

Steven Crist

# Bet Against Other Players, Not Against the House

Determine which most-likely winners are good prices and which are bad prices



The only other game in a casino that you can win at is poker, which is always situated right next to the horse-racing area. The reason that you can win at poker and horse-racing is the same - you are not betting against the house; you are betting against the other players. This is such a crucial and fundamental difference, and it is lost on the general public. The house is not setting the odds. In roulette, there are 38 spaces on the wheel, and if you pick the correct one, the house will pay you off at 35-to-one, and they will keep the difference. The longer you play, the more you lose and the more the house wins.

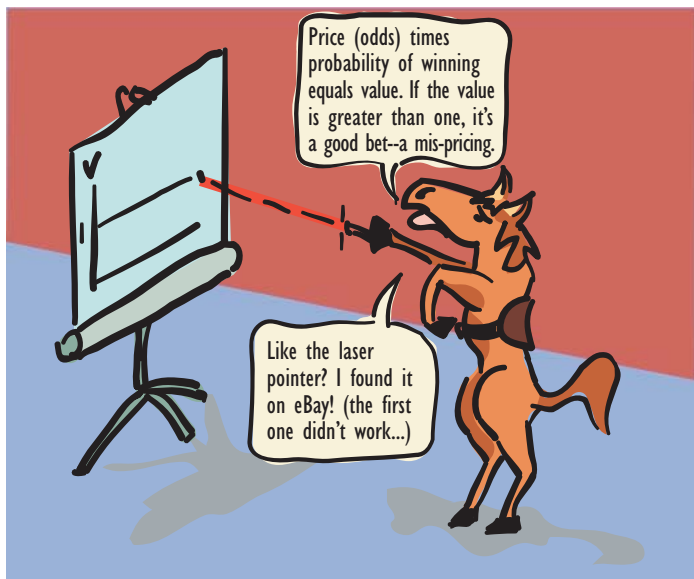
When the other players are setting the prices, it is an entirely different story because somewhere between frequently, occasionally and rarely, the public makes the wrong price.

That is the beginning of the successful equation in horse racing. It took me about ten years as a racing reporter and columnist, trying to track down the elusive method of picking the winner of every race, to realize that that was a fool's errand. In ten minutes I can teach anyone in this room how to pick the most likely winner of a horse race. There are several fields in the data about past performances that we publish in the Racing Form that correlate very strongly with the most likely winner in the race. Most horse racers spend their lives thinking that if they just studied a little bit harder or got a little bit smarter, they could pick the winner of the race enough to make some money. There is no such thing. Picking the most likely winner is no great feat.

Steven Crist

# Price Times Probability Equals Value

## Wait for the public to make mistakes



What you really want to do is to determine which most-likely winners are good prices and which most-likely winners are bad prices. It is a very simple equation: **Price X Probability = Value**

The entire world of investing is that simple too. Here is what I mean. If a horse has a 33% chance of winning a race, and if you can get odds of 2-to-1 on him (which means tripling your money), there is no value - the horse is priced correctly. If a horse is 6-to-5 (which means you will only get back 120% of your bet) and he is only 33% to win, then he is a terrible bet. If you're going to get 4-to-1 (quintupling your money) on a 33% chance winner, then it's a great bet.

The majority of people who play horses refuse to think that way. They

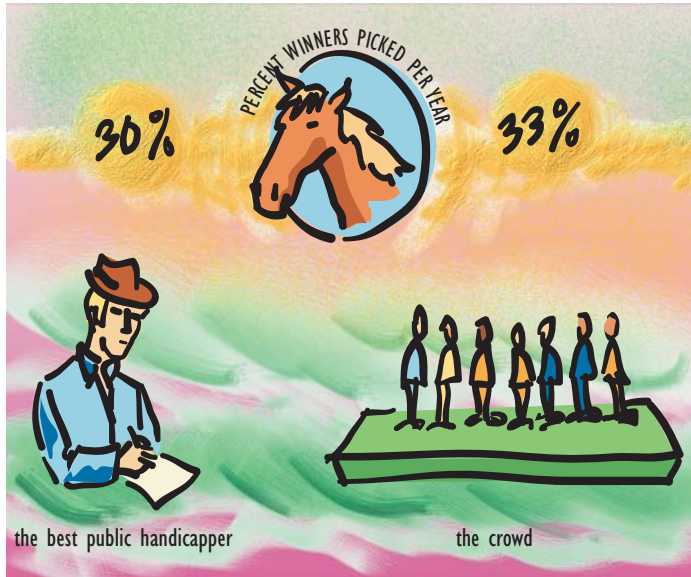
sometimes say that no horse is worth taking a short price on. That's just not true. If a horse is 90% to win a race and you're going to get a 50% ROI, then he is one of the greatest bets in history. They sometimes say that all long shots are over-bet and that you should never bet on a long shot. That's not true either. If a horse has a 10% chance of winning a race and he's 20-to-1, then you're getting double the value than you should.

What you wait for as a horse player (and investors tell me that they wait for the same thing) is for mis-pricing, for the public to make mistakes. I cannot say for sure why the public makes mistakes in your world, but I know why they make them in mine. The people who most influence the odds in racing are known as "public handicappers".

Steven Crist

# Follow the Wisdom of Crowds

## The Best Public Handicappers Don't do as Well as the Assimilated Public



The "Wisdom of Crowds" phenomenon is common to both horse racing and investing. Over the course of a year, the best public handicappers do not do as well as the assimilated public. We have a guy named David Litfin who is by far the best public handicapper in New York. He picks about 30% winners each year, which is a very high percentage. This does not get him even, however, because he is forced to make a pick in every race, even races that he doesn't like and wouldn't bet with his own money. But the public always picks 33% winners. How can the public at large, which includes drunk people and crazy people and people betting on the cute one and the one with pink silks, be better than the Daily Racing Form's ace handicapper?

I found the answer to that in James

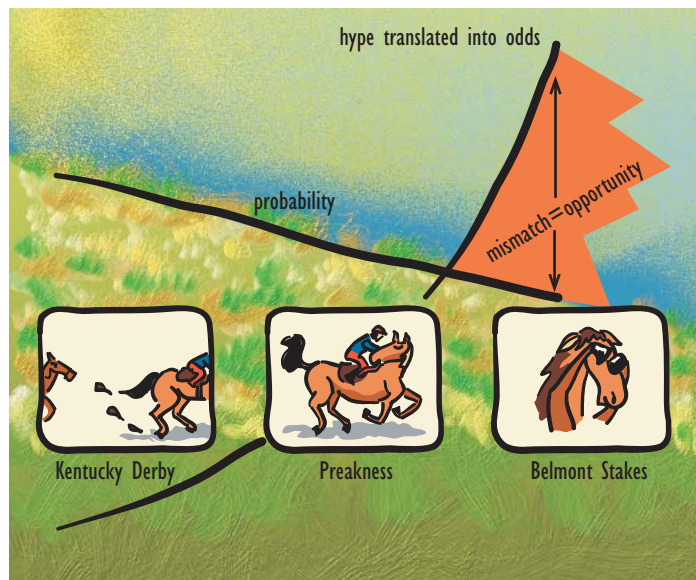
Surowiecki's book, *The Wisdom of Crowds*. The most accessible example comes from the game show, "Who Wants to be a Millionaire?" Contestants could request different "Life Lines" when they found a question too difficult. They could ask a friend, ask an expert or ask the crowd at large. What they found over the several years of the show was that the crowd was much more likely to be correct than the expert. This may appear to be counterintuitive.

There are certain situations where having hundreds or thousands of pairs of eyes on a problem does help create a higher winning percentage over time. That is why there is no great trick to picking the most likely winner of a horse race, and that is why picking the winner is not ultimately a profitable pursuit.

Steven Crist

# Smarty Jones and the Exponential Opportunity

Once the general public and the media get involved in horse racing, the opportunities really expand



Once the general public and the media get involved in my little world of horse racing, the opportunities expand exponentially! They get it so wrong that there are wonderful opportunities.

A horse who began his career in relative obscurity - he was racing in Pennsylvania - slowly became one of the favorites for the Derby. He had a name that people loved - Smarty Jones. By any historical measure (and there are some very good statistical metrics of pace and time), Smarty Jones was the best of a bad group. Most intelligent people bet against him. Smarty Jones took the early lead and won the Kentucky Derby by four lengths on a muddy track. People became very excited about him based on this victory in the slop.

The general news media suddenly

descend on the horse racing world and picked up on the idea that Smarty Jones was a blue-collar hero. Then he won the Preakness. Well, now the world went absolutely crazy. We now had a horse who would absolutely win the Triple Crown for the first time since 1978.

So we finally get to Belmont. Any reasonable analysis would tell you that Smarty Jones at best should have been even money - 50-50 to win. On Belmont Stakes day, he went off at odds of 1-to-5. This horse was between 30-50% to win, and he was being bet as if he were 83% to win. This was one of the most fabulous opportunities in the history of betting. I bet on all of the other horses in the race, and I weighted and dutched my bets. The real horse players had just cashed the best horse bet that they had ever cashed.

Steven Crist

# The Worst Thing That Can Happen to You is a Winning Streak

You risk thinking that you have finally "figured it all out" and that the game is easy now, which leads to bad decisions



The worst thing that you can do is to get on a winning streak, unless you have tremendous discipline which I did not used to have at all. You think that you have finally "figured it out". You think that the game is now easy, and you start betting more and more. Of course, you know what happens next. You have to know yourself and your bad habits. One of the things that I used to do when doing well was to cut back on my homework. I would start to feel that "I just know this stuff". The second you stop doing the work, you're about to start a bad losing streak. I played horses as a primary means of income for three or four years. The rest of the time, I have been fortunate enough to have other jobs that allowed me to treat horse racing like a hobby. It changes everything when you are gambling to pay the bills. That was the least fun I have ever had, and it was the most

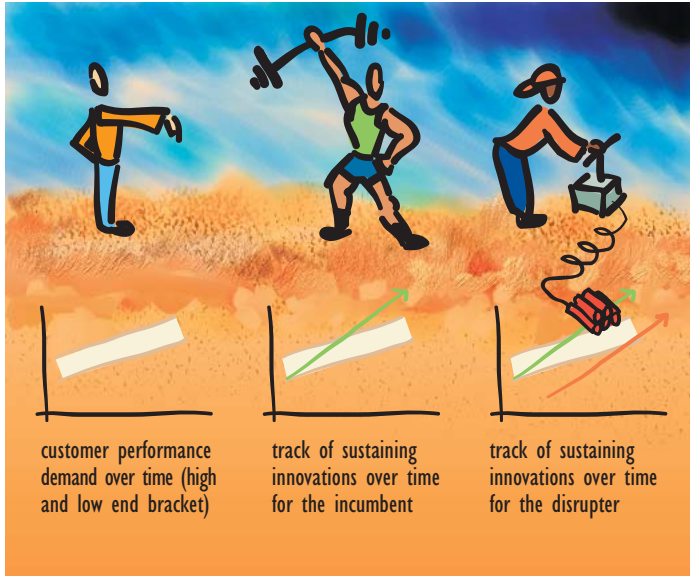
pressure I have put on myself. Losing streaks are horrible when you are losing not your disposable income but... whatever is the opposite of your disposable income. People take losses much harder when they are doing it for a living. When things go badly, you just have to walk away from it. Give yourself some time, and then start over. This is a lot more difficult to do when you need the money to pay the bills.

Creative Concept SC05 Thought Leader Forum 2007

Clayton Christensen

# Two Types of Innovation

There are sustaining innovations and disruptive innovations



In every market, there is a trajectory of improvement that customers can use - a line sloping up and to the right. There is a distribution, of course, so at the high end, there are very demanding customers who will never be satisfied with the best that is offered. At the bottom of every market, there are simple folks who can be over-served by almost nothing.

In each market, there is also a different trajectory of improvement that innovating companies can provide as they keep introducing new and improved products. The most important finding is that the industry's rate of technological improvement almost always outstrips the customers' ability to use the progress. Some of the innovations that help companies move up the improvement trajectory are simply

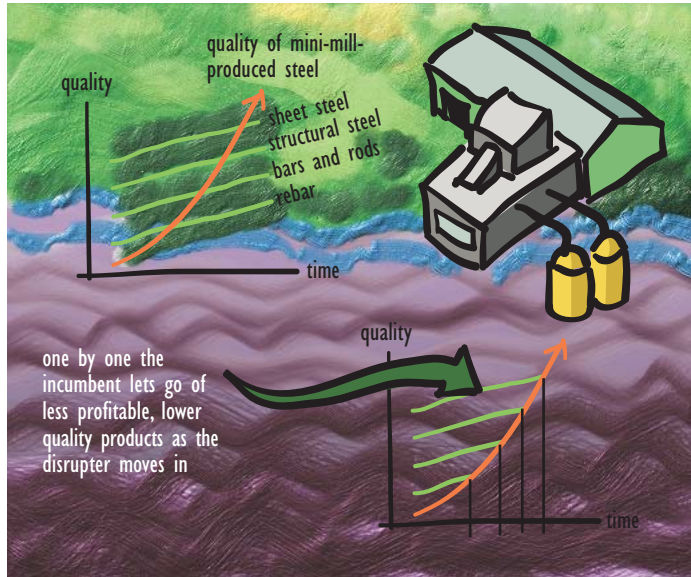
year-to-year incremental improvements. Others are dramatic breakthroughs. Their purpose is to sustain that trajectory of improvement as it exists in the market at the time. Almost invariably the leaders at the beginning of a cycle of sustaining industry innovation will remain on top when it's all over.

There is also another type of innovation that we observed that always killed the leader. We called this "disruptive innovation". It was not as good as what the leaders were selling, but it was simple, convenient and affordable. It could take root in the most undemanding tier of the market, and then improve off of that foothold. Almost invariably, we found that the entrants kill the incumbents and become the new leaders.

Clayton Christensen

# The Minimill vs. the Integrated Mill

A simple, disruptive innovation gains ground over the incumbents, who lose yet make logical decisions every step of the way



Minimills melt scrap in electric furnaces. You can make steel of a given quality in a minimill at 20% lower cost than you can make it in an integrated mill. The steel market, like every market, is comprised of tiers. At the bottom are the simplest products - concrete-reinforcing bar. The high end products, sheet steel, is used to make automobiles. When the minimills became technologically viable in the late 1960s, the only market who would buy what they were making was the rebar market, way down at the bottom. As the minimills attacked the rebar market, the integrated mills were actually quite relieved. Why would they invest to protect rebar, which yielded only 7% gross margins and accounted for only 4% of the industry's tonnage? They had the much more attractive option of strengthening their share of the angle iron market. In this

market, they could make 12% margins. As the integrated mills lopped off the lowest-margin segment of their business, their reported margins to Wall Street improved. Because the minimills had a 20% cost advantage, their margins were very attractive as well. It felt good for the incumbent to get out of this market and good for the entrant to get in. This continued up the product line. The mills figured out how to make sheet steel in its minimills. The integrated mills could not justify defending the low-end grades of sheet steel when their specialty grades offered margins so much better. Today, minimills control over 60% of America's steel market, and all but one of the integrated mills has gone bankrupt.

Clayton Christensen

# Fighting the Giant

Choose a piece of turf where the giant is motivated to walk away rather than fight you



If you were a little boy, how would you go about killing a giant? If you tried to pick a fight with the giant on a piece of turf at the high end of the market where he makes his money, the giant will be very motivated to defend that turf, and the giant has a lot more resourced to throw into that battle. If you are the little boy, pick a fight with the giant on a piece of turf where the giant is motivated to walk away from you rather than fight you. The probability that you will win is much greater.

If someone comes into the main market trying to sell a better product at better prices to the best customers, the odds will be heavily against them. They have picked a fight that the industry leader really wants to win. When someone picks a disruptive strategy, the odds are in their favor because they picked a

fight that the leader wants to flee from.

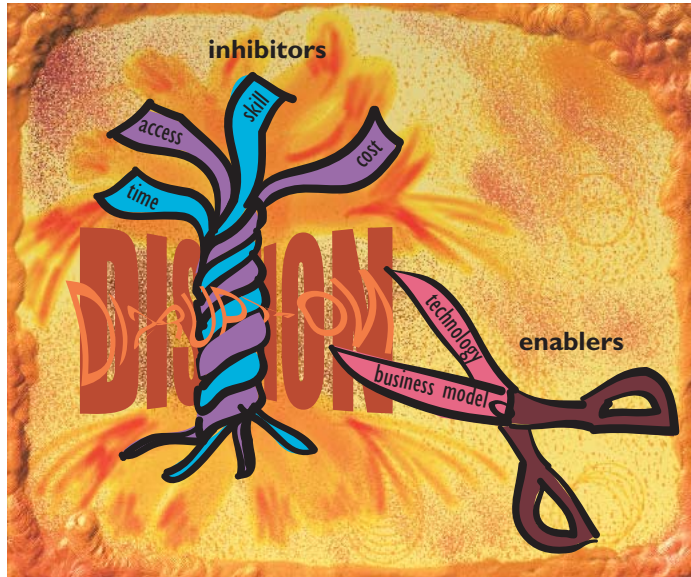
Wall Street encourages us to focus investments where profit margins are most attractive, and to always listen to our best customers. The problem is that this is very good advice on the sustaining innovation trajectory. But these disruptions paralyze the incumbent companies from moving down-market. They create an asymmetry of motivation.

When Kmart moved into Salt Lake City, they sold only hard goods - the simplest products that are so familiar that they sold themselves. Very quickly, the department stores fled up-market to become retailers of clothing and cosmetics. Our kids think that department stores are clothing stores, but it was not always so.

Clayton Christensen

# Disruption Feeds on Certain Conditions

Not every market is a breeding ground for disruptions but there are some patterns that expose opportunities



A disruption is not always possible in a market. It tends to be possible when certain conditions exist. What constrains consumption? Sometimes a product requires too much skill to use which limits who can use them. Sometimes products are too costly. Other times access is too inconvenient, and other times it just takes too much time. Southwest unlocked a lot of non-consumption by making airfare affordable. George Eastman did the same thing with his camera. Not too long ago, if you wanted white teeth, you had to go to the dentist and pay a lot of money. Crest then introduced the technology to do it yourself at a much lower cost. The "Minute Clinic" model relieves all four consumption constraints at the bottom of the medical market.

On occasion, the leaders in an

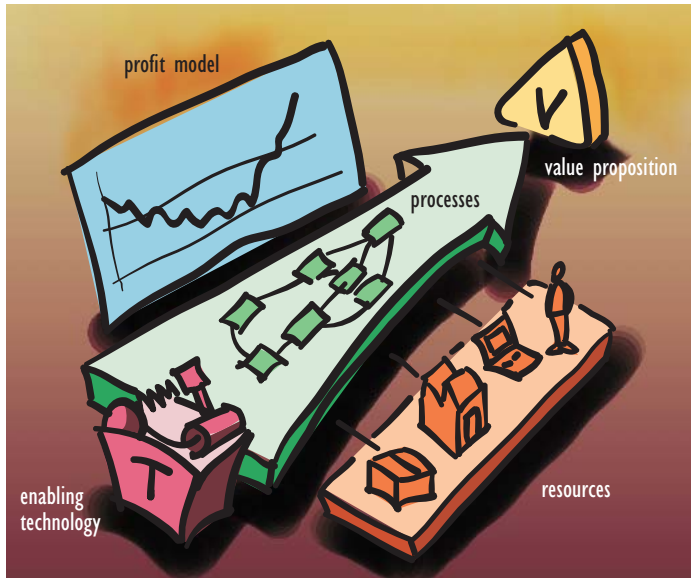
industry will catch the disruptive innovation, but they always do it by setting up a completely autonomous business unit and giving it an unfettered charter to kill the parent. If they saw the disruption coming and did not create an innovative business model, they never succeed.

Almost every disruption includes two components. The first is a technological enabler. This is something that allows an innovator to take a very expensive and complicated product, and make it much simpler and cheaper. This allows many more people to provide and use this product or service. This enabler must be coupled with a business model innovation that can take that simplifying technological enabler into the market in an affordable and convenient way.

Clayton Christensen

# Four Components of a Business Model

It's the whole business model, not the technology, that makes a disruptive opportunity possible and the disruptions so difficult



So what is a "business model"? A business model always starts with a value proposition. The sustaining trajectory has one and the disruptive trajectory has another. This is a product or service that allows people to get a job done more cheaply, simply or effectively. Then the company has to assemble a set of resources - people, technology, products, equipment, facilities and so on - that are needed to deliver on that value proposition. As they use those resources over and over to deliver on the value proposition, processes coalesce. Processes are just habitual ways of working together to get repetitive tasks done. As the resources and processes are in place, a profit model will coalesce. A profit model basically says, "Given the kind of cost structure that we have, what kind of margins do we need to achieve to cover those costs?"

How fast do we have to turn the assets over to get an acceptable return? How big does the business have to be to be viable?" Once the profit model is in place, it determines the kind of value proposition that you can offer.

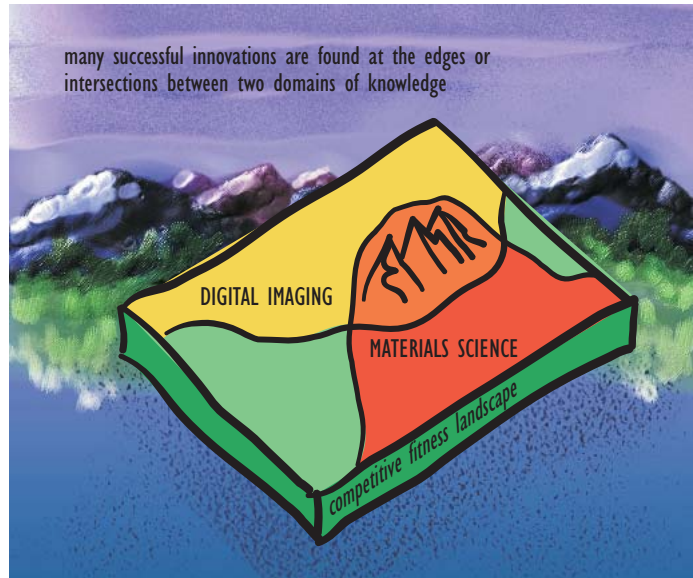
Those four components comprise the "business model". When an innovation fits within that business model, you can predict that the innovation will be successful. When the innovation does not fit, you predict that it will not work, unless they create a different business model that fits the innovative opportunity.

I want to reinforce this point: it is the business model, not the technology, that makes these opportunities possible and the disruptions so difficult.

Antonio Perez

# Opportunity Lies at the Intersection

Kodak found a way forward at the intersection between materials science and digital imaging



When you think about it, it makes a lot of sense. This was the only company fully dedicated to imaging before anyone else. Their life was imaging. They had a lot of money, they hired very good people, they gave them the right tools, and they built a phenomenal IP portfolio. I felt like a boy in a toy store. Which ones of these many opportunities will deliver the most value to us?

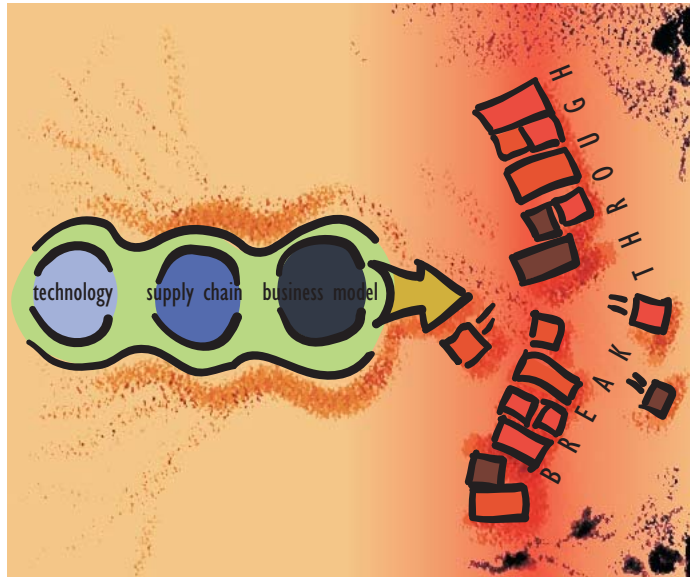
Kodak was one of the best companies in the world in materials science. Without any doubt, they were also one of the top companies in the world in digital imaging in terms of IP, know-how and trade secrets. Whatever we did next had to be at the intersection of those two sciences. We have a lot of tools to play in that area, and we still have to pick the right way to apply those tools to create the most value.

Then I went to the cash register. We had a great group of people, but we had a very tough transformation to make. Three or four months into my tenure at Kodak, we formally and publicly acknowledged that the film business was quickly becoming obsolete, and that we were going to deal with it. The company had talked about it for twenty years, but not until that moment did they begin to do anything about it. When you don't have a plan for anything else, it is very hard to acknowledge such a thing. If the plan is not good enough, why would you accelerate the demise of the best thing that you have in your hand?

Antonio Perez

# Three Coordinated Breakthroughs

The chances for success in a transition are increased by breakthroughs in technology, supply chain and business model



Breakthroughs come in three areas - technology breakthroughs, supply chain breakthroughs, and business model breakthroughs. In my experience, if you can create significant and meaningful breakthroughs in each of those three areas, your probability of success is very high. If you have a breakthrough in only one area, your chance of success is a little lower. We chose to become a leading company by supplying the world with digital capture technology. We put all of our efforts into the CMOS technology.

The advantage of CMOS technology is that the semiconductor not only captures the light, but you can also imbue a lot of software in there. This raises the value of the component, and makes it arguably the most important part of the camera. The opportunity for us was to make that

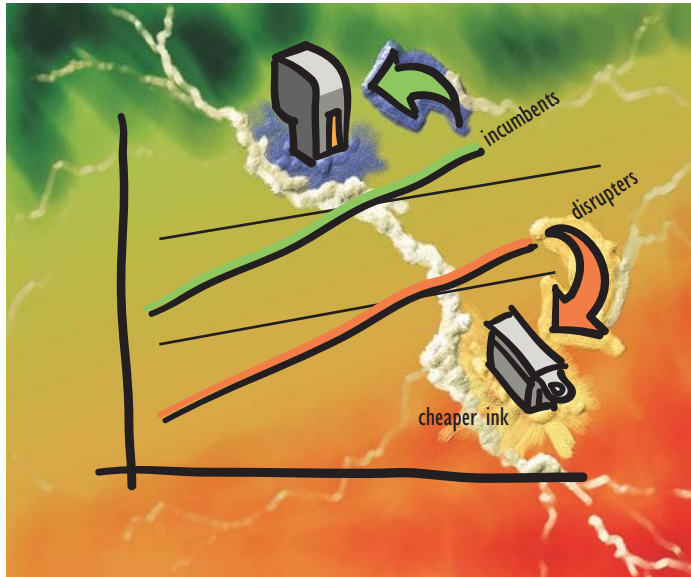
integration happen and then sell it to the world. We shifted our business model to become much more horizontal.

We have been able to create with less risk and fewer assets, capabilities that our competitors already have. For our competitors to replicate what we have done, they will have to do to their business what Kodak did to its film business. When you look at the infrastructure of our competitors, they have infrastructure that is still useful, but not up to date. They could do this, but the cost for them is so high that the probability of them replicating our work is very low. Even if they did it, they would have to pay a very high price so we will still have an advantage.

Antonio Perez

# Sustainability in Kodak's Disruptive Innovations

Competitors may want to replicate a disruption but they will continue doing what's logical for them to do instead



The technology innovations and the supply chain innovations have allowed us to do something very powerful for the printed page. For the last fifteen years, the biggest dissatisfaction in this market is the cost of the ink. A distant second complaint is the quality of the print. The one factor that is by far most likely to encourage you to consider changing your printer is the cost of the ink. This is the key for the value creation - the more you print, the more that you will like this business model.

Can our competitors do that? Of course they could, but it is very unlikely that they will. If the management team for our competitors decides to follow our business model, they will be fired from the company because they would have just eliminated \$2 billion

of operating margins. It is far more logical for our competitors to continue to do what they are doing, and this is what I would do if I were in their place.

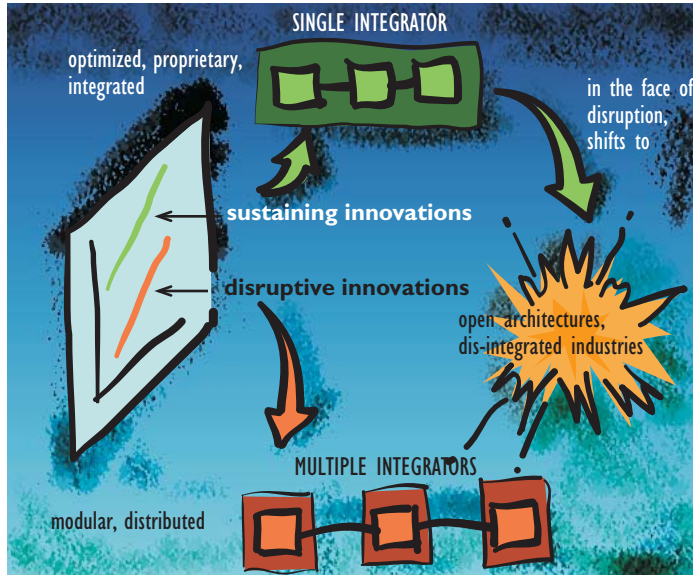
Our sustainability is based on the fact that they cannot easily replicate what we are doing. They will continue to leverage their tools - more promotions, more discounts, more selection and more specialization of printers. They will bundle their printers with their PCs. These are the right things for them to do in their circumstances.

At the end of the day, we firmly believe that they are fighting gravity. The company that offers the best printed page at the lowest cost is going to gain substantial market share. That is the kind of share you want to have.

Clayton Christensen & Antonio Perez

# Disruptions Favor a Shift to Open, Modular Architectures

And when an architecture opens up, the industry dis-integrates



On the sustaining trajectory, the original architecture of the products is often interdependent, proprietary and optimized. Apple computers have that kind of optimized, proprietary character, as does the Apple iPod. You have to control of all of the pieces of the system in order to play in any piece of the system. There is a big advantage to being integrated.

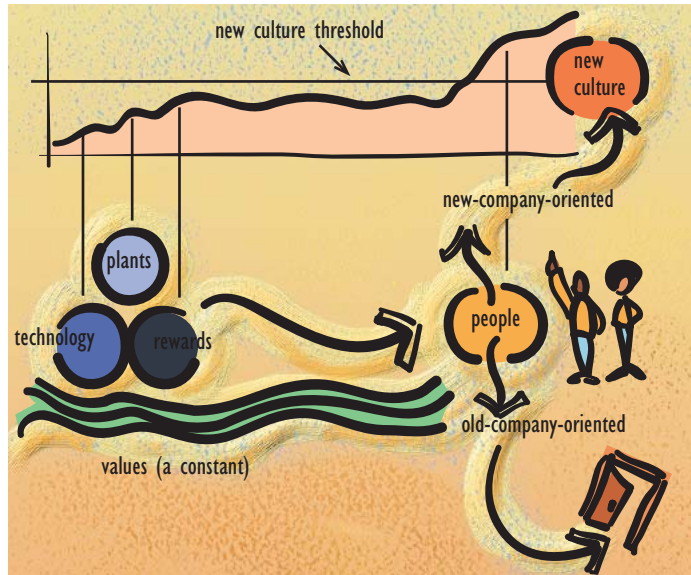
When disruption happens, there is almost always a parallel shift to open, modular architectures. In computers, the Apple gave way to the open architecture of the IBM PC. When the architecture opens up, the industry dis-integrates. When an industry moves to an open architecture, the place in the value chain where attractive profits can be made migrates.

As I watched what Antonio did, I think it's brilliant in retrospect. As the digital camera is disrupted by the cell phone camera, you want to position yourself as the "Intel Inside" of the imaging capability in the cell phone camera. You don't want to make the camera. You want to be the brains inside of it. Kodak's CMOS technology allows you to have on the same chip both the image capturing mechanism and the intelligence that puts it all together. In fact that is what my theory said that you ought to do, but I had never thought about it before. I think it is a really brilliant way to play. If I were in Antonio's shoes, I would really push the technology to make the cell phone cameras better and better. This would make Kodak the engine of the disruption for the digital camera business.

Antonio Perez

# Culture is the Last Thing to Change

When a company embraces a disruptive innovation, it must build a new company and a new culture



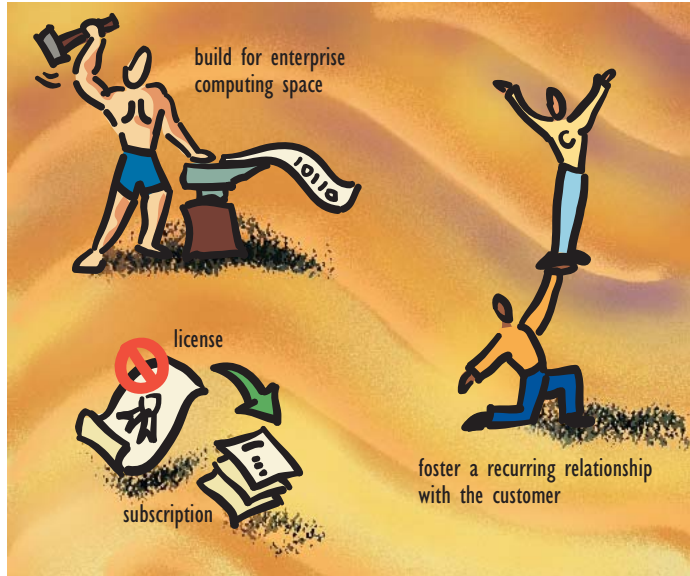
In my experience, culture is the last thing to change. You change people. You change plants. You change the technology. You change the methodology. You change the rewards. You can change everything, and the culture will still lag. In my view, the only way to change the culture is by replacing people. When I came to the company, we had 75,000 people. We are going to finish this year with 35,000. We bought a few companies along the way who could contribute pieces to our puzzle. This added another 15,000 people. Out of the 35,000 in the company this year, only 20,000 of them were with the company when I arrived. I don't know what culture we have now, but it is certainly different than the culture that we had before. We are building a new company and a new culture. We have the same values as the old Kodak company, but the

behaviors are so different. The only way to change behaviors is by changing the people. Gorbachev tried to change the Politburo by replacing some of its leaders. He thought that by changing the leaders, he would change the organization. He did not recognize that the entrenched bureaucracy would not change so easily. The people who stayed with Kodak were the people who really wanted to do this long before I arrived. The ones who left are the ones who didn't want to stay.

Matthew Szulik

# Identifying Three Keys to Initial Success for Linux

They needed to find the people, challenge the economic model and see software as a service, not a product



First we had to go out and find the people who knew how to build it. In my world of open source software, we only produce about 11% of the total product internally. If the product is late, I have no one to walk down the hall to complain to, threaten or incent. Most of these people who are contributing to open source software I have never met. How do we create a new supply chain to produce superior product in quality and reliability that would incent a customer to move?

Second, we had a cultural challenge in the economic model. We saw that the traditional approach of licensed sales and revenue recognition was an enormous risk for someone in my shoes. Many of the traditional license suppliers sell like heck and completely clean out their 90-day sales pipeline and then the CEO

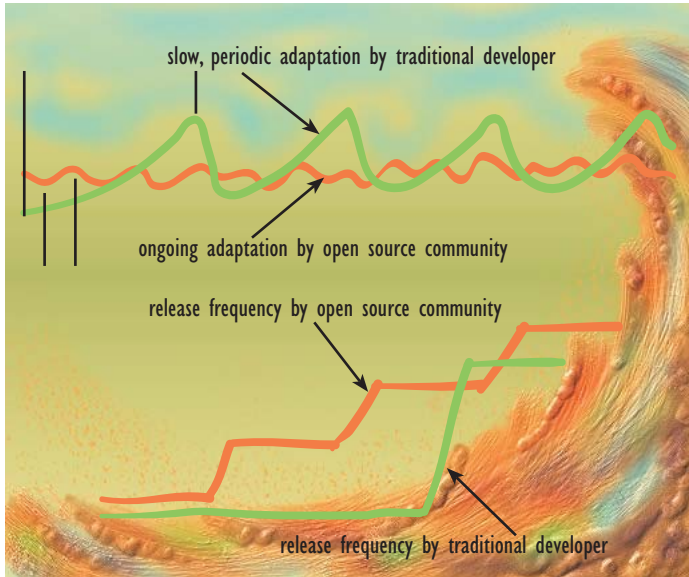
hopes that next quarter they can ramp things up again. The notion of a recurring relationship with your customer and a recurring economic model was not in existence.

We had a cool set of assets. In open source software, the product is being innovated every second of the day. Second, customers want to see software as a service. We moved the economic model of our business in 1998 from license to subscription. We wanted to create multi-year, recurrent relationships with customers. Most important, our delivery to the customer was not a licensed product, but a subscription in many cases on a multi-year basis to continue to drive down the cost of both the systems infrastructure and the labor associated with managing large, complex server requirements.

Matthew Szulik

# Transparent Relationships in Open Source Communities

Systems can be remediated every minute and quality is evaluated and upgraded after each release



It's interesting to think that we build more security by making our technology more available and making it more transparent. There's a fundamental logic to that. If there's a security breach and only one supplier, they will charge you an arm and a leg to fix it. They'll put it through their traditional system and quality assurance processes and maybe in a couple of weeks or months you'll get a security fix. Or you'll get them all at once if you're running on Windows. In our world, where you have complete transparency, systems are being remediated every minute. Enhancements, improvements, fixes and holes are being addressed in short order by hundreds or thousands of people.

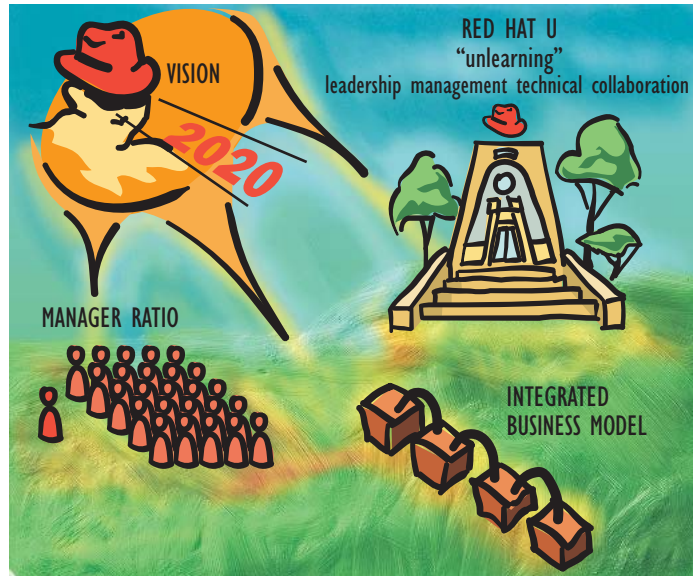
judge. It's not packaged in some cute little box and we don't pay analysts and the media to wrap it up with a lot of rhetoric about how good it is. It's transparent. Twenty-four hours later, the world's best software technicians have an opinion as to whether it's a good release or a bad release. I have no safety net. There's a worldwide audience of software developers who have been stuck in the dark ages and in 1998, all of a sudden, they have a chance to build a relationship with a supplier that is absolutely transparent with its license and code base, and free with its usage. All Red Hat had to do was figure out the economic model of how to monetize it.

I mentioned software quality. When we released Red Hat Enterprise Linux 5, in 24 hours, the world became my

Matthew Szulik

# Red Hat Vision 2020 Focuses on a New Organizational Model

A culture of collaboration means a low dependency on management but a high ability to bring skills and values to scale



How do you make sure that this notion of collaboration and transparency doesn't become something that's just in the back of my brain but gets imbued in the decision-making and value systems of the work that we do? The board and I created a vision of 2020. How do we create an organizational model that has a low dependency on management and continues to bring the skills and value systems that we need to scale the business? Our theme for 2020 is one manager for every 25 associates.

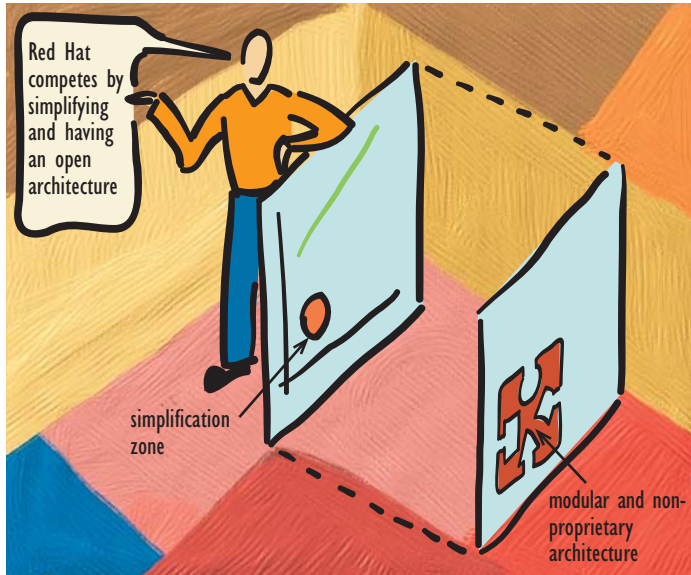
We've created Red Hat University to unlearn all of those things that people learn at school. They are trained in the American education system to kill the person to the left and right of them because that's how you get ahead. Our culture doesn't work that way. How do we teach them that

collaboration is supported by an incentive for what the team produces, not what the individual produces? How do we build a management model without hiring folks from other companies who would seriously change our culture? How do we build a leadership model that promotes from within and builds next generation leaders within our own company? We created Red Hat University and it handles our leadership development, technical development, and succession planning. We moved to a complete, integrated line of business model for how our products are made and went into the field-based model of setting up general management models in the four major geographies that are all led by internally trained and developed Red Hat people.

Clayton Christensen & Matthew Szulik

# Red Hat Uses Two Types of Disruption in its Model

One type takes root at the bottom of the market with a lower cost business model; while the other competes against non-consumption



If you remember the models of disruption, there are really two types of disruption. One would be typified by the mini mill or by Wal-Mart. They take root at the bottom of an established market with a lower cost business model and then they move up. The other type is like the personal computer or the transistor radio. They transform a product that was so complicated and expensive that only people with a lot of money and a lot of skill could have one. They come out in a third plane to initially compete against non-consumption. I have to draw on both of those types of disruption to make sense of Linux.

If you look out there in the third plane of competition, computing in the Internet-centric way was slow and not very safe compared to the enterprise way. But Linux has taken root out there as the dominant

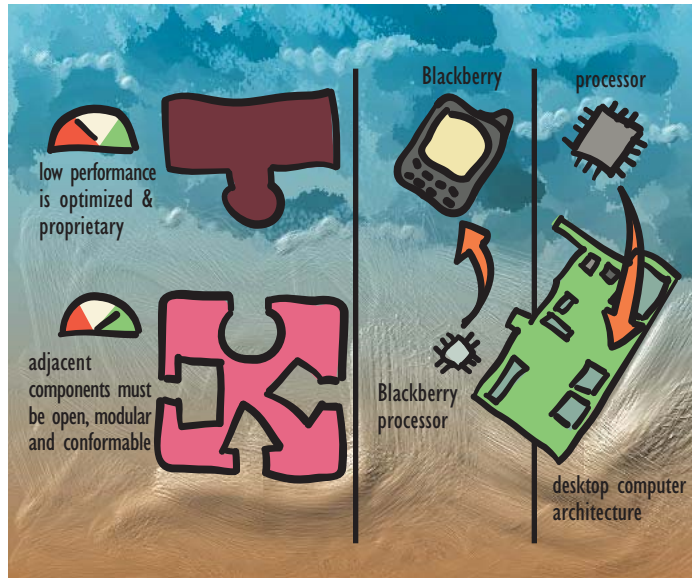
operating system of choice in web servers. As web-based computing becomes more and more capable, faster and secure, it's drawing customers from a corporate-centric world to an Internet-centric world.

The second model that helps me make sense of what Red Hat is doing relates to this notion that at the beginning of most industries the architecture is proprietary and optimized. As it gets disrupted, that gives way to an open, modular architecture. Windows is a proprietary (some would say not very optimized) system. It is excruciatingly interdependent. Linux, in contrast to Windows, is a modular, open architecture.

Clayton Christensen & Matthew Szulik

# The Law of Conservation of Modularity

Whatever is performing well enough to be optimized in a value stack has open, modular neighbors



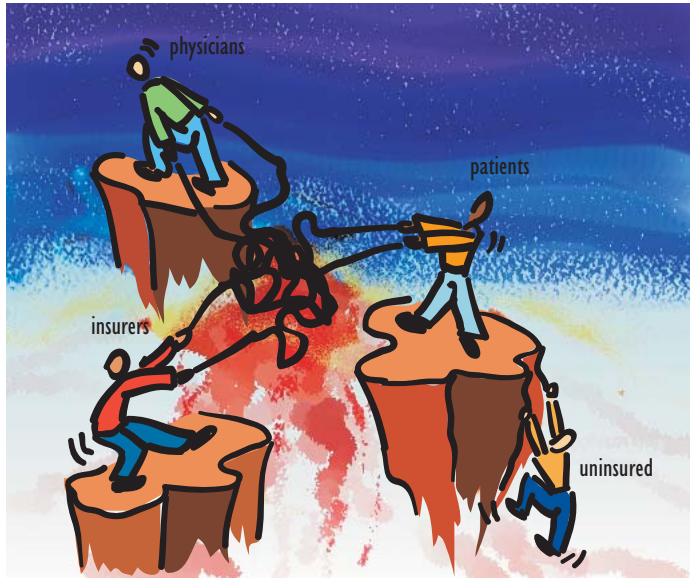
The Law of Conservation of Modularity says that when you have one thing sitting on top of another thing in a value-added stack, whatever is not performing well enough has to be proprietary and optimized in its architecture. That means that what's next to it has to be open and modular and conformable in its architecture. It's easier for me to describe in hardware. The Intel processor within itself is an optimized, independent architecture. In order to allow Intel to be optimized, the architecture of the desktop computer has to be modular so that it can conform itself to the external interface of Windows. But what's disrupting the computer is the BlackBerry. In the BlackBerry, it's the device itself that doesn't perform well enough. The battery life isn't long enough, the display isn't good enough, the input and memory are

not good enough, and so the BlackBerry architecture has to be proprietary and optimized so that the last element of performance can be wrung out of that device. Next to it, the processor inside has to be modular and conformable. You can't have a one size fits all processor inside of a BlackBerry. You need one that is custom and has only the functionality that BlackBerry needs. In both of those examples, one side had to be modular and conformable, while its neighbor-what is not good enough-can be proprietary and optimized.

David Mandelkern

# Disruptions Can be Built on Disconnects

In the health care system, patients, providers and payers are disconnected and not aligned; the situation can create openings for disruptions



Part of the problem is a huge disconnect that I haven't seen in too many other markets and which frustrates innovation. It's between the people who are getting care (patients), the providers (doctors and hospitals), and the people who are paying for it (the insurance companies). Their motivations and interests are not at all aligned.

Customer satisfaction is low. I don't know anyone who really raved about the last time they visited their doctor. They have to wait a long time and then they see their doctor for a brief period of time. I don't know of any other industry that can treat their customers so poorly and still make so much money at it.

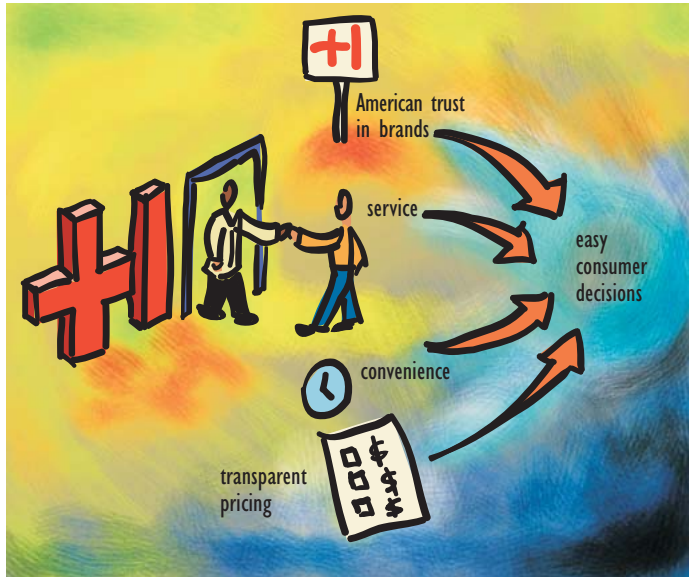
At the same time, you have a huge and growing problem of 47 million people in this country who don't have

health insurance. We talk a lot about reform but in short, there are no short term political solutions. It will take a long time to unravel and it is a national embarrassment to us in the meantime. It's also a major economic issue because we see companies who are in global competition and having very severe cost disadvantages based on whether or not they provide employee health insurance. I don't think you can ask a manufacturing company to compete globally with manufacturers in other countries that provide national health care. Fundamentally, as an employee, it shouldn't come down to an issue of choosing to work for a company based on whether they will provide health insurance or not. Health insurance should be something that consumers have access to at a reasonable price.

David Mandelkern

# A Retail Model for Health Care

QuickHealth follows the pattern of shifting consumers to national trusted brands



We're changing the model. We're blowing up the boxes. You can see from the photographs that we were inspired by the look and feel of a Starbucks. We're following a basic pattern of consumer behavior. Some of you will remember when you got your haircut at a barber shop that had a little striped pole outside the door. Now you go to places like Supercuts or Great Clips. You used to go to a doctor to get your eyeglasses, and now you go to Pearle Vision. This is the branding and modernization of America. People like to get their basic retail services done in a retail setting by a trusted national brand. Health care has lagged way behind all of the things that model entails: decent service, convenient hours, and transparent pricing. That's what we provide. Our business plan is the same basic business plan as if we were running

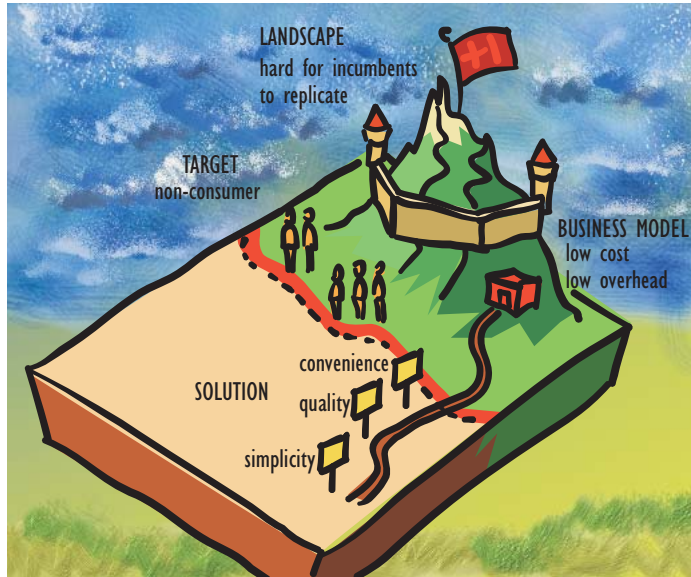
a Baskin-Robbins or a Starbucks franchise. The main difference is that our employees wear white lab coats and have medical degrees.

A number of people in health care say that consumers aren't smart enough to think through their own health care options and decisions. They're not smart enough to buy health care the same way they would a digital camera. But consumers are pretty sharp if you give them adequate information about what they need and what it costs. They make pretty good decisions. An example is our Healthy Heart check-up package with a suite of tests for only \$99. It's value priced down from \$179 if you bought it ala carte. Consumers love that, by the way. They like to get a deal. If you package preventive care in an attractive way, people will buy it and use it.

David Mandelkern

# Disrupting the Health Care Industry

The target customer, solution, business model and competitive landscape create opportunities for QuickHealth



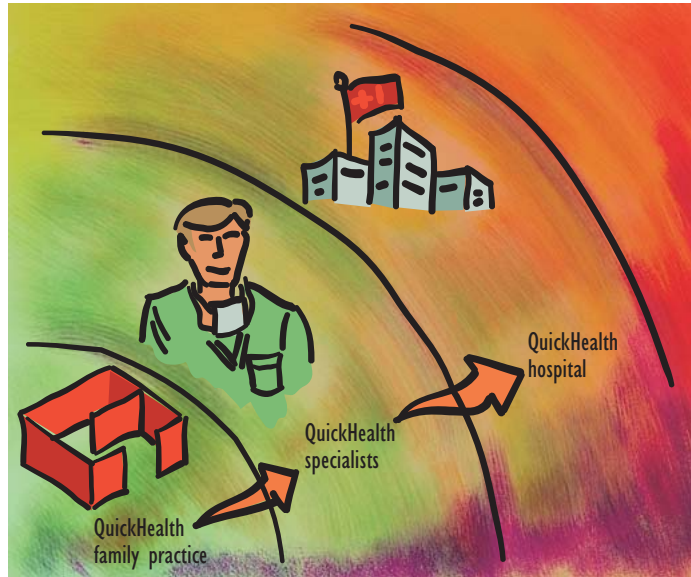
Are we really a disruptive innovation? According to Professor Christensen, there are four key attributes that differentiate a disruptive innovation from a sustaining innovation and they are: target customer, solution, business model and competitive landscape. The first one is target customer. We're not looking for the existing customer but for the non-consumer of the service. We're targeting consumers who feel that they do not have access to the traditional providers and are ignored by the current health care system. The second attribute is the solution. We believe we're breaking new ground. We're not changing the way that doctors practice medicine. We're using physicians doing what they do and not trying to change the psychology of the relationship between the doctor and patient. We do differentiate on the quality and

convenience of the experience. The business model itself focuses on a low cost, low overhead model that changes the game instead of just improving the existing business model. Finally, the competitive landscape. Is this something that the traditional market leaders are going to mimic and catch up with? The public health providers have a budget determined by the county and based on the number of people waiting in line, and so they can't replicate our model. They'd save a lot of money if they put a QuickHealth store on the front lawn of every hospital in the state of California. Other health care providers can't understand how we open a store for \$100K when their IT department can't hook up a computer system in a retail location for that much. This model is not in the DNA of the traditional health care industry to be able to replicate.

David Mandelkern

# Moving up the Disruptive Innovation Curve

QuickHealth starts with family practice and then is positioned to move up into other areas of specialization and additional services



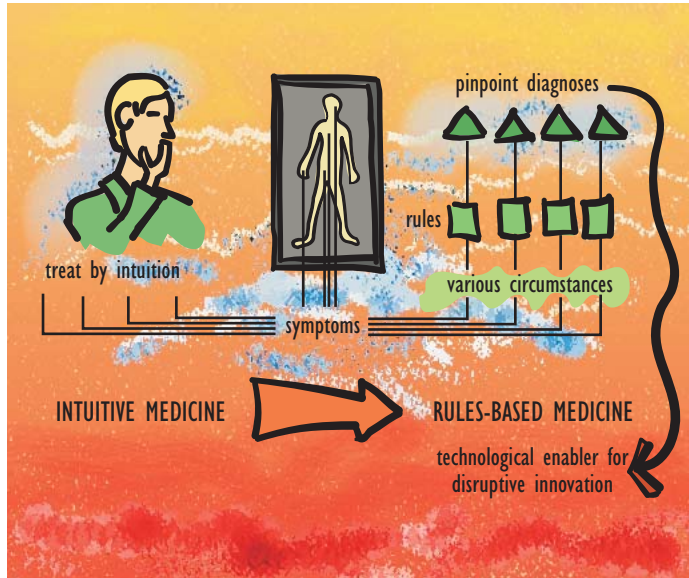
Our strategy going forward is to continue to do what we've been successful at so far and build out the footprint. Then we will move up the food chain. We do have to pass on some referrals to cardiologists or other specialists. There's no reason that on a regional basis we couldn't provide that next level of specialization to our customers as well. That could even move up the chain to a QuickHealth hospital. Most of what you get at a hospital you could probably get just as good and at a better cost by checking into a suite at the Hyatt Regency and hiring a private nurse to take care of you.

Creative Concept DM04 Thought Leader Forum 2007

Clayton Christensen & David Mandelkern

# Rules-based Therapy is a Technology Enabler in Health Care

If we can diagnose a disorder by the cause instead of the symptom, then we can make a rules-based therapy plus a business model to disrupt the industry



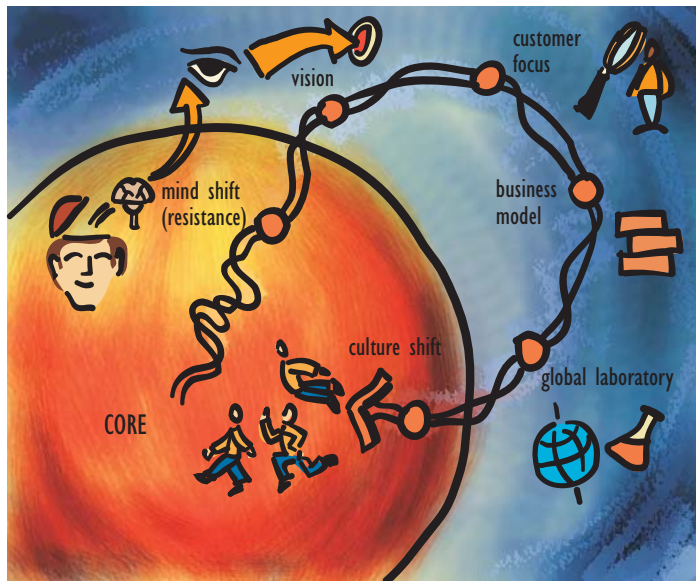
It turns out that the body isn't very articulate. It has a very limited vocabulary that it can draw upon to express that something has gone haywire. For example, we thought in the past that high blood pressure was a disease. A doctor would treat a patient who would respond then treat a different patient who wouldn't respond. You couldn't have a rules-based therapy that way. Now we know that there are several different disorders that are expressed by the same symptom. Now that we understand the cause of the symptom in each of these cases, a rules-based therapy can be developed. A physician doesn't have to treat it any more. A specialist can give it to a generalist and ultimately leave it to a nurse. We now understand that the reason why different patients with type II diabetes respond differently to treatment is

that diabetes isn't a disease. It's a symptom that has about twenty underlying disorders as its cause. Now that we can diagnose these precisely, a rules-based therapy can emerge. Breast cancer isn't a disease, it's just a location. So disease by disease, the technology is shifting things from the unstructured trial and error world of intuitive medicine to a rules-based world of what we would call precision medicine. That technological enabler has to be embedded in a business model and that's how I interpret what QuickHealth is doing.

John Donahoe

# Innovation at the Core: a Future Vision of Change

Creating innovation within the core of a successful company requires overcoming resistance through vision and mind shift



In many ways, this is the least sexy kind of innovation. You don't always see results immediately. When I got to eBay I found one of the most successful and proud businesses ever created. However, with that comes resistance to change. There's a successful, entrenched business model with a massive installed customer base.

We set out a year ago to think about how we could change before we are forced to change. We took a good look at ourselves in the mirror saw a very successful business and a lot of momentum but our user experience and ability to satisfy our buyers and sellers wasn't what we wanted it to be. By using a real focus on the customer, we embarked on a series of fundamental changes that will span a three year period. We created a future vision because not

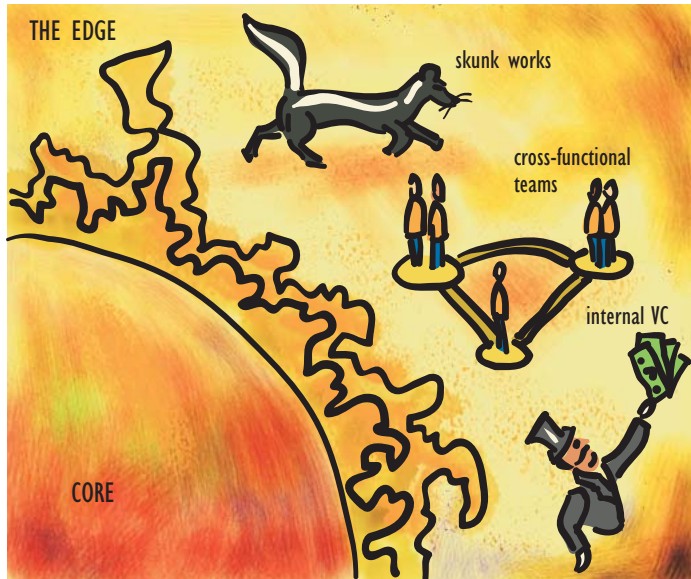
everyone felt the impetus to change, given the success we were experiencing.

We had to create a mind shift at our company—we had to think bold and not just incremental. We had to create a vision of the future so people could let go of a very successful past. We had to understand that this wasn't going to happen just overnight. We need to drive these principles of disruption at the same time that we're executing a very successful business. Second, we have to look at all parts of the business model—the whole end-to-end user experience. We're using our global portfolio to test and learn. All of this requires new infrastructure, whether it's new data, testing or advertising capabilities. Finally, even I may have underestimated how important organization and culture are.

John Donahoe

# Innovation Around the Core

Searching for patterns of innovation at the fringes of the core product can possibly help you avoid becoming a target for disruption by others



The second kind of innovation takes place around our core. We are disrupting ourselves before we get disrupted.

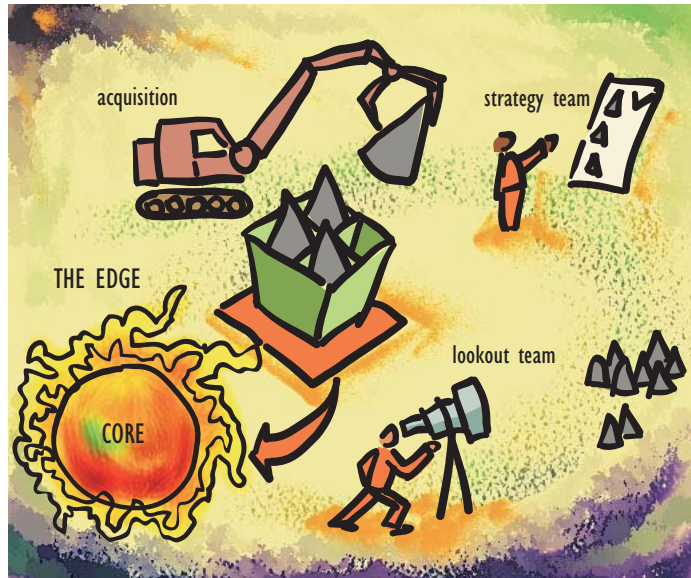
We're providing a forum to bubble-up ideas. We have a skunk works in-house. We're creating lightweight, cross-functional teams. We're giving the teams the freedom to focus on the right user experience and then worry about monetization. If we ask for too firm a business case up front, they'll never get out of the gates. We give them the space and energy to move aggressively and we use user adoption as the metrics in the early days. We talk and listen to customers, but for this kind of innovation, customers don't always know what they want. No one would have asked for a widget, but when they saw it they liked it. There's a real balance between being customer-driven and

going with your intuitions. We also put the right people on the team: not everyone can do this kind of innovation. We are acting like internal venture capitalists with resources. We give them just enough to get to the next round. We also know when to cut them off or keep them going. Finally, we involve people from the core business in these ideas, but not too early in the process. People in the core business typically want to kill these things when there's a tight quarter.

John Donahoe

# Finding New Disruptive Innovations

Innovations that are far beyond a company's core products are the most difficult for it to create; sometimes it's best to acquire



Finally, I'll touch on the last form of innovation. These are the new disruptive innovations. Meg has a controversial hypothesis that I'll share: it's really hard for large companies to do fundamentally new disruptive things, so the best way to tap and access relevant new disruptive things is through acquisition. We've built a process where we have our strategy teams constantly looking externally for opportunities. We have a lookout team whose job is to call on venture capitalists, new companies, and scan the environment. We meet once a quarter and this team comes in with the five companies, ideas or technologies that are really disruptive and have a potential for a positive impact on our business.

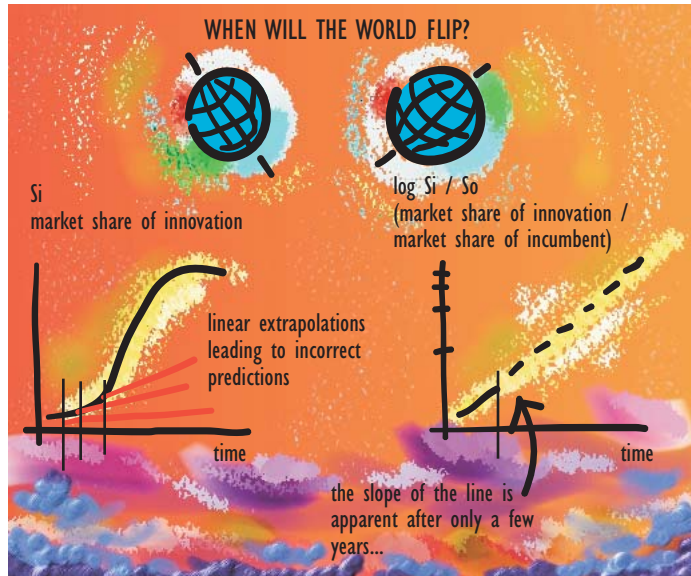
Our philosophy of acquisition includes the need to take some

focused, limited risk. We do the appropriate due diligence but we put it in context. We are not a prisoner to a discounted cash flow because we understand the potential acquisition as a disruptive risk. But we also need to understand whether the disruptive company can join ours and be a success.

Clayton Christensen & John Donahoe

# Predicting the Growth of a Disruptive Innovation

The S-curve of growth can be made linear to help predict when an innovation will flip to seize the market



Whenever a new approach substitutes for an old approach, if you plot the percentage of the market that the new approach has over time, it always follows an s-curve. Sometimes the curve is very steep and sometimes it's shallow. It takes a while for things to get formalized and understood, and then the world flips on it really fast. The problem is that the established players will look at the new stuff and see that it accounts for only two or three percent of the market and they'll extrapolate it out in a linear way, concluding that it won't be big for a long time. They take the "wait and see" approach and then the world flips on them fast and they get killed.

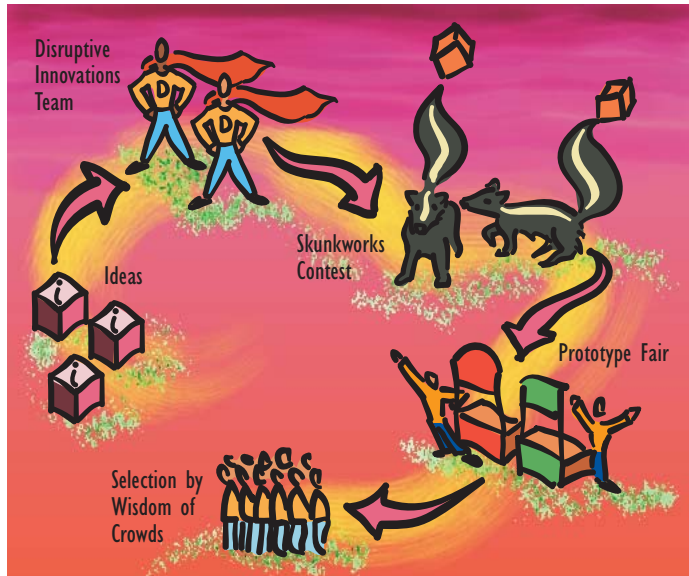
So how do you know if the world is going to flip on you next year or in ten years? There actually is a way to know. Plot a ratio of the new idea's

percentage of the market divided by the old idea's percentage of the market and plot the result on a logarithmic scale. The behavior of the ratio of market percentage always follows a straight line. The mathematics of calculating the ratio and using a logarithmic scale linearizes the s-curve. The slope of that line is generally apparent when the new industry is only three or four years old. Sometimes it's a steep line and sometimes it's shallow. You can look out and see when the idea will hit 25% of the market or 50% of the market. I would bet that Skype is still down on the flat part of the curve, but if you do this calculation you'll see that the world is going to flip at a perilously rapid rate.

John Donahoe

# An Approach to Deciding Which Innovations Get Funded

Combine skunk works, an innovations fair and some unpredictable open source problem solving

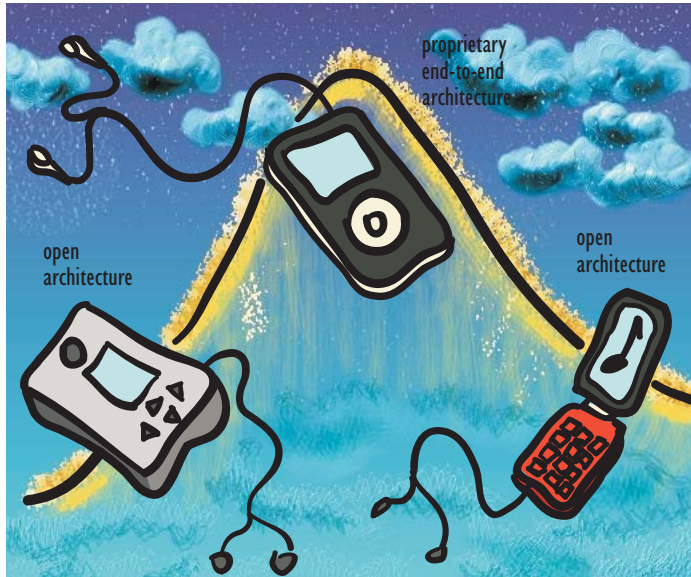


How do you manage the number of ideas that get funded and decide what should be killed? This is where our Disruptive Innovations Team comes in. Everyone knows where to take their new ideas. We have a skunk works contest that happens twice a year. Of all the ideas that come in, we fund twenty-five to build working prototypes. We talk about "prototypes, not PowerPoints." We'll have a fair where all of our employees come to see the prototypes. It's the "wisdom of crowds" phenomenon. It's usually quite clear which ones you fund. Some of my favorite innovations are the ones that I never knew about or approved. The Facebook widget happened before anyone asked them to do it. Part of our strength is breeding this innovative entrepreneurialism and having a platform that's flexible.

Clayton Christensen & Michael Mauboussin

# The MP3 Disrupts the World

The story tells the shift from open architecture products to proprietary architecture. Does the iPhone leap across or into the abyss?



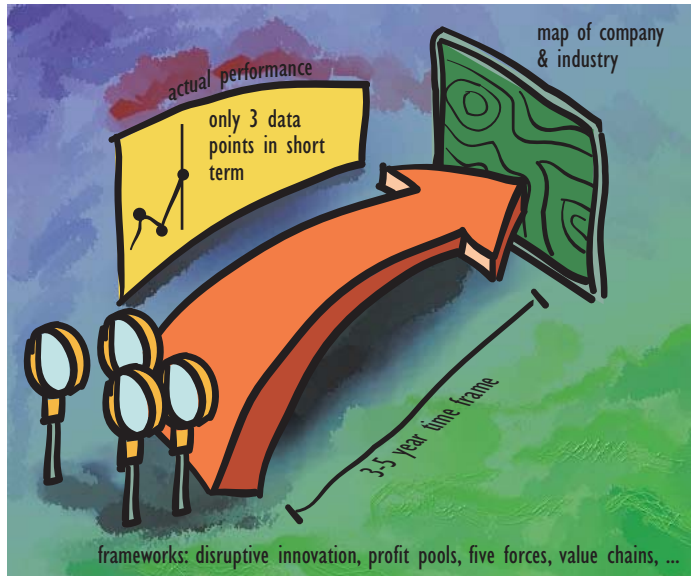
You go way back to the early years of the MP3 world. The earliest devices from Creative, Rio and so on, were open architecture products. Apple comes in with what was the right strategy—proprietary end-to-end architecture—and they just shipped their 100 millionth iPod. But if you look at the bottom of the market, almost every advertisement you see of a wireless handset today advertises the ability to download music onto the telephone. It's not as good as an iPod, but the music doesn't come from iTunes either. The music comes from Yahoo Music or others, and there's a standard interface now. I see the modular horde coming up from the bottom. This may be disruptive to Apple. They don't feel it yet because they're still growing, but that data doesn't show how much additional growth is being created at the bottom. Then they

came out with the iPhone. Lots of people thought it was a cool product. Because no one can copy Apple's coolness, they thought that it would be a big deal. Maybe it will, but if you look at it through these lenses, what they've done is leapt beyond Nokia. (And these devices will ultimately try to disrupt the notebook computer.) But they leapt beyond Nokia, and Nokia is very motivated to not give up that space. I was interested to read in the Boston Globe two weeks ago that Nokia announced a very powerful device that looks a lot like an iPhone. I think it has 8GB of memory for downloadable music. What happens when someone tries to beat the incumbent with a better product is they set into motion powerful machinery on the part of the incumbent not to lose that position.

Michael Mauboussin

# The Role of Strategy in Investing

Good strategizing requires a series of frameworks to help you see the landscape and imagine the future



The first idea is the role of strategy in investing. The average turnover for a mutual fund is something close to 100%. That turnover ratio is much higher for many hedge funds that are active in the markets. So if you're looking at a 12 month or 6 month time horizon, you typically get two or three data points—a new product introduction or earnings report. Also, quantitative funds, which have become more prominent over recent years often use statistical arbitrage techniques. Strategy is not particularly important for those kinds of investors, and understandably so. In contrast, if you're a long-term-oriented investor, strategy is really crucial to what you do. What we try to do is buy businesses and understand what the company and industry will look like in the future. A typical time horizon for us would be 3-5 years. Strategy is absolutely

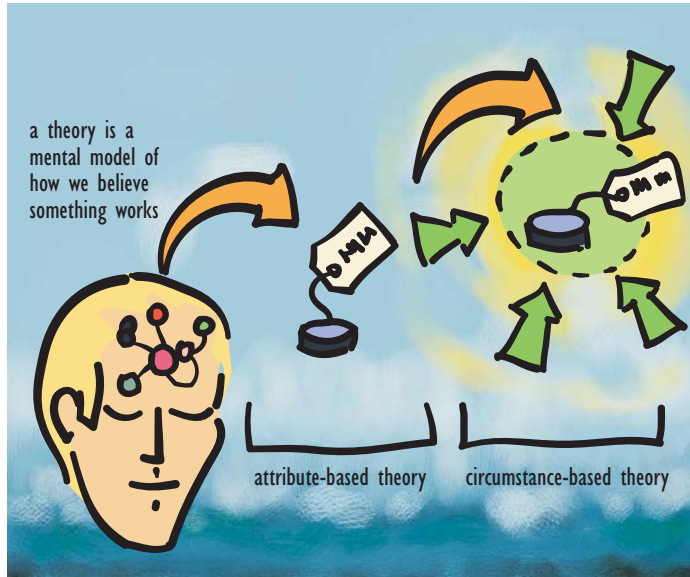
crucial to thinking that out properly, and—put more bluntly—thinking about which companies will win and which will lose in the marketplace.

While the disruptive innovation framework is fantastic and is one we do use, it's one of a number of different strategy frameworks we put to work. We talk a lot about profit pools, five forces and value chains and so on. It's an important part of a broader toolbox that we use to try to understand problems as robustly as we can. So strategy is really crucial to a long-term-oriented investor but not necessarily for all investors.

Michael Mauboussin

# Circumstances vs. Attributes

As theory improves, it becomes more robust and moves from being attribute-based to being circumstance-based



a theory is a mental model of how we believe something works

attribute-based theory

circumstance-based theory

Theory is something that tries to link cause and effect. Many business people don't like the word "theory" because they associate it with "theoreticalness," or "airy," or "not the real world." But we all operate with theories in our heads, whether we acknowledge it or not. In some of his papers, Clay has laid out some robust thoughts about how theory proceeds. A key insight from that work is that as theory improves, as it becomes more robust, it goes from being more attribute-based to being more circumstance-based. This is a big deal in the investment world.

For example, twenty-five years ago a bunch of researchers found that low P/E stocks deliver higher returns than the current model predicted. That led to a simple attribute-based theory: if you buy low P/E stocks, you'll outperform the market. As you

know, if you ask anyone in the market whether a low P/E is good or bad, they have to answer, "it depends." It depends on the circumstances surrounding it. The same goes for a high P/E. So, looking at the world from a simple, attribute-based framework can lead you down many empty paths. The other example from today is the notion of whether a company should outsource or not. Thinking through the notions of modularization-how you go from proprietary to modularized markets and what that means for wealth transfers-is a very robust, circumstance-based theory that can help you gain some important insights.

Michael Mauboussin

# Understand the Relationship Between Fundamentals and Expectations

The greatest error in the investment business is the failure to properly distinguish between fundamentals and expectations



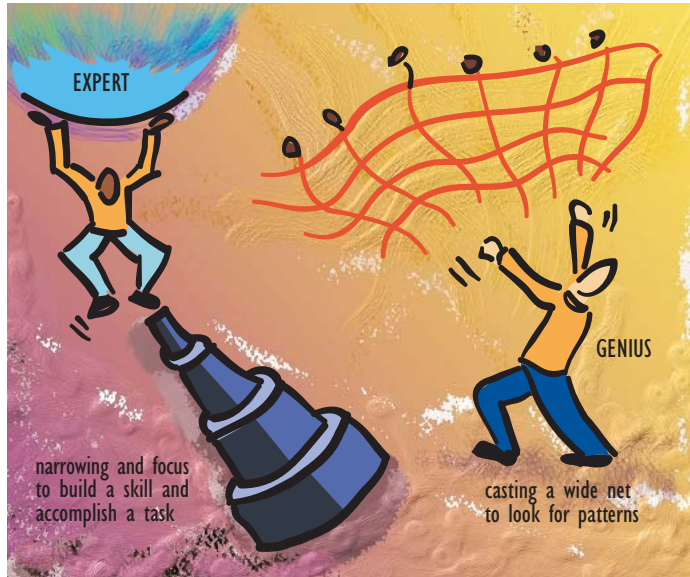
The fourth and final point I would make is something we should never lose sight of as long term investors. We're all ultimately trying to generate excess returns for our portfolio. That's what it's about. There are two parts to that equation. We mostly talked about one side of that equation, not both. The first side of the equation is about understanding fundamentals. How will a company perform based on its financials: return on capital, growth prospects, the competitive landscape and so on. As Steven Crist said last night, that concerns how fast the horse can run. Then he said that a properly-trained handicapper can do a decent job of predicting the race and rank of the horses. Those tools are out there and we can understand that stuff. But what gets you paid is not understanding the fundamentals, but the relationship between

fundamentals and expectation. The greatest error in the investment business is the failure to properly distinguish between fundamentals and expectations. When things are going well and fundamentals are good, everyone wants to buy. That's the environment that we see today. When things are going poorly, everyone wants to sell. One of the disciplines we iterate over and over is this distinguishing between fundamentals and expectations.

Bill Miller

# Expertise vs. Genius

Experts have skills that help them do specific tasks, but genius casts a wider net to find patterns where others don't see patterns



I was at a Santa Fe Institute meeting in DC a few weeks ago heard a talk on creative genius by Dean Simonton—not just ordinary creativity, but geniuses like Darwin and Einstein. The question is whether there are attributes or an attribute-circumstance model that leads to this kind of genius. He drew a distinction at the outset between expertise and genius. Expertise requires a narrowing: you study more and get more focused. That way you get a skill set that allows you to solve some kind of task. He said that the creative geniuses are very different than that. They typically have expertise but they also cast very wide nets looking for patterns where other people don't see patterns. It's like the entrepreneur who sees things in his or her mind that are different from what other people are seeing. That's part of why we do these

conferences and part of the great benefit of the books we read outside of our field.