a grocery store, stocking shelves. They married and settled in an area called Rose Park. Their house was a small brick bungalow, like most houses in the neighborhood—they were starter homes for returning G.I.s, built right after the war. The women in Rose Park mostly stayed home; the men were mailmen, or plumbers, or worked at the oil refineries north of Salt Lake, or at Kennecott, the copper mill out in Magna.

When they had their first child, Verda Mae quit working for money, but she stayed up all night writing scripts for church productions or articles for church programs, and took care of the kids during the day. There were, eventually, eight kids (Clayton, born in 1952, was the second), and they ate like horses. Before a basketball game,

Clayton would fill a mixing bowl with cereal, mashing it down to get more in. Verda Mae served a lot of defrosted meat pies, and she liked to say at dinner that she'd been slaving over a can opener for five minutes. But she was always busy, and if a kid needed something done she would usually tell him how to do it himself. When Clayton found holes in his socks in second grade, she said to him, "If I were going to fix this for you, this is how I'd do it," and he followed her instructions.

Every election, Verda Mae and Robert went door to door with the kids, handing out flyers. They were practically the only Republicans in their district, and Christensen claims he didn't know that "dumb Democrat" was two words until he was in high school. He subscribed to the *Congressional Record* in fourth grade, and posted a large chart on a wall of the basement to keep track of the votes of selected congressmen and all hundred senators. Both of his parents were active in the church. Robert served as a stake president, overseeing the affairs of eight congregations, and he brought his kids to work with him on the church's hog farm—the church had its own welfare system for the Mormon poor, and part of that was raising hogs to supply pork to the bishop's storehouse.

Christensen was a good child. He was on the school newspaper and in the Key Club. He made all-state in basketball. He read the World Book Encyclopedia all the way through, from A to Z. In high school, he was voted student-body president, and so, one time, when the rough kids from his school beat up the middle-class kids from another school, he went and apologized. He wanted to go to Harvard or Yale, and got into both, but his mother wanted him to go to Brigham Young. Not knowing what to do, he fasted and prayed, and he discovered that God agreed with his mother. That wasn't the answer he was looking for, so he fasted and prayed some more, just to make sure he hadn't misheard or something, but he hadn't, so he went to Brigham Young.

During his freshman year, he met his future wife, Christine Quinn. They were both wearing Sterling Scholar pins, which they'd won in a statewide competition in high school. She asked him what his category was, and he said, "Social Science," and he asked her what her category was, and she said, "Homemaking," and he snickered a little. Then she said, "How did you do?," and he said, "Pretty well, I was the runner-up"—second in the state. "How did you do?" And she said, "I won."

Christine had grown up not far away, in Bountiful, but their families were as different as two families could be and still be Mormon. His family was, as he put it later, an affiliated group of individuals. His father, for instance, was very loving, but came to watch him play basketball only twice. This had always seemed just fine to him. His parents never pushed their kids to do anything in particular. Christine's father, on the other hand, was an ex-Army officer, and his kids were expected to excel at whatever they did. When it came to extracurricular activities, the Quinns moved as a pack. If one Quinn had a swim meet, the thirteen other Quinns would be there in the stands, cheering the family cheer. When the two oldest Quinn boys played baseball, their father coached the team, three of the littler Quinns were bat boys, Mrs. Quinn sold Sno Cones to raise money for the league, and Christine, the eldest child, got trained as a scorekeeper.

Christensen found this continuous togetherness overwhelming, but he figured that he and Christine could do things their own way. Then, a week before they got married, he was driving her home, and she said, "Don't you look forward to when our kids are playing ball and you'll be the coach?" And he said, "But I don't want to be a coach." And she said, "What do you mean? My father was always the coach." He said, "Well, my dad was never my coach and he was a great dad. I don't have to be the kind of father your father was." She said, "Stop the car, I'm getting out." And so it came to pass that when they had children, five of them, he was their basketball coach, and he was a Scout leader for twenty-five years, and, in the merger of the Quinn-Christensen company cultures, the Christensen culture was entirely obliterated—which, he discovered, suited him just fine.

In his last year of college, Christensen won a Rhodes Scholarship, and he went to Oxford to study econometrics. Being a Mormon at Oxford, it was soon clear, was going to be extremely inconvenient. He had already served a two-year mission to Korea, and thought he was certain of his beliefs, but now he decided he'd better figure out for sure whether his was the true church. Each night at eleven, he knelt down and told God out loud that he needed to know whether the Book of Mormon was true. After praying, he sat and read one page, and then he stopped and thought about it. Then he knelt and prayed out loud again, asking God to tell him whether the book was true. Then he read another page. He did this for an hour each night for many weeks.

"One evening in October, 1975," he wrote later, "as I sat in the chair and opened the book following my prayer, I felt a marvelous spirit come into the room and envelop my body. I had never before felt such an intense feeling of peace and love. I started to cry, and did not want to stop. I knew then, from a source of understanding more powerful than anything I had ever felt in my life, that the book I was holding in my hands was true."

After that day, his faith grew steadily stronger, and God granted him special powers. He healed the sick. He spoke in tongues. He saw into the future. Over the years, as he became aware that some Christians didn't think that the Church of Jesus Christ of Latter-Day Saints was really Christian, he spent a lot of time thinking about the difference between what he believed and what other sorts of Christians believed, and he concluded that Christianity had taken a wrong turn sometime in the first century or two after Christ. He didn't know exactly what had happened, but he imagined that the early Christians had got impatient with their growth rate—converting people one by one was too slow—and so they had gone on a mergers-and-acquisitions binge. But, as with any merger, this process involved negotiation and compromise. "They went south to Egypt," he says, "and in that merger the Christians said, 'Man, this is gonna be complicated, because we have one god and no rituals to speak of, and you guys have multiple gods and lots of rituals.' And so in the end they settled on one god with lots of rituals. Then they went over to the Greeks, and this was a tough one, because the concept of God as Christ taught it was that God exists within the universe, but the Greeks thought that God existed above the universe, and in the negotiations Christianity adopted the Zeus view of God." These negotiations culminated in the fourth century, at the Council of Nicaea, where under the orders of Constantine a group of bishops voted on what would henceforth count as Christian orthodoxy. Fifteen hundred years later, the Latter-Day Saints, Christensen believed, had restored the true early Christian tenets, the ones that had come straight from Christ, such as the belief that there is a mother as well as a father in Heaven. But mainstream Christianity was a synthetic religion, its god a synthetic god.

"One of the big fast-food chains was trying to beef up the sales of its milkshakes," Christensen said, pointing his clicker to call up another slide. "These were sophisticated marketers. They had developed a profile of the quintessential milkshake customer—actually, I fit right in the mold. People like me

gave them very clear feedback, and they would improve the milkshakes on those dimensions, but this had no impact whatsoever on sales or profits."

After the success of his first book, many companies had asked him to teach them how to avoid being disrupted. He decided to start a consulting company, Innosight, which would dispense advice based on his theories. (One C.E.O. who never asked for his help, despite his admiration for "The Innovator's Dilemma," was Steve Jobs, which was fortunate, because Christensen's most embarrassing prediction was that the iPhone would not succeed. Being a low-end guy, Christensen saw it as a fancy cell phone; it was only later that he realized that it was also disruptive to laptops.)

"We decided to try a different approach, which was to ask, 'I wonder what job a customer is trying to do when he hires a milkshake?' We stood in one of their restaurants for eighteen hours one day and took very careful notes on what time each customer bought a milkshake, what was he wearing, was he alone or with other people, did he buy other food with it or just the milkshake, did he drink it in the restaurant or go off with it? It turned out that nearly half the milkshakes were sold in the very early morning. It was the only thing the person bought, and he was always alone. He always got in his car and drove off with it.

"We came back the next day and confronted these people as they came out of the restaurant, surreptitiously holding their milkshakes. And we asked them, in language they could understand, 'What job were you trying to do that caused you to hire that milkshake?' It turned out that they all had the same job: they had a long, boring drive to work, and they needed something to do while they were driving. One hand had to be on the wheel, but, jeez, somebody gave me another hand and there isn't anything in it. And I'm not hungry yet but I know I'll be hungry by ten o'clock. So what do I hire? If you promise not to tell my wife, I hire doughnuts a lot, but they crumb all over my clothes and they're gone too fast. I've hired bagels, but they're dry and tasteless, so I have to steer the car with my knees while I put the jelly on, and if my phone rings I'm in big trouble. But, let me tell you, this milkshake is so viscous that it takes twenty-five minutes to suck it up that little straw. And you can turn it sideways and it doesn't fall out!

"Once you understood what job the customers were trying to get done, how to improve the product became clear: you make the milkshake even more viscous. You

stir tiny chunks of fruit into it, not to be healthy, because they didn't hire it to be healthy, but to make the commute more unpredictable—they're driving along and—*upp!*—a lump of fruit. And you move the dispensing machine to the front of the counter and give people a prepaid swipe card so they can just gas up and go."

This insight—that people go looking not for a product but for a solution to a problem they have—was not original to Christensen. The late Theodore Levitt, of Harvard Business School, liked to quote to his students the adage that a person doesn't want a quarter-inch drill; he wants a quarter-inch hole. But Christensen's milkshake experience was such a satisfying illustration of this idea, and the idea itself, which he dubbed "jobs to be done," meshed so well with his personality, that it soon took its place alongside the disruption of the steel industry as part of his repertoire of lessons.

Christensen's personal experience of products was one of prelapsarian simplicity: he had a need—a job-to-be-done—so he searched for an object that would help him meet that need. He understood that other people's experience of consumerism was more complex than his own, involving nuances of status and imitation and manufactured desire, and his theory could accommodate that—your job could be to appear more high-class to your peers, for instance. But Christensen was a man of function, not form. He loved machinery, he loved to see how things were made and problems solved. Every Christensen family vacation included a trip to a local factory, and it was usually Christensen's favorite part of the trip.

One recent Christmas, Christensen gave Christine, among other things, a homemade book in which he had pasted photographs of all the things he had bought her or the household over the years which she had made him return to the store. One of the Christensen traits that had stubbornly persisted in him, despite years of training and negative reinforcement, was that, when it came to products, he had no interest in perfection. He was a man of the good-enough dishwasher, the good-enough chair, the good-enough floor. For him, a good decision was a made decision. Christine, on the other hand, was still a perfectionist Quinn. And so, over the years, chairs that he'd fixed had had to be reupholstered, dishwashers that he'd bought had had to be disconnected and replaced, lighting fixtures he'd thought were just fine had to be unhooked and sent back.

In December of 2009, Christensen and Christine were in Washington to see the Christmas lights on the Mormon temple on the Beltway. In the middle of the night, he felt pain in his back. At the hospital, doctors found three large tumors. He was told that he had a follicular lymphoma that was likely to be terminal. He was fifty-seven years old; his father had died of lymphoma at forty-nine. He said to God, "I think I have probably done things in my life that you wanted me to do. And if in your judgment there's more work that needs to be done on the other side, I'm happy to go. And on the other hand if I can be more useful by staying in this side, my preference is to stay." He said of this time, to *Forbes*, "I felt good. I don't think that it was in any way depressing."

Christensen tears up easily, but he cries mostly in gratitude. When he received his diagnosis, he was calm. "What would be depressing is if I'd spent my life to that point on things that didn't matter," he says. "But I felt that I could look back on my life and think about lots of folks that I helped become better folks. And I've tried to be as good a man as I could be." He had always tried to help people, whether through teaching, or consulting, or helping out with money, or signing up every week he could in church for good deeds. He would miss his family when he was dead, but he'd see them again in Heaven. In the scale of eternity, it wouldn't be long. The important thing was that he was right with God.

When Christensen's mother, at the age of eighty-two, was told that she was going to die in six weeks, of pancreatic cancer, she was excited. Not resigned but actually excited. She said, "Clayton, do you know how long it's been since I saw your father, or your brother Milton?" (Milton, her third child, had died, of a blood disease, when he was eleven. Clayton was thirteen.) She had lived a good life. She looked forward to the future.

Mormons believe that family is for eternity, and that in Heaven they will be together with their relatives as they were on earth. They believe that after death they will grow to resemble their heavenly parents as children grow to resemble earthly parents, until eventually they become gods. Even so, when Christensen told Christine about his conversation with God she said, "Wait a minute, you don't go across town without us talking about it, and you're suggesting a transfer to another sphere?"

She wasn't surprised by his tranquillity, however. Two years earlier, they had been in Montreal over a weekend for a large church gathering. Christensen was then one of the Seventy—he was responsible, along with a few others, for the Mormon church in the northeast quadrant of North America. At three in the morning, he felt a terrible pain in his chest. He didn't want to go to the hospital, because that would ruin the meeting the next day, so he knelt down at the side of the bed and said to God, "I have a problem. Whatever this is, could you please make it go away?" The pain did go away, so he went back to sleep, and he didn't mention it to Christine. They went home. The day after that, he was raking leaves in their garden when he felt the pain again. He realized he was having a heart attack, so he fetched his briefcase on the chance that he would have time to get some work done, and then he told Christine that she needed to drive him to the hospital.

Christensen's initial cancer diagnosis turned out to be incorrect. His lymphoma was a type that responded well to treatment. He underwent four months of chemotherapy and was declared to be in remission. Three months later, he had a stroke. He was giving a talk to a church group one Sunday in July when, in the middle of a sentence, he stopped making sense. He opened his mouth and things that sounded like English syllables came out, but they were not words. After the stroke, he lost almost all his language, but he worked fiercely for twelve hours a day to get it back. Christine was always there helping him; it was difficult to be so dependent on people. One night, he set his alarm for two in the morning so that he could leave the house alone, and drove to a twenty-four-hour drugstore, just to practice buying something, but he couldn't find the words.

Little by little, he got his language back, except now he had to think about every word he used, and at the end of the day his brain hurt. Even after eighteen months, he often made mistakes. He would substitute words that rhymed: he said "store" instead of "shore," and "bake" instead of "make." He often mixed up "wife" and "mother." Giving a talk at church, he had said "Saviour" when he meant to say "Satan."

"I'll just tell you a silly story to illustrate what's going on." Christensen had received a visit from an official at the University of Phoenix. "He said, 'Clay, we've read your stuff, we'd like to record one of your best lectures to show to our students.' So I went to our dean and asked him if he thought I should do this, and he

was just incredulous, he said, 'What's going to happen to your brand?' But I said, 'It's the low end today that is the mainstream tomorrow,' and he said, 'Well, fine.'"

This particular low-end product had been an obsession of Christensen's for some time. Years before, he had become fascinated by Howard Gardner's theories about multiple intelligences and different ways of learning. Christensen thought in visual terms—he found language ambiguous, and didn't feel that he really understood something until he could draw it as a graph. But he had learned from editors who begged him to remove the graphs from his books that this was not true of everyone. He realized that, whereas in a regular classroom students could learn only in one way—the way the teacher taught them—online learning offered students who thought differently from their teachers a way to get help. What's more, recorded lectures and online learning were much cheaper than teachers in a room, so they had the potential both to bring otherwise unavailable courses to underfunded schools and to disrupt not-underfunded schools, like Harvard. Few people at the not-underfunded schools agreed with him—they couldn't imagine that an online course could ever be as good as the old-fashioned kind. They didn't realize that a low-end product didn't need to be as good as a high-end one to drive it out of a market.

"Harvard won't allow you to record in their classrooms, so these guys booked a beautiful auditorium in the Institute for Contemporary Art," Christensen said. "Behind me was this massive bay window, and you could see the whole harbor. The guys had told me, 'We'll have forty or fifty students so you don't have to present to an empty room.' So I showed up about ten minutes early, and I looked out at the students, and, oh, my gosh! These were *beautiful* people! I went and asked one of them, 'What school do you guys go to?' And he said, 'Oh, we're not students, we're models.'

"So I did my best, and about a month later the official came back and asked me, 'Have you ever seen Clay Christensen teach?' And I said, 'Actually, no.' He showed me the video. Holy cow! Clay Christensen was unbelievable! There was not a single word that didn't need to be there"—they'd all been edited away. "And then, instead of this boring PowerPoint slide about the steel industry, theirs was three-dimensional and dynamic, and they even had *music*, so when the mini mills went up into the sheet-steel market the music came to a crescendo! I'm not kidding. It was fantastic!

So I said, 'Jeez, how many of your students are you going to show this to?,' and he said, 'Well, we're thinking we might show it to all hundred and seventy thousand of them.' And I said, 'Oh. I thought Harvard was one of the bigger business schools in America, and we bring in nine hundred a year.' And I thought, There is a concept that we used to hear about years ago, and it's called scale. Ever heard of it? Oh, my gosh. And yet we feel no pain."

Some people said that Christensen was a man with a hammer to whom everything looked like a nail. But he wasn't the only one who saw nails everywhere. Not long after "The Innovator's Dilemma" came out, Christensen got a call from William Cohen, at that time the Secretary of Defense under President Clinton, who asked him to talk to him and his staff about his research. Imagining a few second lieutenants and interns, Christensen was startled to see, upon entering Cohen's office, the Joint Chiefs of Staff, the Secretaries of the Army, the Navy, and the Air Force, and their Under-, Deputy, and Assistant Secretaries, all waiting to hear him. Bewildered, Christensen told his story about the integrated steel mills and the mini mills, until the chairman of the Joint Chiefs interrupted him and said, "You don't have any idea why you're here, do you?" Christensen admitted that he didn't, and the chairman explained that, for him and his staff, the Soviets were sheet steel, terrorism was rebar, and they needed to figure out how to reconfigure their organization to capture the low end of the market. (Later, the government decided to set up an independent spinoff terrorism branch, in Norfolk, Virginia.)

At one point, it was suggested that Christensen try to apply his theory to health care. Along with two doctors, he spent several years studying the problem. He concluded that in many ways health care was like the steel industry, but before the mini mills got good enough to make I-beams and sheet. Big hospitals were like integrated mills: they could do everything that could be done, because they had the best equipment and the best-trained specialists, but they were very expensive. Each patient was different, and required a different combination of resources. As a result, very little could be routinized, and the difficulty of managing all those thousands of unpredictable combinations resulted in layer upon layer of expensive administration.

He realized that some medical problems were complex and poorly understood, and needed to be diagnosed and treated in big hospitals by expert doctors. But many

others were very well understood, their care had become routine, and they did not need experts or fancy equipment at all—they could be managed in some cheaper venue, such as a clinic or a doctor's office. As medical science advanced, more conditions would become amenable to routine treatment, and expensive hospital care could be restricted to fewer cases. Just as the low-cost mini mills had pushed the integrated mills out of the steel market, low-cost clinics could disrupt the hospitals.

That was what *ought* to happen, he believed. What would happen would depend upon insurance companies and regulations. As long as hospitals were paid by the procedure, they obviously had no incentive to leave the simpler treatments to clinics. And as long as hospitals competed with other hospitals for patients they would continue to add ever more facilities, growing ever more expensive: in health care, because of the perverse incentives that insurance put in place, competition actually raised prices rather than lowered them. There needed to be some kind of integrated managed-care system where insurance and hospitals worked in concert, such as Kaiser Permanente in California, where doctors were employees of the system rather than independent operators. That gave the system an incentive to keep patients healthy while treating them as inexpensively as possible.

Applying his ideas to health care and education was exciting, and Christensen started a think tank, Innosight Institute, to keep that work going. But what he felt he had been put on earth by God to do was help people become better people. He decided to write a book (with two co-authors), "How Will You Measure Your Life?," in which he applied his theories about how good companies lost their way to a discussion of how good people lost their way.

At his business-school reunions, he had talked to people whose careers had turned out to be boring or without purpose but who found themselves held captive by their expensive lives. He had seen people who had been through one divorce, two divorces, whose kids were far away or no longer spoke to them. And he had seen something that shocked him deeply: two members of his Rhodes class had been prosecuted for criminal behavior, one for insider trading (the charges were dropped), the other for having sex with a teen-ager; and a business-school classmate who had seemed to him a good man who loved his family, Jeffrey Skilling, the former president of Enron, was

now divorced, had lost a son to a drug overdose, had been jailed for public drunkenness, and was serving a twenty-four-year prison term for financial felonies.

How did this happen? Each year, he saw wonderful, bright young people sit in his class and then graduate full of hope for the future. Many of them came to talk to him about decisions they were contemplating—what job to take, where to live, what most to value. None of them planned on failed marriages or lost children or meaningless lives. And yet each year some of these bright young people, almost all of them meticulous planners and careful analysts of risk, set themselves on courses that would lead them to ruin.

Christensen had seen dozens of companies falter by going for immediate payoffs rather than long-term growth, and he saw people do the same thing. In three hours at work, you could get something substantial accomplished, and if you failed to accomplish it you felt the pain right away. If you spent three hours at home with your family, it felt like you hadn't done a thing, and if you skipped it nothing happened. So you spent more and more time at the office, on high-margin, quick-yield tasks, and you even believed that you were staying away from home for the sake of your family. He had seen many people tell themselves that they could divide their lives into stages, spending the first part pushing forward their careers, and imagining that at some future point they would spend time with their families—only to find that by then their families were gone. Christensen had made a pledge to God not to work on Sundays, and a pledge to his family not to work on Saturdays and to be home during the week early enough for dinner and to play ball with the kids while it was still light. Sometimes, in order to keep these commitments, he would go to work at three in the morning.

Another thing he worried about in both businesses and families was outsourcing. Look at Dell: over the years, the company had outsourced more and more of its manufacturing to a company in Taiwan—its returns increasing each time, as it focussed on higher-level activities like design and marketing—until in the end the Taiwanese firm started making its own computers for less money. When he thought about Dell, he thought about how, when he and Christine were first married, she had made most of the family's clothes, and they had picked apples and made applesauce, and picked tomatoes and made tomato sauce, but then store-bought clothes and

applesauce and tomato sauce became so cheap that it seemed crazy to keep making them at home. Luckily, they had bought two wrecks of houses and fixed them up themselves, so there had always been Sheetrocking or plastering or painting to do with the kids, but he knew that most of his students would consider this a waste of time. Wanting their children to spend their extracurricular hours in the most profitable way, they would pay for lessons and smart, enriching activities, and they would outsource the low-end, dumb tasks like mowing the lawn and mending clothes, and the children would grow up without knowing how to solve practical problems by themselves, or do something they didn't enjoy or thought they weren't going to be good at.

He worried most of all about his students' integrity. He told them about Jeff Skilling, but the thought of prison was so extreme he could see that most of them dismissed it. They didn't seem to realize how easy it was for a good person (and he believed that almost everyone started out good; Mormons don't believe in original sin) to make one tiny, unimportant compromise after another, until he was too compromised to find an honest way back. He told them about how at Oxford he had refused to play basketball on a Sunday, even though it was the national championships, because he had promised God he wouldn't; and how much pressure his coach and teammates had put on him to compromise just that one time. Later, he realized that if he had said yes that time he would have had no standing to say no another time, and what he learned—one of the most important lessons of his life—was that it was easier to do the right thing a hundred per cent of the time than ninety-eight per cent of the time.

He had talked for more than an hour, and at the end of the talk several people asked him questions. He told each of them that they had asked a great question, and if they noticed that he said that to everybody, well, it didn't matter, because he always meant it. He urged them to be in touch.

"If I can ever be useful to you, oh, my gosh, what a magnificent company," he said. He looked up and smiled again. "If you ever need somebody to bounce an idea or two off, it's the only way I can ever learn, if folks like you would give me a chance to think things through, so I would love to talk with you," he said. "Thank you so much." ♦