Patterns of disruption

Anticipating disruptive strategies in a world of unicorns, black swans, and exponentials

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About the research team

This report and the pattern write-up series would not have been possible without the hard work of our research team—colleagues who tracked down case studies and cheerfully dug for data and more data on the way to proving and debunking countless possible patterns.

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Executive summary

"HOW can I anticipate the unexpected threats that could devastate my business?" This is the question that keeps us up at night. We fill our days with managing the expected, the things we can control: having the right talent, developing the right capabilities, getting resources to the right place at the right time, maintaining margin, growing revenues, delighting customers. These expected challenges are challenging enough. But what about the unexpected, the disruptive?

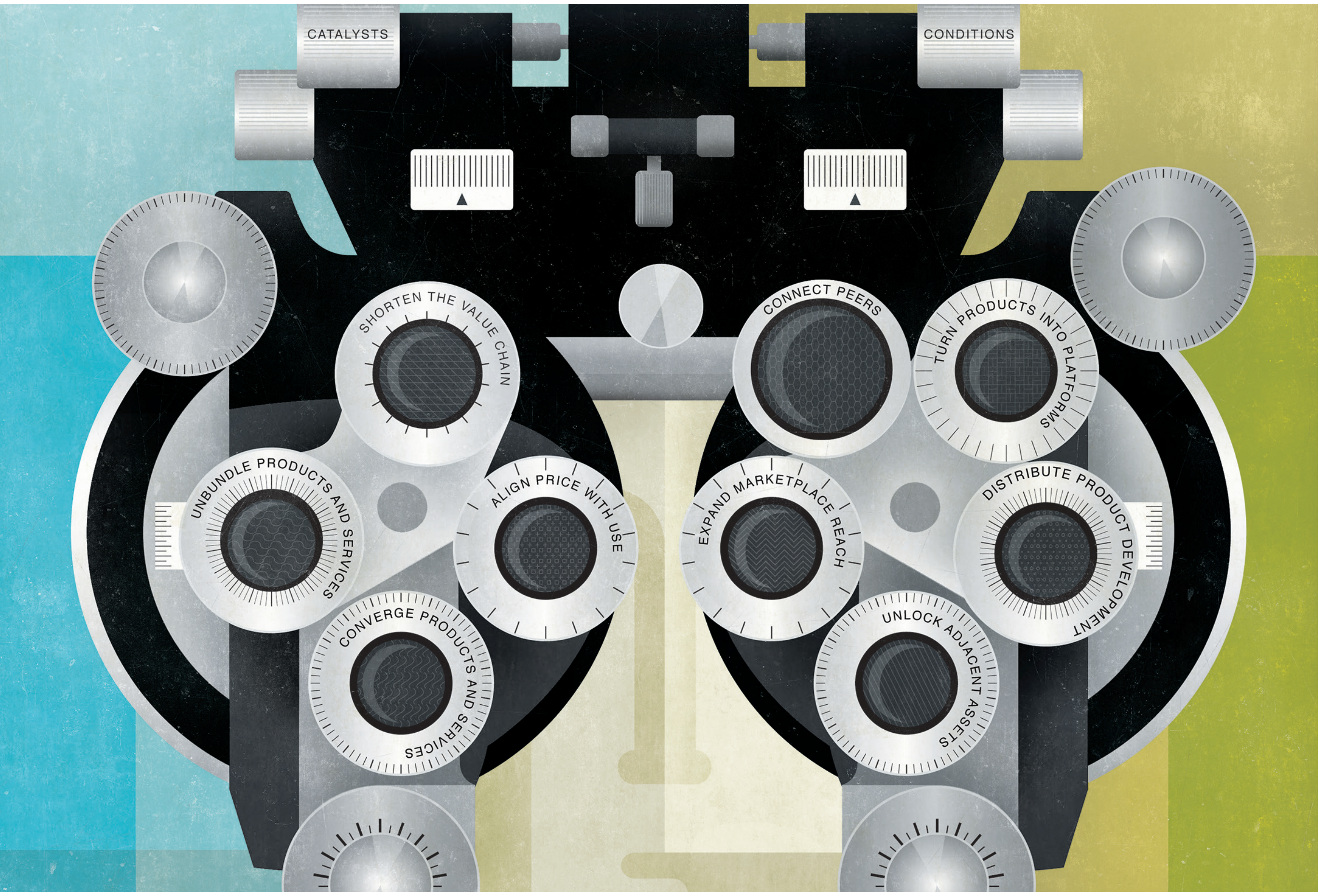
Unexpected, disruptive types of threats tend to be based in a new approach, a disruptive strategy, that was not previously feasible or viable in a given market.[1] Something changes in the larger environment—technology or customer preferences or supporting infrastructure/ecosystem—to make the new approach possible and profitable. The incumbent, preoccupied with the status quo, doesn't recognize that the ground beneath it is shifting. Hampered by the nature of the existing business, the incumbent struggles to respond effectively as the new entrant takes market share. The same aspects of the incumbent's business that made it successful also make response difficult and tend to act as blind spots, preventing it from fully recognizing the threat when it is still on the horizon.

As the first of a two-part series, this article takes an incumbent's point of view to understand what turns a new technology or new approach into something cataclysmic to the marketplace—and to incumbents' businesses. Why are these developments hard to see coming, and why are they difficult to respond to effectively? In search of patterns, we looked far and wide across arenas as varied as voice-over-IP, furniture manufacturing, fantasy sports, and travel guides. We analyzed dozens of cases from the past 20 years, including some favorite "unicorns"—the unprecedented pool of tech start-ups with funding-based valuations of $1 billion or higher[2]—to home in on the specific ways threats manifest in a world rapidly becoming digital. We also considered how the next wave of exponentials (including the Internet of Things, 3D printing, and Blockchain) might fit this dynamic. We looked for cases where a leading incumbent had been displaced from its market—either by being marginalized within an existing market or by failing to capture enough of a growing market—and tried to identify what they might have seen coming if they'd known where to look and what to look for.

In doing so, we have identified nine patterns of disruption. These patterns are more than "one-off" occurrences, but they also are not universal forces; they are disruptions that will likely occur in more than one market but not in all markets. Each delivers new value through a new approach subject to a set of market conditions. Each brings its own challenges for the incumbent. These nine patterns can't describe every possible challenge a business will encounter, but, individually and in tandem, they do help make sense of the changing environment and competitive dynamics that many companies are experiencing.

So how can incumbents avert disaster? First, see it coming: Understand the shape new threats are likely to assume (patterns of disruption); understand what particular disruptive strategies your market is most vulnerable to; and understand what will act as catalysts for those threats. Armed with this understanding, you can start asking the right questions of your business and the world around you to not only anticipate changes but make the "unexpected" expected—to begin making the choices and taking the actions needed to control your destiny and see the opportunity on the flip side of the threat.

In part two of this series, we'll explore the strategies that will be most effective in preparing for, responding to, or taking advantage of the particular patterns that are most relevant to a given market or business.



Introduction

IN January 2012, Eastman Kodak Co. filed for bankruptcy after a tumultuous decade that saw the 130-year-old company rapidly lose relevance as picture-taking consumers switched from film to digital photography. The company had lost money for nine of the previous twelve quarters, and employed fewer than 20,000 workers from a high of over 145,000 in the late 1980s.[3]

OUR APPROACH: SEEKING DISPLACEMENT

In this report, our first task was to identify cases where leading incumbents had been displaced from their markets. Although we were looking for loss of market share by revenue, in cases where significant value was removed from specific markets, we considered proxies such as loss of share of total number of users.

We looked broadly across a variety of tech, non-tech, digital, and non-digital arenas in search of displacement. We discovered that this type of enduring displacement of leading incumbents (versus the period-to-period jockeying for position between multiple established competitors) was relatively difficult to prove, given the subjectivity in how markets are defined.[4]

Why displacement? The persistence of corporations is such that even businesses that have been significantly weakened, with their revenue streams depleted and/or their business model undermined, tend to continue for a surprisingly long time. Bankruptcy laws allow companies that have been significantly weakened to restructure debt and get out from under labor obligations. These businesses may take several years after being disrupted to actually fail, or they may not fail at all. Some companies, by virtue of size and cash reserves, can survive despite losing market after market. Nonetheless, to company leadership, investors, and certainly the employees of the main business at the time who suffer layoffs or restructurings, disruption has occurred.

UNICORNS, EXPONENTIALS, AND BLACK SWANS

"Unicorn," a name popularized by venture capitalist Aileen Lee in 2013 and a phenomenon that has captured both the imagination of would-be tech moguls and the angst of an economy in transition, refers to any of the tech-based start-ups that, based on fundraising, have achieved valuations of over a billion dollars. As *Fortune* points out in "The age of unicorns," this phenomenon did not exist prior to 2003.[5] Neither Google nor Amazon had such valuations as private companies, but now there is a long and ever-changing list, headed by the likes of Uber and Airbnb. It has also been noted that these soaring valuations are on paper only and represent a break from traditional pre-2000 valuation models.[6]

"Exponential organizations," a phrase coined by Singularity University founding executive director Salim Ismail, refers to companies that are designed to leverage the abundance of resources afforded by exponentially advancing underlying technologies (for example, core digital components like computing power, storage, and bandwidth, as well as second-order technologies like social, big data, analytics, and synthetic biology). Exponential organizations have a disproportionate impact relative to traditional, linear companies organized for command and control.[7]

"Black swan" describes a rare, unexpected, high-profile event that has a significant impact (across societal, geographic, economic, and chronological boundaries). It derives from a theory developed by Nassim Nicholas Taleb and can be thought of as disruption on a broad, universal scale.[8]

The story of Kodak's decline is well known. And, especially among a population whose days are permeated with digital technologies, one can only shake one's head and wonder, "How did Kodak miss out on digital photography?" This is an important question for executives today who want to avoid losing the market they lead or even going out of business entirely. Strategic analysis with the benefit of hindsight, however, is easy. Embedded in Kodak's story are other, more useful, questions: Why was the technology so disruptive to this established business? Why couldn't the company react? How could leaders have identified the significance of this new technology amid the noise of so many other changes in the global business environment? What trends within and beyond the industry catalyzed what might have been an interesting new product technology into a disruptive force? What aspects of Kodak's market, and adjacent markets, rendered the company unable to recover from the turmoil wrought by the new technology?

These questions, and their answers, become even more important if we consider the accelerating changes in the forces that catalyze disruption—changes that we believe will increase the pace and frequency of dramatic market displacements.

To attempt to answer these questions and, in so doing, better understand what market leaders might do to avert this type of devastating loss, we looked for clues in the past and present. We had a sense that, just as markets in the 20th century followed certain patterns around scale and efficiency, there would be patterns to how 21st-century markets worked as well. We looked for examples of companies that had lost market leadership to new approaches that they seemingly could not reconcile with their core business. We also looked at incumbents that are currently suffering under an onslaught of new entrants wielding new technologies—the so-called unicorns and exponential organizations (see sidebar, "Unicorns, exponentials, and black swans"). Finally, we considered these cases in light of evolving underlying technologies, shifting consumer dynamics, the rise of platforms, and other changes in the global environment that might inform our understanding of the nature of unexpected threats in the 21st century.

Why is disruption so hard to see?

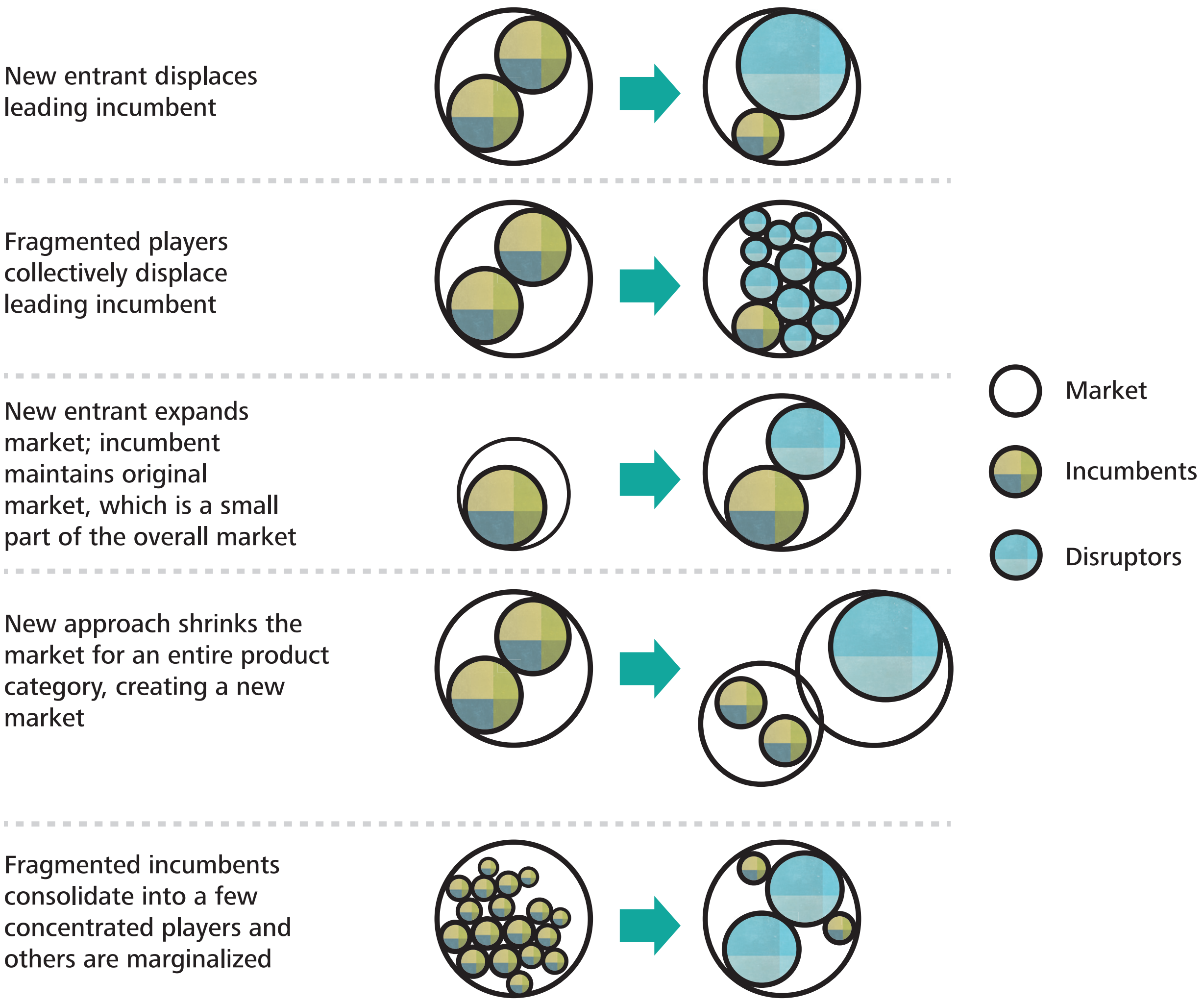
OF course, the problem with disruption is that we tend not to recognize it for what it is until it's too late. Just ask *Encyclopedia Britannica*. With the benefit of hindsight from the vantage point of a world where Wikipedia almost always comes up in the first three results for any online search, the expensive and massive collection of heavily edited, bound volumes seems an anachronism, both ostentatiously authoritative and hopelessly static, out of touch, and out of date before the ink even dried upon the page. But what did it look like in 1993 when Microsoft introduced Encarta Encyclopedia for PC, or in 2001 when Wikipedia began attracting contributors?[9] Or imagine that you are a hotel executive hearing murmurs of a service for renting out a spare room or sofa bed. Does Airbnb look like a threat to your continued viability? And if it does, what constitutes an effective response?

As straightforward as it may sound, one part of the problem is simply recognizing that market leadership is being lost. New entrants wielding new approaches uproot incumbents in five ways (figure 1), some of which take longer to manifest; with these slower ways, the length of the process breeds false security.

In its most familiar form, displacement can be as clear-cut as Amazon taking customers and revenue from Borders in the US book market. The incumbent simply loses customers because the value delivered is no longer sufficient to win the market. In this scenario, given most companies' focus on short-term metrics like revenue and profitability growth, the incumbent quickly recognizes the new entrant as a threatening competitor.

Similarly, the incumbent will likely notice loss of share to fragmented new entrants, although a large company accustomed to one or two main rivals may underestimate or misunderstand the threat of a multitude of small players in aggregate. When independent music artists, enabled by digital tools, began to find an audience in the early 2000s, the four major record labels, which had collectively controlled

Figure 1. Incumbents may walk multiple paths to displacement



Graphic: Deloitte University Press | DUPress.com

over 80 percent of the market, continued to compete with each other for hits while a host of non-major labels with niche artists stole nearly 30 percent of their market share.[10]

What about when a new approach grows the market significantly and the incumbent stays roughly static, neither losing nor gaining an appreciable amount? The incumbent might not consider itself displaced. Eventually, however, failing to capture growth in a growing market will catch up to the incumbent through lack of investors, flight of talent, and fewer opportunities to learn and position oneself for industry evolution. Again, the incumbent may not recognize the competition because of market myopia: that is, it defines its market and competitors too narrowly. Yet the incumbent has no incentive to think about its market in any other way, particularly when the analysts say it dominates that market.

Counting on the market to continue to be defined as it has traditionally been defined can lull an incumbent into being blindsided by another form of displacement: collapse or dramatic contraction. This can happen when a new approach sucks a significant amount of value out of a market, either through demonetization or through eliminating the demand for an entire type of product. Classic examples include refrigeration eliminating the market for ice delivery and, more recently, the smartphone eliminating much of the demand for point-and-shoot cameras, calculators, flashlights, and travel clocks.

Finally, although it is less of a threat to large companies, fragmented incumbents can be displaced from the market through consolidation. Scale becomes the dominant competitive advantage where before it was not; the remaining fragmented players cannot compete in the general market and either consolidate or specialize.

In recognizing threats, much depends on identifying the potential ways in which the relevant market might be redefined. That is why understanding the multiple forms of displacement is so important. It is too easy for incumbent leaders, engaged in the day-to-day business of maintaining an existing competitive advantage, to overlook potential challenges from beyond the narrow arena where they are, like the mythical children of Lake Wobegon, "above average."

Another part of the problem is that the world is volatile and full of noise. On the surface, many of the cases of disruption feel strikingly similar (and are lumped together by headlines and conference breakouts about the "sharing economy" and "collaborative consumption"). However, they are also different in important though hard-to-articulate ways. For example, many disruptors—Amazon, Salesforce, Uber—employ platforms, yet most prove threatening to the incumbent through a different source of value creation. It wasn't the platform per se that was disruptive so much as the usage-based pricing for Salesforce or the unlocking of private assets for Uber. For Amazon, on the other hand, it was the extended market reach of its aggregation platform that gave it its disruptive power.

By the time *Encyclopedia Britannica* shut down its print edition in 2012, it had sold only 8,000 units of its print publication over the previous three years.[11] Newspapers everywhere similarly suffered drops in print sales as free, crowdsourced sites like Reddit competed against newspaper-based journalism. The leaders in those industries probably could not have imagined a scenario where people would accept the word of faceless, uncredentialed peers over the authority of an august institution. But with platforms that allow many faceless peers to come together, adding to, editing, and moderating each other's work, it turns out that the average consumer is more willing to trust faceless peers than anyone had thought.

Disruption happens when a new approach meets the right conditions. And the conditions, it turns out, are always changing.

Context is everything: Why yesterday's novelty can be tomorrow's disruption

AS has been often pointed out, Kodak invented the digital camera back in 1975. At the time, the company chose not to pursue it. It was a rational business decision at the time: Kodak didn't switch its product line over to digital or begin phasing out film, yet for two decades, Kodak performed very well.[12] Why was the digital camera of 1975 not disruptive, or even viable, while the digital camera of 2005 displaced an American giant?

Whether looking at it from the perspective of an innovation's potential or an incumbent's vulnerability, context is key. Real potential threats and opportunities are time-, market-, and incumbent-dependent. What completely displaces the market leaders in one market at a given point in time might, in another market or another time, merely advance the state of technology and expand customer expectations, forcing the entire market to move forward.

First, the environment in which businesses operate and in which individuals work and consume is unique to a time and, sometimes, to a place. New products and new entrants occur within larger trends, across the economy and across the globe. The forces of the Big Shift (the increasing price performance of core digital technologies coupled with a trend toward liberalization of policies governing the flow of resources), and the subsequent impacts (value shifting from stocks to flows, rising consumer power, intensifying competitive pressures) have been reshaping the global business environment for the past several decades. With greater access to tools of production and emergent ways of organizing and doing business, once-prohibitive barriers to entry are dropping such that modestly sized new entrants can now economically address segments of fragmenting consumer demand. And the impact is accelerating as advances in the underlying technologies accelerate. Whereas the disruptive threat faced by Kodak took some 30 years to play out, we now see certain incumbent businesses threatened in a matter of a few years or even months after the unveiling of a new technology or the arrival of a new unicorn (see figure 2 on technology adoption). All of this challenges the business practices and orthodoxies carried forward from the 20th century.

The Big Shift's forces create the catalysts for disruption to occur, and neither the forces of the Big Shift nor disruptive events proceed apace across all industries or markets.

Market conditions

Every market has unique conditions that determine the competitive dynamics in that market. The market conditions at a specific point in time will affect what types of threats emerge, how they will be perceived, and how incumbents react.

Although there are many market conditions, characteristics of the product, characteristics of demand, and characteristics of industry structure proved most relevant to the way threats develop and the impact they have on the market in the cases we analyzed. Figure 3 shows a representative list of the types of conditions that affect whether the introduction of a new technology or business model in a given market is rejected, appropriated by incumbents, or poised to displace incumbents. The very characteristics that have made a market attractive for the incumbent, by acting as barriers to entry, can make a market more susceptible to disruption. For example, in a very concentrated market (where a few large incumbents claim the vast majority of market share) with high switching costs, incumbents might become complacent about customer relationships and lose the ability to notice or respond quickly to changing customer preferences. Such a market would be vulnerable to a new entrant with an approach that redefines the customer relationship and delivers value to the customer that outweighs (or reduces) switching costs.

Catalysts

A catalyst is a change in the broader environment that serves as an early indicator of possible disruption. Catalysts can be thought of as *shifts from the historic, prevailing conditions to new conditions.* They can change the desirability of an offering or the viability of a business model by either making a new offering technically feasible, enabling a new offering to equal or exceed the features of current offerings, or by changing the market conditions

Figure 2. Time to reach 50 million users

Source: Bernd Leger, "20 fresh mobile trends," Localytics, May 13, 2013, http://www.localytics.com/blog/2013/mobile-statistics.

Graphic: Deloitte University Press | DUPress.com

Figure 3. Representative market conditions

Product characteristics	Modularity Functionality Use Pricing and contracting Design and development
Demand characteristics	Demand profile Customer preferences Market composition
Industry structure	Value chain complexity Supply constraints Distribution constraints Asset structure Regulatory conditions

Graphic: Deloitte University Press | DUPress.com

or the economics of production/distribution such that a new offering becomes desirable even if its quality or functionality falls short of existing offerings.[13]

These broader catalysts precede any action that an individual company would take. Therefore, we've defined catalysts as shifts outside of a company's direct control rather than company-made decisions. For example, Borders' decision to use Amazon for online fulfillment is not a catalyst per our definition, although it is a business decision that may have contributed to the company's downfall. Similarly, Wikipedia's creation of the wiki platform was not a catalyst for Wikipedia's disruption of the paid encyclopedia market.

The most relevant catalysts for anticipating disruption are related to enabling technologies, customer expectations and preferences, platforms, macroeconomics, and public policies (figure 4). It should be noted that catalysts often exist independent of market or industry designations, although, as we will discuss, specific market conditions may shape the degree of impact a catalyst has on that market.

Enabling technology. Directly or indirectly, technology—from the printing press to the steam engine, electricity, and the microprocessor—drives change in society and in the economy, in both the personal and the public sphere. Advances in core enabling technologies are at the root of most of the disruptive potential we see. As a catalyst, enabling technologies are technologies that can be applied to drive radical change in the capabilities, structure, or economics of a business, user, or culture.

Rapid advances in enabling technologies are characterized by rapid development of subsequent derivative technologies. For example, the transition from analog to digital music allowed for songs and CDs to be distributed online; this quickly led to new file-sharing protocols and protections, new payment systems, and the development of streaming services and specialized digital marketplaces. Similarly, as technologies such as additive manufacturing enable small-scale manufacturing to be more cost-effective, changes in the interactions, dependencies, and economics within the larger manufacturing ecosystem will drive technological and infrastructural advances (for example, protocols for modifying and licensing designs) to support them.

In addition, as the rate of price performance improvement in core technologies accelerates, so, too, do innovations that combine these technologies in new and interesting ways, blurring the traditional boundaries between industries or disciplines. These innovations layer upon each other, with technological advancements enabling further layers of innovation in a cycle of exponential innovation. For example, Project Cyborg, led by computer-aided design (CAD) software maker AutoDesk, combines the ability to use cloud computing to run modeling, simulation, and sophisticated analytics on vast amounts of data with 3D printing technology and advances in materials science to

Figure 4. Some representative catalysts describing shifts that occur in the global environment

Enabling technology	Digital infrastructure providing richer connectivity Affordable access to sophisticated tools of production Cheaper, faster, more reliable shipping making the world smaller Affordable sensors making the invisible visible
Customer mindset	From "wanting the best" to "accepting the basics" From accepting standardized to expecting personalized From ownership to access From passive customer to active customizer
Platform	Aggregation and social platforms reducing isolation Aggregation platforms reducing inventory and distribution costs Scalable learning platforms reducing barriers to entry Learning and aggregation platforms increasing collaboration
Economy	Sense of scarcity increasing willingness to share Constrained buying power decreasing willingness to pay up front Lower purchasing power increasing demand for affordable, versatile products Challenging economic conditions increasing demand for "good enough"
Public policy	Self-regulation and open source in place of protected IP Regulatory and legislative structures adopting "wait and see" approach Local decision making and budgeting Changes in the tax or legal code

Graphic: Deloitte University Press | DUPress.com

"reframe the science of living things as a design and engineering challenge," with significant implications for biotechnology, pharmacology, and materials engineering.[14]

Customer mindset. Businesses are driven by customer demand. But customers' values, preferences, and expectations are not fixed, nor are they universal (although for business purposes, identifying broad trends can prove useful). It is worth pointing out that, although we tend to think of individual consumers when we talk about mindset, business customers also have values, preferences, and expectations that influence demand. At any rate—whether an individual consumer or a business—customers have expectations that are shaped by what they see around them, what they experience in other facets of their personal and professional life, and by financial and social pressures. Sometimes there is a noticeable shift in expressed values. For example, after the collapse of a garment factory in Bangladesh in April 2013, media outlets such as the *New York Times* and NPR reported that increasing consumer awareness of labor practices and working conditions was beginning to influence clothing purchase decisions, and that some retailers and industry groups were adopting new practices as a result.[15] At other times, it isn't so much that values or preferences change as that customers now believe something is feasible and reasonable that previously was not. For example, consumers today might expect to find more personalized products at an affordable price, while a few years ago, they may have thought that affordable prices meant settling for "standard" products. Sometimes the shift occurs in context—for example, US consumers may have valued participation and "doing it yourself" for a while, but only relatively recently has that expectation extended into arenas such as health and education.

> It is worth pointing out that, although we tend to think of individual consumers when we talk about mindset, business customers also have values, preferences, and expectations that influence demand.

In addition, shifts in customer mindset may take time to register, as feasibility often precedes widespread demand. Customers don't necessarily express a preference for something until they learn that it exists or is possible, often because another vendor or producer has offered it to them. Then, suddenly, they expect it, everywhere. For example, customers paid for advertising based on rates set for expected reach until 2000, when services like Google AdWords offered advertising based on engagement (clicks). Now, business customers expect pay-for-performance and usage-based pricing rather than fixed upfront fees for services ranging from web hosting to data centers and office space.

Implicit in customer mindset as a catalyst is a shift in customer behavior that affects demand for a given product and/or how companies need to operate to meet that demand. This shift may be as simple as customers reprioritizing their values or preferences. For example, customers may begin to demand more of what they valued all along—personalization—simply because they have come to recognize that personalized products do not necessarily need to cost more than "standard" mass-market products.

Platforms. Broadly defined, platforms help make resources and participants more accessible to each other on an as-needed basis. They can become powerful catalysts for rich ecosystems of resources and participants.[16] While there are many types of platforms and the term is used in many contexts, well-functioning platforms share two key elements: a governance structure and a set of enabling protocols. A governance structure includes a set of protocols that determines who can participate, what roles they can play, how they interact, and how disputes are resolved. The enabling set of protocols or standards is designed to facilitate connection, coordination, and collaboration.[17] In the most effective, and therefore most catalyzing, platforms, the governance structure and enabling protocols provide just enough structure to facilitate smooth interactions that engender trust in the platform, without being too cumbersome to attract participants or to scale.

As catalysts, we have identified four types of platforms:

- *Aggregation* platforms facilitate transactions, connect users to resources, and tend to operate on a hub-and-spoke model.
- *Social* platforms facilitate social interactions, connect individuals to communities, and tend to foster mesh relationship networks.
- *Mobilization* platforms facilitate people taking action together around a cause or vision. They tend to foster longer-term relationships to achieve shared goals.
- *Learning* platforms facilitate sharing insights over time. They tend to foster deep, trust-based relationships as participants work together to achieve more of their potential.[18]

Economy. Macroeconomic factors, such as economic growth, interest rates, or exchange rates, affect how businesses and individuals operate and make decisions. Significant changes in the macroeconomy, such as the tightening of credit markets in the United States after the 2008 crash, can alter the financing options for a business; more generally, they can affect the priorities and assumptions underlying decisions about purchases and investments. To the degree that macroeconomic changes persist, they can pose challenges or opportunities for both incumbents and new entrants.

But even for cyclical economic factors, the disruption does not necessarily go away when the cycle ends. Between 2007 and 2010, for example, real consumer spending in the United States fell nearly 8 percent,[19] and some customers, both business and consumer, became more cost-conscious and interested in reducing nonessential purchases. Their associated behavior—buying fewer and lower-priced products and brands—lingered even though the economy improved, in part because their understanding of the available options expanded: "Of consumers who switched to cheaper products, 46 percent said they performed better than expected."[20]

Therefore, although an economic change can help to catalyze some aspect of the new approach or amplify its disruptive potential—so long as it persists long enough for a new approach to gain critical mass, particularly where network effects develop—the threat of disruption will endure independent of economic cycles. Consider the explosive growth of Airbnb and the sharing economy overall. These new collaborative consumption models were launched into an environment of economic uncertainty and newfound frugality after the 2008 crash and subsequent recession. In this case, both consumers and businesses were looking for ways to meet their needs without incurring significant costs; they were more open to new models that could deliver value (for consumers) and growth (for businesses).

Public policy. When the government changes the degree to which it intervenes in a specific aspect of the business environment or society, the result can limit options for businesses or open up new opportunities. The public policy environment is not restricted to legislation and regulation, but includes the influence of changes to tax policy, labor law, environmental law, trade restrictions, tariffs, and political stability on markets and individuals.[21] For example, the Affordable Care Act, which mandated health insurance coverage for all US citizens, could be considered a catalyst because decoupling health insurance from employment might cause the workforce to behave differently. These different behaviors might put new pressures on businesses, but it also might open up opportunities for new health-related businesses to serve customers in a different way. On the other hand, the legalization of marijuana highlights how the *removal* of a law or regulation can act as a catalyst for new business opportunities; these opportunities may prove to be disruptive (for example, to certain types of pharmaceutical firms or to certain black market organizations) if the trend toward marijuana decriminalization spreads nationally.

We use the term "public policy" broadly to include other types of regulating agencies or structures that substitute for government activity as a result of government inaction or a public policy's perceived ineffectiveness or irrelevance. An example of this might be the influence that self-regulated, open-source, and Creative Commons licensing has had relative to a litigated patent environment.

Returning to the story of Kodak, what were the shifts between 1975, when the digital camera was not worth pursuing, and 2005, when the digital camera killed the film photography business? In this story, enabling technologies played the starring role of catalyst. The decreasing cost and increasing quality of digital technology made photo digitization both possible and affordable for the mass market. The improving technology allowed digital cameras to compare in size to existing cameras, and while the price for digital cameras was higher than for the mass-market 110mm and disposable cameras that had gained popularity, it satisfied the needs of most users, most of the time. In addition, customer mindset played a catalyzing role along with technology: With the proliferation of laptops and personal computers, the public was becoming increasingly familiar and comfortable with using digital technology on the Internet, as well as with creating and sharing digitized media via email and online processing services such as oFoto (acquired by Kodak in 2001) and Snapfish. Hence, the average photo-taking consumer shifted from wanting to capture one special moment on paper to put in a photo album to wanting a camera to record images as they happened. As social platforms became part of everyday life, that too opened up a new way to experience and share images, and digital cameras became not just acceptable but preferable.

As Kodak's story illustrates, catalysts not only influence the market conditions but also interact with, and sometimes reinforce, other catalysts. As well, an innovation in one market can have a catalytic effect across many others, either as an enabling technology or, often, through changing customer mindset. Consider the effect that both digital cameras and downloadable music had in shifting customers' expectations around timing to instant gratification. This expectation has quickly permeated other arenas, such as the market for books, movies, TV, and now even groceries and other physical products.

Why can't incumbents respond?

ONE of the first thoughts that springs to mind when we hear a case about a leading incumbent losing the market to a new entrant is, "Why didn't they react? Why didn't they do something before the situation became so dire that the only options were layoffs and shuttering facilities?"

The simple part of the answer is that disruption is a lot easier to see in retrospect. Responding effectively presumes that the incumbent recognizes the threat as it is happening; often, that isn't the case. Understanding the patterns and forms that threats take can help companies improve their ability to identify imminent threats.

Even when the incumbent is aware of the new entrant (or new approach) and has competent management at the helm, however, adopting a new business practice or developing a new product is not so simple. A number of factors—such as poor decision making, cumbersome processes, a stodgy culture, and/or lack of leadership to drive change—can derail a business's response regardless of the particular shape or pattern of the threat. In particular, many large companies face a growing mismatch between their tightly defined processes and rigid planning and budgeting cycles on the one hand, and the increasingly fluid and interconnected environment on the other. Given their vested interest in preserving the status quo, it is not surprising that large incumbents tend to magnify risks and discount rewards when dealing with uncertainty. As we discuss below, the characteristics of an incumbent business at the time of disruption can get in the way of adapting to certain types of threats.

The barriers to incumbents' ability to respond to any specific disruptive threat tend to fall into three categories, which can also act as blind spots to recognizing a threat in the first place. The first barrier is that replicating the disruptor's approach would cannibalize profitable revenue streams. New entrants may employ a new delivery approach that has a fundamentally different cost structure, or they may completely reconceive the product. In either case, the incumbent must either replicate the new product, cannibalizing its existing products, or undermine its own product's profitability with a new pricing model to remain competitive. Thus, especially for a publicly traded company tied to quarterly earnings reports and the need to consistently meet or exceed financial expectations, it is easier to double down on activities to bolster the existing revenue stream's profitability than to sacrifice short-term gains to transform the business for an uncertain future.

The digital age has introduced a special, and particularly vexing, form of this problem: the demonetization of a business line or of an entire industry. Many media-related businesses are already grappling with this phenomenon. They may continue to own the largest share of the market by revenue, but the market itself has all but disappeared in terms of revenue. For example, with the widespread use of the free listing site Craigslist, nearly $15 billion in revenue formerly generated by classified ads disappeared from the newspaper industry between 2000 and 2012.[22] Adopting the new approach to remain relevant in a suddenly constrained market may be less palatable than staying the course for as long as possible.

The second barrier that can keep incumbents from responding to disruptive threats is that the new approach would render existing assets and investments obsolete. When a new entrant fundamentally changes a product offering, the incumbents' assets become liabilities. Emerging technologies or new methodologies might bypass the need for high up-front or asset-intensive investments, or the new approach might require significant new investments. In either case, the incumbent's existing assets are no longer as effective for creating value in the market. Large incumbents that previously benefited from the barriers to entry created by the need for capital-intensive assets suddenly find themselves burdened with expensive, illiquid liabilities. Acknowledging and replicating the new approach would require the incumbent to write off the assets underlying their traditional offerings, which often implies shutting down a business unit or a facility. And making and executing a decision to write off assets is difficult, time-consuming, costly, and laden with organizational politics. This type of inertia-by-investment is not limited to obvious physical assets such as those found in manufacturing and transportation. Incumbents may be hobbled by investments in real estate or other infrastructure assets—for example, if they have invested heavily in developing and supporting a particular sales capability.

Finally, the third barrier is that the emerging threat challenges fundamental assumptions about the incumbent's business and market. Competing against new entrants with new approaches requires an incumbent to think about its product or service offering in a completely different way. Often, the assumption being challenged is so basic to the business that it goes unexamined—for example, the belief that the company is fundamentally a dedicated product company and could never, or should never, be anything different.

For established incumbents, especially if they have been successful for many years, the entire organization is oriented to outmaneuver a few primary competitors with comparable business models. Competitive dynamics are viewed as fixed and known. The company assesses its health and performance relative to its primary competitors, and it dedicates resources to price competition and product differentiation. New entrants from beyond these defined boundaries may not initially be seen as competitors. This market myopia stems from the basic problem of defining one's market and competitors too narrowly. It is exacerbated because the existence of these new competitors challenges the incumbent's understanding of how the market operates and what is possible within the industry. As Christensen has identified, one barrier to a company responding effectively to a disruptive strategy can be its own "good" management within the market conditions that predominated previously.[23] In many cases, incumbents act in ways that seem rational for the business at the time.

New entrants wielding new approaches to create value

ALL businesses try to create value, and we can safely assume that successful incumbents have made it their business to deliver value to their customers. Yet, through the effect of catalysts and market conditions, what was *sufficient* value one day proves *insufficient* the next when a new entrant with a new approach emerges to blindside the incumbent with compelling new value for the customer.

New approaches can create relevant new value either directly to the customer, in the form of improved choices, greater convenience, or better addressing unmet needs, or by reducing direct and indirect costs in the system to reduce lead times, improve responsiveness, or dramatically lower costs and eliminate waste. However, the type of compelling new value that has disruptive potential is not incremental—that's the realm of the many day-to-day decisions and trade-offs companies make in the normal competitive environment. Disruptive new value represents value that is an order of magnitude better than the status quo—a level of value creation possible only through a new approach.

What do we mean by "a new approach"? Spend any time listening to start-up pitches, and after multiple rounds of "We want to be the Uber of X," one might start to believe there is only one new approach. When we looked at case studies, however—and in particular at the unicorns—we took a wide view of what might constitute a new approach.

Certainly, today's ubiquitous digital infrastructure and the improving price performance of core technology components are fundamental to many new approaches. It is hard to imagine an Uber or Airbnb without the widespread adoption of all things digital and the rapid evolution of mobile and sensor technologies. At the same time, however, a new approach is more than just new technology. It involves thinking about the customer in a different way, reevaluating the relationship between brand and consumer, rethinking how value is created, and, generally, reimagining the possible in a world that is, by many accounts, poised in the elbow of an exponential curve. While digital will continue to redefine roles in the business environment and the relationships institutions have with individuals and each other, the next wave of exponentials—bringing advances in digital biology, the Internet of Things, 3D printing, artificial intelligence, and Blockchain—will likely further enable and expand these new ways of creating and capturing value.

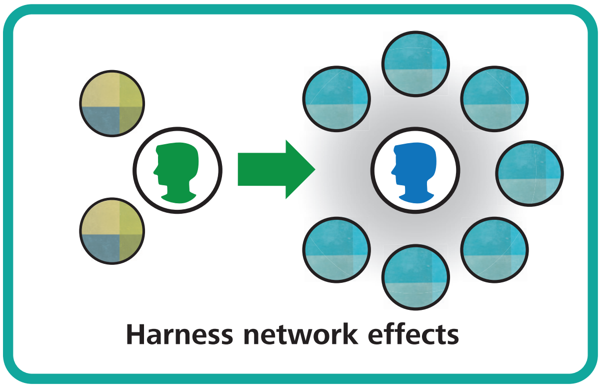
How to avert disaster

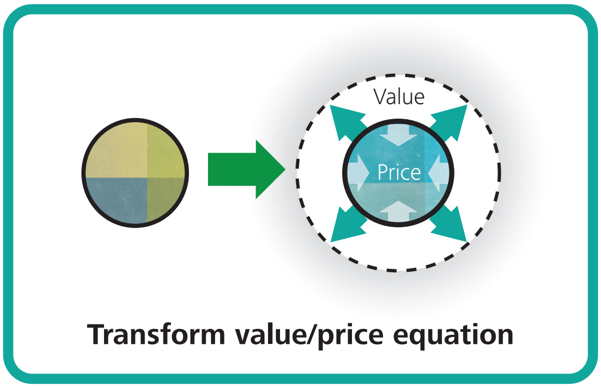
ULTIMATELY, the leader of any organization wants to avoid the types of unexpected challenges we've described. As discussed, disruptive threats are cataclysmic precisely because they are hard to identify in advance and difficult to respond to from the context of an incumbent business. Companies that grew up in the 20th century, when scalable efficiency, predictability, and standardization won the day, are in the midst of a very challenging environment. The basic assumptions of what methods and practices will deliver the most value must be reassessed, and reassessed again. New infrastructures are bringing new sets of priorities and trade-offs. Often, the same aspects of a business that made it successful act as blinders to correctly identifying threats and to formulating appropriate response strategies.

Patterns: The shape of threats to come. Through our research into recent and emerging cases of significant market incumbent displacement, we identified nine patterns of disruption—ways that disruptors created new value through a new approach under specific market conditions—that seemed generalizable, in both the past and future, beyond one-off instances (figure 5). These patterns describe disruptions that are likely to affect multiple markets but will not be universally disruptive; they require a specific context to occur in a way that threatens incumbents. Each of the nine patterns entails a particular combination of tactics and enabling catalysts that pose specific challenges for incumbents under certain conditions. The patterns are not predictive or absolute, nor are the nine intended to be fully exhaustive. In some cases, patterns can occur in sequence, with one pattern laying the groundwork for eventual disruption by another.

By framing threats as patterns of approaches, catalysts, and conditions, it becomes easier to filter the noise and put it in context. These nine patterns can act as a lens through which to view one's business, the market, and the surrounding landscape. They can provide incumbents' executives with a framework for important conversations about their businesses and the potential for disruptions in relevant markets.

Figure 5. Nine patterns of disruption





Expand marketplace reach
Connecting fragmented buyers and sellers—whenever, wherever

Unlock adjacent assets
Cultivating opportunities on the edge

Turn products into platforms
Providing a foundation for others to build upon

Connect peers
Fostering direct, peer-to-peer connections

Distribute product development
Mobilizing many to create one

Unbundle products and services
Giving you just what you want, nothing more

Shorten the value chain
Transforming fewer inputs into greater value outputs

Align price with use
Reducing upfront barriers to use

Converge products
Making 1 + 1 > 2

Graphic: Deloitte University Press | DUPress.com

What is an incumbent leader to do?

There's a natural psychological reaction we all have when confronted with change, which is to go into denial. Yet the more we understand that change—significant change—is becoming a critical part of our business environment and seek to explore the opportunities that it creates, the better positioned we will be to succeed. Here are some steps to consider:

Assess market conditions: Which types of threats is my business vulnerable to?

Markets are the petri dishes in which the ingredients of disruption come together; catalysts are constantly altering conditions in the dish. When a new approach encounters the right conditions, incumbents are displaced. The conditions that make a market vulnerable are specific to the type of threat or new approach described by the pattern. At the same time, as we've discussed, the relevant market can be somewhat ambiguous. Industries are blurring, as are geographic and demographic boundaries. Define your market too narrowly, and you will miss both threats and opportunities. Define it too broadly, and considering market conditions is useless.

Given this difficulty, each of our forthcoming reports on the nine patterns of disruption includes a set of questions for assessing the product, demand, and industry characteristics of your market, however you define your market. This market conditions framework

THE "PATTERNS OF DISRUPTION" CASE SERIES

The pattern descriptions in this paper are summaries, intended as a basis for helping large organizations think about how their businesses may evolve. In the forthcoming "Patterns of disruption" case series, we will describe each of the nine patterns in detail and illustrate them with representative cases as well as with more speculative or emerging stories. In each instance, our intent is to provide a framework that generates the questions and conversations executives should be having about their businesses and the potential for disruptions in relevant markets. The format is designed to invite discussion and reflection on each of these categories within the unique context of a market or industry (figure 6).

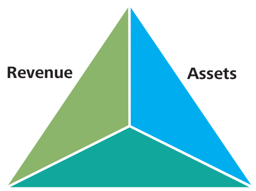
Figure 6. The "Patterns of disruption" case series will include expanded definitions of each pattern as well as quick reference pages.

Expand marketplace reach

Connecting fragmented buyers and sellers—whenever, wherever

def. Significantly expand market reach via a marketplace (typically digital) that allows customers to access a broader range of producers and suppliers

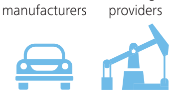
Cases Amazon x Borders | Indie music x major music labels | Netflix x Blockbuster

Conditions Where is it playing out?	Catalysts When?	Challenges Why is it difficult to respond?
		
Markets with underserved customers and a wide range of hard-to-find, differentiated products that cannot be cost-effectively shipped to the customer	**Enabling technology:** Digital infrastructure providing richer connectivity Access to sophisticated, affordable means of production **Customer mindset shift:** From standardized to personalized products **Platform:** Scalable learning platforms reduce barriers to entry	**Cannibalizes core revenue streams** Competing in a digital marketplace requires lower profit margins and erodes revenues from physical channels **Renders significant assets obsolete** Significant investments in brick-and-mortar retail, manufacturing, and logistics facilities become less valuable **Challenges core assumptions** Changes assumptions about how much customers need physical facilities to make purchases

Arenas

CP retailers craft goods | Public sector higher education | Health care providers

Automotive manufacturers | Oil and gas providers



More vulnerable ← → *More resistant*

Graphic: Deloitte University Press | DUPress.com

can serve as a valuable diagnostic tool to home in on the particular patterns that are most threatening to your market. As the markets' definition and conditions evolve, leaders can revisit the diagnostic framework with different assumptions.

Monitor the changing context: Sometimes the best way to look ahead is to look around

It is one thing to know that disruptive threats come from beyond your field of vision and that new threats and opportunities are right now brewing in adjacent markets. It is another thing to know where to look and how to interpret and act upon what you see. Awareness of patterns of disruption may help leaders identify relevant catalysts to monitor, prompting them to take a second look through a different lens at seemingly inconsequential developments in their own and other industries. At the same time, the patterns might provide a context for big news stories: Amid the rapid changes of our exponential world, we risk becoming too enamored of the stories of unicorns or too fascinated with the details of a specific incumbent's fall from grace, becoming distracted and missing the larger opportunities in play. The process of exploring patterns should generate questions and avenues of inquiry for further strategies for both averting disaster and preparing for opportunity.

Break with the past

Although each pattern will imply certain strategic and tactical responses—which will be treated in more detail in the second article of this series—incumbents in any market should begin to address the structural impediments that may prevent them from recognizing pending disruptions. One common thread among the reasons companies fail to respond is the idea that the future is predicated on the past. As has been proven by the low rate of change in annual budget allocations, despite rhetorical nods to transformation and change, organizations tend to preserve the status quo. Our capacity to rationalize, rather than recognize the need for action, is infinite.

The paradox is that whatever a company has been doing thus far to be successful can be the very impediment to taking the necessary action for the future. Sunk costs and past investments—the effort to build an organization around profitable revenue streams, the time and work needed to accumulate knowledge and know-how, the assets needed to run the current business—encourage the putting on of blinders and organizational inertia.

In their research on the tensions between the role of data and analytic rigor and the process of framing and sense-making for executives, Kathleen Sutcliffe and Klaus Weber revealed that companies performed best through times of change when they had leaders who possessed the paradoxical combination of humility and optimism. They found that leaders who expressed an awareness of their organization's shortcomings and capability gaps, yet were also confident in the organization's capacity to learn and adapt, were the most likely to galvanize action and move past the organizational inertia that tends to accompany success.[24] In advance of formulating responses, perhaps the most important activity an incumbent can undertake is to *unlearn*, as an organization, the business practices and institutional structures that delivered success in the past. On an individual level, this requires leaders to interrogate their own assumptions and purposefully get out of their comfort zones in order to develop the ability to break their own frameworks and stretch their frames of reference.

FOREWARNED IS FOREARMED: A PREVIEW OF RESPONSES

Just understanding the forms that threats to one's business might assume provides a significant advantage. The patterns, by describing the threats' forms and the context in which they arise, allows business leaders to look ahead and focus on relevant developments that have the potential to do damage.

Of course, anticipating disruption is only one part of the equation. Companies facing disruption will broadly have three options available to them:

- Contain or exit. A company facing a disruptive threat may choose to cede the particular market where disruption will occur and find a more sustainable business or market. Unlike the cases we studied, in which incumbents were displaced from their markets, this action is a choice made by the incumbent while it can still control the timing and process of exiting the market.

- Be the disruption. This is a difficult option for all the reasons given above for why incumbents often fail to respond to disruption. However, forewarned is forearmed. Each barrier to responding is more surmountable when an incumbent has advance notice of the future market dynamics, either to lend urgency to examining its own core assumptions or to begin planning how to change existing assets and revenue streams.

- Undermine the disruptor. By understanding the levers that make a given pattern likely in its market, an incumbent can choose a strategy of shaping the market and influencing the catalysts to make a particular form of disruption less likely.

Each of these three actions is difficult and dependent on the context of the anticipated disruption, and the unique capabilities of the incumbent to execute on an option. We will discuss them in more detail in the second report in this series.

Endnotes

1. The existing literature suggests an evolving array of possible definitions for disruption and how it unfolds, including:
    - Initially, disruptive technologies were described as "innovations that result in *worse product* performance, at least in the near term...(that) bring to a market a very different value proposition..." The products are "typically cheaper, simpler, smaller, and, frequently, more convenient to use." They subsequently become "fully performance-competitive in that same market..." Clayton Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (Harvard Business Review Press, 1997).
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Below the surface of current events, buried amid the latest headlines and competitive moves, executives are beginning to see the outlines of a new business landscape. Performance pressures are mounting. The old ways of doing things are generating diminishing returns. Companies are having a harder time making money—and increasingly, their very survival is challenged. Executives must learn ways not only to do their jobs differently, but also to do them better. That, in part, requires understanding the broader changes to the operating environment:

- What is really driving intensifying competitive pressures?
- What long-term opportunities are available?
- What needs to be done today to change course?

Decoding the deep structure of this economic shift will allow executives to thrive in the face of intensifying competition and growing economic pressure. The good news is that the actions needed to address short-term economic conditions are also the best long-term measures to take advantage of the opportunities these challenges create.

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