Clayton Christensen with James Euchner

MANAGING DISRUPTION: AN INTERVIEW WITH CLAYTON CHRISTENSEN

Clayton Christensen talks with James Euchner about how companies can anticipate disruption and the challenges of managing disruptive change.

Clay Christensen is best known for formulating "the innovator's dilemma": the observation that the same behaviors that sustain a company—listening to customers and investing in innovations to meet those customers' needs—can ultimately lead to failure. Focusing too heavily on current customers' needs can blind the company to a disruptive innovation, one that starts in new markets and changes the way customers perceive the current product. Since he articulated the problem in *The Innovator's Dilemma* and described how well-managed companies fail precisely because they do what rational analysis would dictate, Christensen has worked with many companies confronting disruptive change. We spoke with him about how companies can anticipate disruptive forces, the tactics they can use for moving before

customers do, and the organizational challenges associated with confronting disruption.

James Euchner [JE]: Thank you, Clay, for spending the time with me this morning.

Clayton Christensen [CC]: Oh, I'm delighted. Thank you.

JE: As those responsible for innovation in our organizations, we're very interested in how people get close to their customers, understand what their customers' needs are, and then innovate into them. You've studied this in great depth, and you caution people that you can get too close to your customers or listen too much to your customers. Can you comment on that?

Clayton M. Christensen is the Robert and Jane Cizik Professor of Business Administration at the Harvard Business School and is widely regarded as one of the world's foremost experts on innovation and growth. Christensen is the founder of Innosight, a consulting firm that uses his theories of innovation to help companies create new growth businesses, and Rose Park Advisors, a firm that identifies and invests in disruptive companies. He is also a bestselling author of five books, including his seminal work The Innovator's Dilemma *(1997), which received the Global Business Book Award for the best business book of the year;* The Innovator's Solution *(2003); and* Seeing What's Next *(2004). Recently, Christensen has focused the lens of disruptive innovation on social issues such as education and health care. He founded Innosight Institute, a nonprofit think tank whose mission is to apply his theories to vexing societal problems. Two of his more recent books also examine these issues;* Disrupting Class *(2008) looks at the root causes of why schools struggle and offers solutions, while* The Innovator's Prescription

(2009) examines how to fix our healthcare system. Christensen holds a B.A. with highest honors in economics from Brigham Young University (1975) and an M.Phil. in applied econometrics from Oxford University (1977), where he studied as a Rhodes Scholar. He received an MBA with High Distinction from the Harvard Business School in 1979, graduating as a George F. Baker Scholar and was awarded his DBA from the Harvard Business School in 1992. He holds four honorary doctorates and an honorary chaired professorship at the Tsinghua University in Taiwan. **cchristensen@hbs.edu**

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Clayton Christensen, bestselling author of The Innovator's Dilemma, *works with companies confronting disruptive innovation.*

Almost the only way to [find the disruptive opportunity] is to just watch how the customers live their lives.

CC: Sure. If you look across the sweep of business history, the big new waves of growth have been started by companies that actually develop what I call "disruptive innovation," and a disruptive innovation is an innovation that makes it so much simpler and so much more affordable to own and use a product that a whole new population of people can now have one—people who, historically, didn't have the money or skill to be in the market. Some examples of these sorts of disruptive innovations are the personal computer, the router, Toyota's automobiles, Kodak's original camera, Xerox's original photocopier, Canon's desktop photocopier.

All of these innovations made something so much simpler and more affordable that a new population of customers got pulled into the market. In every one of those cases, though, the performance of the disruptive products wasn't anywhere near as good as the performance of the established products that were being sold to the players in the market.

For example, when Canon disrupted Xerox, their most important customers operated high-speed photocopy centers, and they needed even faster, ever more fully featured machines. These little tabletop copiers [from Canon] could do three or four copies a minute. They couldn't collate;

they couldn't enlarge or reduce or do grayscale replication. But they made it so much simpler to make photocopies that many people actually had two copiers for a while. For the simple things, we had a little Canon around the corner from our office, and for the high-volume jobs, we still took the work to the corporate photocopy center.

When Xerox listened to its [photocopy center] customers, it got no signal from them that this little tabletop thing was important. But then Canon, little by little, made it better and faster and more capable and more convenient to use until, ultimately, an entirely new market was created. Now it seems that to be within 15 seconds of a high-speed photocopy machine is almost a constitutional right, you know?

And Xerox missed most of that growth. Oddly, it's because they listened to their customers rather than doing a deeper analysis of, "Well, what is the job that the customer is really trying to get done?"

JE: In that case, it was actually the same customer—the large enterprise customer—that used both products. How could Xerox have picked up the weak signal as it was coming out? How could they have known that the small copier was actually important? What attributes of the world would cause them to say, "Hey, wait a second, I know it doesn't look like this is what my current customers want, but I had better pay attention?"

CC: You know, almost the only way to do it is to just watch how the customers live their lives. So if I stay with photocopiers for a minute: if you watched how people were living their lives, you'd see them say, "Darn it, I just don't have the time to walk all the way over there to the corporate copy center, so I guess I'll just do without an extra copy of this thing," because they just have a

couple of pages. They need to make two copies of each to pass around the table for a meeting.

By watching them, you'd see, well, yeah, that photocopy center is actually organized to do a particular job that arises in the life of those customers, but there's another job, which is, "Crud, I didn't plan ahead. I don't have any time. I need this right now." What this highlights, I guess, is that the *customer* actually ought not be the fundamental unit of analysis, but the *job* should be. What's the *job* that arises in the customer's life? The same customer might have two or three jobs for which a photocopier like this could get "hired."

JE: You have to be pretty insightful to do this, because your sales force is talking to a different buyer. And doing the observation takes a long time. You'd have to sit around a lot of offices for a long time to see what the "job to be done" is. Do you have any examples of how someone has successfully done that—figured out the new job before they got blindsided?

CC: Yes, there are several really interesting ones. Intuit, the personal software company, actually developed a practice of watching their customers—with the customer's permission—take their original Quicken product home. They'd watch them boot it up on their computer, and then they'd watch them use it and talk to them about, "Why did you do this?" and so on. What they were originally trying to do was to just understand how to get the unused features off the product and how to get the used features easier to use.

They observed that about 30 percent of the Quicken customers weren't using it to balance their personal checkbooks. They were using it to keep track of their finances for a small business that they ran, and they talked to these guys about what it was they were really trying to do, and they found that they actually didn't *want* to keep the books of their business. That wasn't their skill. It wasn't what made them money. What they were *trying* to do was not to have to keep the books, but they knew they couldn't run out of cash, and they had to pay taxes, right?

And so Intuit developed this product called QuickBooks that made it really easy to get the basic jobs of a small business done and freed up their time to do what really helped them make money. There were a lot of small business software packages in the market at the time, but they all had a lot of accounting features—aging of accounts receivable and other features that an accountant might be very interested in. There were a few accountants and small businesses who actually valued those features, but if you looked at what the typical small business owners were trying to do, it was very different.

JE: So they came up with a less-featured product, easier to use, which actually moved them up-market into small businesses?

CC: That's right. It was very disruptive. In two years, they went from 0 percent to 85 percent market share in the small-business software market.

JE: Wow, incredible.

CC: Anyway, it's a great illustration. Let me just say one other thing because you posed a really interesting paradox: doesn't it take a lot of time and trouble to crawl inside of the customer's premises and watch how they live their lives? Yes, it does, for an individual marketer. It would be so much easier to just buy data from Gartner Group or something like that. But if you look at that millions and millions of dollars that most companies spend developing a product and then trying to launch it into the market, this is actually a piddly little investment to get it right.

JE: I would agree. It takes *calendar* time, too. It's a small amount of money over sometimes a lengthy period of time. Often, the tyranny of the urgent prevents people from getting that kind of insight.

CC: That's right.

JE: Can we dig a little deeper into the case of the disk-drive industry, which was kind of the poster child in your first book? In that case, the customers for the disruptive technology were actually a completely different set of customers. If you were selling disk drives, you were selling them to one set of companies, say the mainframe makers, and the disruptive technologies were being sold to people you weren't even talking to, like the minicomputer makers. How would you get to those customers? As you point out, you couldn't go to IBM because they were listening to *their* customers. How would you know that there was a disruption coming even if you did the kind of observation you are talking about?

CC: Yes. I wish there were a cookbook. At this point, instead of it being marketing science, it's marketing intuition or marketing art. But the question you have to ask is, is there a population out there who can't do something because the solution is just too expensive and too inconvenient? Or are there people who *can* do something, but they can't do it in a context that is convenient?

If we just kind of go across the sweep of history again, there were a lot of people who simply couldn't afford to eat out, and so you saw them not eating out. Fast food, disparaged as it is by a lot of people, actually made it much more convenient and much more affordable to eat out. And so when you observed people choosing not to eat out because, "Geez, I only have an hour for lunch," there was a symptom of an opportunity there.

You see these things and you say, "Well, you know, the existing infrastructure is so rigid that you can't conveniently do things when you need to do them." So it's that kind of questioning. Are there people who don't have access because they can't afford it, or because it requires

too much school, or because there are times that it's not convenient? That's almost always a signal that I ought to go in there and probe to understand what [those people are] really trying to do.

JE: You have to develop the skill of asking, "Who are the people who are not being served at this time, in this particular segment?"

CC: That's right. I'll give you an example that's playing out right in front of our eyes, and I can claim some credit for this because these guys read my research. But anybody with children in elementary school has lived through this experience: My daughter wakes up, and she's got an earache; we can't send her to school. We have to wait until 9:00 when the receptionist at the doctor's office saunters in. We call her up, and she says, "We can't see her today."

And we beg, "She's got an earache; can't you work her in?"

And so the receptionist says, "Yeah, why don't you come around 2:00, and we'll see what we can do." So we show up at 2:00, and we wait for two hours. Finally, the doctor lets us in, and in two minutes, the doctor looks at her ear and says, "She's got an ear infection," prescribes Amoxicillin, and sends us home with a $150.00 bill. But I knew she had an ear infection: I've lived through this before. There's a job needing to be done, which is not diagnosis—"I wonder what's wrong"—but rather prescription—"I know what's wrong; I just need the solution, and I need it now."

So these guys in Minneapolis came up with a concept called the MinuteClinic. They opened these clinics in CVS pharmacies and Target Stores. They're manned by nurse practitioners, and there's a big sign on the door that says, "We don't treat everything, guys," but there are 14 rules-based disorders—instances where there's a clear, unambiguous go/no-go diagnostic. And because the diagnostic is unambiguous, you don't need a doctor, you just need a quick convenient solution. These guys are going like gangbusters.

JE: Let's shift gears a little. Let's say that you are in a company and you have reason to believe that there might be a disruption happening to your business. How can you make the point heard? It's not a message people want to hear, and I have been in companies where people were trying to talk about a disruption, but they were voices in the dark.

CC: That's a great question, Jim. Let me stay with the MinuteClinic for a minute to illustrate the underlying cause and then turn to how you solve this problem.

You could imagine that, in a doctor's office somewhere, a nurse observed the gross dissatisfaction among the customers and saw this great opportunity. Some of the staff might have kids themselves, and they've lived

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through the problem. But the way the doctor's office is structured to make money, the doctor can only be reimbursed if the doctor provides care. What they need is a way to be reimbursed $175.00 per visit, not $150.00. And the nurse comes at them with this $40.00 per visit idea. It just doesn't make sense in the business the way it's structured. That's why disruptions are very hard to deploy within an established business.

Let me tell you about an experience I had with Andy Grove at Intel [that illuminated the problem for me]. When he was running Intel, they used this way of thinking a lot. Intel was, in the late '90s, being disrupted by much less expensive chips from Cyrix that were the brains of the entry-level computer systems. Cyrix's share at the low end of the computing business grew from 10 percent to about 70 percent in 18 months.

And as Cyrix was driving Intel out of the low end of the business, it felt great to Intel because they were reducing their volume in the lowest-margin part of the product line even while they're adding higher performance Pentium chips to the high end of the product line, where the margins are better. Overall, their reported margins to Wall Street were improving and, as you know, Wall Street likes margins. But then one of their engineers saw a piece that we had written and realized, "Gosh, this is happening to Intel."

Anyway, she engineered a meeting between me and Andy and his senior staff. Now Grove is a very let's-get-down-to-business kind of guy. I wasn't two minutes into the meeting before he said, "Look, we have a lot to do; just tell us what this means for Intel."

And I said, "Andy, I want to, but you have to give me 30 minutes because I need to explain the model that has emerged from my research, and then let's apply it." So he kind of impatiently sat back, and 10 minutes into the presentation, he said, "Look, I got it." And he then recounted to me what it was he understood. And by goodness, he *did* get it.

So he said, "So tell me what it means for Intel."

And I said, "Andy, I want to, but if you'll just give me ten more minutes. I want to describe how this process of disruption worked its way through another very different industry than microprocessors, and then let's talk." And I described how the steel minimills at Nucor had disrupted the big, integrated mills like U.S. Steel and Bethlehem Steel.

And as I got to the end of that story, he interrupted me again, and he said, "I got it. So what it means for Intel is *this*." Looking back on that experience, even though I thought I knew what it meant for Intel, had I attempted to *persuade* him that I knew more than he did about what was going on in his business, it would've just been hopeless. Instead of trying to tell him what to think, fortunately, I taught him how to think, and then he could reach his own conclusion.

Well, I was interested that he did not then stand up in front of the company and announce, "I've got this insight; we're going here." He took the company through a deeper change. He set up an educational process [that replicated his own process of reaching an understanding of the concepts]. He brought in 100 managers at a time for a whole day to learn about disruptive innovation. I helped them do this. We'd present a little bit of my research and then have breakout groups discuss who's disrupting Intel, present a little bit more and have breakout groups discussing how Intel could disrupt other people, and present a little bit more and have breakouts about how Intel's processes and organizational structure needed to change to facilitate disruption.

And over the course of a year, Grove brought in 18 different groups. I kind of phased out, and the management phased in terms of conducting these sessions, but when it was done he had taken 2,000 people through this process.

The insights [from these sessions] led Intel to launch what they now call the Celeron chip, for example, as well as the decision to get into flash memory because it was going to disrupt disk drives. These were quite counterintuitive initiatives for Intel at the time, because the margins on those products were so much lower than the ones in processors.

I was talking to Andy a couple of years ago about how they had pulled that off, and he said, "Well, your models didn't give us any answers, but they gave us a common language and a common way to frame the problem so that we could reach consensus around a counterintuitive course of action." And that, to me, was one of the most profound lessons I've ever learned.

JE: That's very impressive.

CC: So, when you see members of a management team standing in the way of what might seem to be an obvious innovation, it's not because they're obstructionists, generally, but rather, they don't share the same language. They don't understand how to frame the problem, and therefore, they're doing what makes sense in the terms they are used to dealing in. You just need to teach them how to think differently about the problem. [That's what Andy Grove was doing with those workshops.]

JE: So it's a very integrated approach. When I was first thinking about this, I was thinking in terms of things you can do in the investment priority process to categorize things differently. What you've described is a much more holistic way of thinking.

CC: That's right. There are actually important things that you have to do in an investment prioritization process. But even there, if the decision makers within that process don't share a common language, they're just always going to be coming back one more time and asking, "Why are you saying we need to do this?" And it's that kind of second-guessing that really slows down commitment of resources to disruptive innovation programs.

JE: Right. It is important that the people get a pretty deep understanding of the concept as opposed to a sort of "slogan" understanding. Otherwise, the whole process can become bastardized. You really need that deep learning so that when people are talking about "disruptive," they mean the same thing and they understand the implications. That is what enables a sustainable discussion.

CC: Yes, that's another great point, Jim. If I had it to do over again, I would not call the phenomenon "disruptive," because there are so many prior connotations in

the English language. In fact, at Intel, Andy called it the "Christensen effect" because he could see the ambiguity in that word. All of us have a propensity, whenever we're introduced to a new concept, to twist the concept to reinforce the way we already think about the world. It takes a bit to unwind things.

JE: Now, you talked in your book about the creosote bush [which drops a sort of toxin that kills anything that might take resources away from the parent plant]. It seems like, at Intel, they found a way around the poisoning effects of the creosote bush: if you have strong leadership and vision at the core, and you spread the ideas out from the core, then all of a sudden, the core won't be the source of the creosote that kills everything; they'll be the place where you are encouraged to think differently.

CC: That's exactly right. And when you do what Intel did, it kind of puts everybody on notice: "Hey, this new thing is growing up here, but none of us are going to drip creosote on it because it's actually critical to the growth of the future."

JE: Very, very interesting. It's optimistic actually, more optimistic than you were, say five years ago, that there's a possibility for companies to pick up the weak signals and change the mindset inside.

CC: Yes, but I go from optimism to despair. Another optimistic example comes from Cisco, which disrupted Lucent. The router was just a classic disruptive technology to the conventional circuit-switched equipment, but the router originally couldn't handle voice. It could handle data because the latency delay wasn't as big an issue, and that enabled the Internet to happen. But then, little by little, the latency delay got shortened and shortened and shortened until today—[calls made through]Voice over IP are almost indistinguishable from circuit-switched voice—and so the Nortels and Lucents are just on the ropes.

And then Cisco looked down at the bottom of its market, and there was this flaky, little company called Linksys that made these wireless routers for home use. Now Linksys was disruptive to Cisco, just like Cisco was to Lucent. But now Cisco had this disruptive innovation model, and they could say, "Oh, my gosh, this is one of those disruptive technologies, and it ultimately will be a threat to us." So they bought Linksys and kept it separate, funded its growth, fueled its technological potential.

Those cases give me cause for optimism. But there are others that throw me into despair (if you wouldn't mind my venting for just a minute).

Kodak was getting disrupted by digital photography. Some folks at Kodak read my research and contacted us. We arranged for their management team to come to Harvard, and we went through three days of what this

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phenomenon looks like. We concluded, "My gosh, Kodak, this is exactly what is happening to you! And you're doing everything wrong, just like all these other people did everything wrong." In particular, their crime was investing very aggressively in digital photography but investing in a way that would allow digital cameras to compete head-on with film on the basis of quality of image.

Competing in that way meant that they had to cram their cameras so full of charge-coupled devices to get the maximum quality that were very expensive. It drove the price point up to the point that the only people who could buy digital cameras were those who bought film cameras. They invested over $3 billion trying to make the digital camera good enough that it could compete in the established market. And of course, our gospel is "Don't do that, but rather use the digital technology to make it so affordable and simple that a whole new population can now own and use cameras."

So they went home to Rochester and changed things. They set up a separate business unit and made it truly separate. Willy Shih, the guy who ran it, said, "When we finally were totally separated out and stood naked in front of the mirror, I was just horrified at how ugly we were." The separating out of the business gave them a true sense of what the economics of consumer digital camera business were so that they could build a model of the fixed and variable cost and unit volumes that they had to achieve to get profitable.

And so they came out with a camera called an Easy-Share, distributed through Target and Walmart. Their share of the [digital-camera] business in America went from 8 percent to 28 percent of the market. They became the largest digital camera vendor in America—almost $2 billion in revenue—and it was profitable. And they would've been the largest in the world, but Kodak just doesn't have much distribution in Japan. It's an extraordinary triumph in the face of collapse in film sales.

Well, that's the good news. The bad news is that the chairman, Dan Carp, retired. They brought in a new guy, Antonio Perez. I don't know where he came from, but he didn't have the language or this way to frame the problem. So he waltzes in, and he says, "This doesn't make sense: we've got a film business, which is a consumer business, and we've got a digital camera business, which is a consumer business, and why do we have all these duplicate overheads?"

And so he mushed the two things together and actually was able to cut out some costs, but he created a business unit with different incentives. That business saw its responsibility as maximizing its own profitability, and those guys looked at the margins you can get on film and the margins that you can get on digital cameras and asked, "Why are we down here at the low end of the market?" And they said, "We have to get the pricing on these things up so that it doesn't tear down the profitability of this division that I'm responsible for."

And in the process of digital cameras needing to fight against film within a business unit, the price of the cameras

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just got jacked up. The volume declined. They plunged into loss. Market share dropped from 28 percent to 12 percent. They then decided, "You know, this is just such a crummy business, we're just going to give it all to Flextronics." Geez, that makes me mad.

JE: That's disturbing.

CC: And I've never met this guy, and so I can't blame him, because everybody does what makes sense for him, but what a squandered growth opportunity.

JE: It gives you that much more respect for what Andy Grove did at Intel, which is institutionalizing, really, the way of thinking about disruptive innovation.

CC: That's right. I guess what we have to learn from Kodak is that the language and the way of thinking need to go all the way to the Board. At Kodak, the process was left to subsequent CEOs and the old financial way of thinking crept back into the company.

JE: It's good to see that there are the successes, as difficult as disruption is. I think you have helped to illustrate how companies can begin to manage these disruptive forces in real time. Thanks for sharing your insights with us.

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