How to Pitch a Brilliant Idea

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How to Pitch a Brilliant Idea

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Coming up with creative ideas is easy; selling them to strangers is hard. All too often, entrepreneurs, sales executives, and marketing managers go to great lengths to show how their new business plans or creative concepts are practical and high margin—only to be rejected by corporate decision makers who don't seem to understand the real value of the ideas. Why does this happen?

It turns out that the problem has as much to do with the seller's traits as with an idea's inherent quality. The person on the receiving end tends to gauge the pitcher's creativity as well as the proposal itself. And judgments about the pitcher's ability to come up with workable ideas can quickly and permanently overshadow perceptions of the idea's worth. We all like to think that people judge us carefully and objectively on our merits. But the fact is, they rush to place us into neat little categories—they stereotype us. So the first thing to realize when you're preparing to make a pitch to strangers is that your audience is going to put you into a box. And they're going to do it really fast. Research suggests that humans can categorize others in less than 150 milliseconds. Within 30 minutes, they've made lasting judgments about your character.

These insights emerged from my lengthy study of the $50 billion U.S. film and television industry. Specifically, I worked with 50 Hollywood executives involved in assessing pitches from screenwriters. Over the course of six years, I observed dozens of 30-minute pitches in which the screenwriters encountered the "catchers" for the first time. In interviewing and observing the pitchers and catchers, I was able to discern just how quickly assessments of creative potential are made in these high-stakes exchanges. (The deals that arise as a result of successful screenplay pitches are often multimillion-dollar projects, rivaling in scope the development of new car models by Detroit's largest automakers and marketing campaigns by New York's most successful advertising agencies.) To determine whether my observations applied to business settings beyond Hollywood, I attended a variety of product-design, marketing, and venture-capital pitch sessions and conducted interviews with executives responsible for judging creative, high-stakes ideas from pitchers previously unknown to them. In those environments, the results were remarkably similar to what I had seen in the movie business.

People on the receiving end of pitches have no formal, verifiable, or objective measures for assessing that elusive trait, creativity. Catchers—even the expert ones—therefore apply a set of subjective and often inaccurate criteria very early in the encounter, and from that point on, the tone is set. If a catcher detects subtle cues indicating that the pitcher isn't creative, the proposal is toast. But that's not the whole story. I've discovered that catchers tend to respond well if they are made to feel that they are participating in an idea's development.

The pitchers who do this successfully are those who tend to be categorized by catchers into one of three prototypes. I call them the showrunner, the artist, and the neophyte. Showrunners come off as professionals who combine creative inspiration with production know-how. Artists appear to be quirky and unpolished and to prefer the world of creative ideas to quotidian reality. Neophytes tend to be—or act as if they were—young, inexperienced, and naive. To involve the audience in the creative process, showrunners deliberately level the power differential between themselves and their catchers; artists invert the

differential; and neophytes exploit it. If you're a pitcher, the bottom-line implication is this: By successfully projecting yourself as one of the three creative types and getting your catcher to view himself or herself as a creative collaborator, you can improve your chances of selling an idea.

My research also has implications for those who buy ideas: Catchers should beware of relying on stereotypes. It's all too easy to be dazzled by pitchers who ultimately can't get their projects off the ground, and it's just as easy to overlook the creative individuals who can make good on their ideas. That's why it's important for the catcher to test every pitcher, a matter we'll return to in the following pages.

The Sorting Hat

In the late 1970s, psychologists Nancy Cantor and Walter Mischel, then at Stanford University, demonstrated that we all use sets of stereotypes—what they called "person prototypes"—to categorize strangers in the first moments of interaction. Though such instant typecasting is arguably unfair, pattern matching is so firmly hardwired into human psychology that only conscious discipline can counteract it.

Yale University creativity researcher Robert Sternberg contends that the prototype matching we use to assess originality in others results from our implicit belief that creative people possess certain traits—unconventionality, for example, as well as intuitiveness, sensitivity, narcissism, passion, and perhaps youth. We develop these stereotypes through direct and indirect experiences with people known to be creative, from personally interacting with the 15-year-old guitar player next door to hearing stories about Pablo Picasso.

When a person we don't know pitches an idea to us, we search for visual and verbal matches with those implicit models, remembering only the characteristics that identify the pitcher as one type or another. We subconsciously award points to people we can easily identify as having creative traits; we subtract points from those who are hard to assess or who fit negative stereotypes.

In hurried business situations in which executives must evaluate dozens of ideas in a week, or even a day, catchers are rarely willing to expend the effort necessary to judge an idea more objectively. Like Harry Potter's Sorting Hat, they classify pitchers in a matter of seconds. They use negative stereotyping to rapidly identify the no-go ideas. All you have to do is fall into one of four common negative stereotypes, and the pitch session will be over before it has begun. (For more on these stereotypes, see the sidebar "How to Kill Your Own Pitch.") In fact, many such sessions are strictly a process of elimination; in my experience, only 1% of ideas make it beyond the initial pitch.

Unfortunately for pitchers, type-based elimination is easy, because negative impressions tend to be more salient and memorable than positive ones. To avoid fast elimination, successful pitchers—only 25% of those I have observed—turn the tables on the catchers by enrolling them in the creative process. These pitchers exude passion for their ideas and find ways to give catchers a chance to shine. By doing so, they induce the catchers to judge them as likable collaborators. Oscar-winning writer, director, and producer Oliver Stone told me that the invitation to collaborate on an idea is a "seduction." His advice to screenwriters pitching an idea to a producer is to "pull back and project what he needs onto your idea in order to make the story whole for him." The three types of successful pitchers have their own techniques for doing this, as we'll see.

The Showrunner

In the corporate world, as in Hollywood, showrunners combine creative thinking and passion with what Sternberg and Todd Lubart, authors of Defying the Crowd: Cultivating Creativity in a Culture of Conformity, call "practical intelligence"—a feel for which ideas are likely to contribute to the business. Showrunners tend to display charisma and wit in pitching, say, new design concepts to marketing, but they also demonstrate enough technical know-how to convince catchers that the ideas can be developed according to industry-standard practices and within resource constraints. Though they may not have the most or the best ideas, showrunners are those rare people in organizations who see the majority of their concepts fully implemented.

An example of a showrunner is the legendary kitchen-gadget inventor and pitchman Ron Popeil. Perfectly

coiffed and handsome, Popeil is a combination design master and ringmaster. In his New Yorker account of Popeil's phenomenally successful Ronco Showtime Rotisserie & BBQ, Malcolm Gladwell described how Popeil fuses entertainment skills—he enthusiastically showcases the product as an innovation that will "change your life"—with business savvy. For his television spots, Popeil makes sure that the chickens are roasted to exactly the resplendent golden brown that looks best on camera. And he designed the rotisserie's glass front to reduce glare, so that to the home cook, the revolving, dripping chickens look just as they do on TV.

The first Hollywood pitcher I observed was a showrunner. The minute he walked into the room, he scored points with the studio executive as a creative type, in part because of his new, pressed jeans, his fashionable black turtleneck, and his nice sport coat. The clean hair draping his shoulders showed no hint of gray. He had come to pitch a weekly television series based on the legend of Robin Hood. His experience as a marketer was apparent; he opened by mentioning an earlier TV series of his that had been based on a comic book. The pitcher remarked that the series had enjoyed some success as a marketing franchise, spawning lunch boxes, bath toys, and action figures.

Showrunners create a level playing field by engaging the catcher in a kind of knowledge duet. They typically begin by getting the catcher to respond to a memory or some other subject with which the showrunner is familiar. Consider this give-and-take:

Pitcher: Remember Errol Flynn's Robin Hood?

Catcher: Oh, yeah. One of my all-time favorites as a kid.

Pitcher: Yes, it was classic. Then, of course, came Costner's version.

Catcher: That was much darker. And it didn't evoke as much passion as the original.

Pitcher: But the special effects were great.

Catcher: Yes, they were.

Pitcher: That's the twist I want to include in this new series.

Catcher: Special effects?

Pitcher: We're talking a science fiction version of Robin Hood. Robin has a sorcerer in his band of merry men who can conjure up all kinds of scary and wonderful spells.

Catcher: I love it!

The pitcher sets up his opportunity by leading the catcher through a series of shared memories and viewpoints. Specifically, he engages the catcher by asking him to recall and comment on familiar movies. With each response, he senses and then builds on the catcher's knowledge and interest, eventually guiding the catcher to the core idea by using a word ("twist") that's common to the vocabularies of both producers and screenwriters.

Showrunners also display an ability to improvise, a quality that allows them to adapt if a pitch begins to go awry. Consider the dynamic between the creative director of an ad agency and a prospective client, a major television sports network. As Mallorre Dill reported in a 2001 Adweek article on award-winning advertising campaigns, the network's VP of marketing was seeking help with a new campaign for coverage of the upcoming professional basketball season, and the ad agency was invited to make a pitch. Prior to the meeting, the network executive stressed to the agency that the campaign would have to appeal to local markets across the United States while achieving "street credibility" with avid fans.

The agency's creative director and its art director pitched the idea of digitally inserting two average teenagers into video of an NBA game. Initially, the catcher frowned on the idea, wondering aloud if viewers would find it arrogant and aloof. So the agency duo ad-libbed a rap that one teen could recite after scoring

on all-star Shaquille O'Neal: "I'm fresh like a can of picante. And I'm deeper than Dante in the circles of hell." The catcher was taken aback at first; then he laughed. Invited to participate in the impromptu rap session, the catcher began inserting his own lines. When the fun was over, the presenters repitched their idea with a slight variation—inserting the teenagers into videos of home-team games for local markets—and the account was sold to the tune of hundreds of thousands of dollars.

Real showrunners are rare—only 20% of the successful pitchers I observed would qualify. Consequently, they are in high demand, which is good news for pitchers who can demonstrate the right combination of talent and expertise.

The Artist

Artists, too, display single-minded passion and enthusiasm about their ideas, but they are less slick and conformist in their dress and mannerisms, and they tend to be shy or socially awkward. As one Hollywood producer told me, "The more shy a writer seems, the better you think the writing is, because you assume they're living in their internal world." Unlike showrunners, artists appear to have little or no knowledge of, or even interest in, the details of implementation. Moreover, they invert the power differential by completely commanding the catcher's imagination. Instead of engaging the catcher in a duet, they put the audience in thrall to the content. Artists are particularly adept at conducting what physicists call "thought experiments," inviting the audience into imaginary worlds.

One young screenwriter I observed fit the artist type to perfection. He wore black leather pants and a torn T-shirt, several earrings in each ear, and a tattoo on his slender arm. His hair was rumpled, his expression was brooding: Van Gogh meets Tim Burton. He cared little about the production details for the dark, violent cartoon series he imagined; rather, he was utterly absorbed by the unfolding story. He opened his pitch like this: "Picture what happens when a bullet explodes inside someone's brain. Imagine it in slow motion. There is the shattering blast, the tidal wave of red, the acrid smell of gunpowder. That's the opening scene in this animated sci-fi flick." He then proceeded to lead his catchers through an exciting, detailed narrative of his film, as a master storyteller would. At the end, the executives sat back, smiling, and told the writer they'd like to go ahead with his idea.

In the business world, artists are similarly nonconformist. Consider Alan, a product designer at a major packaged-foods manufacturer. I observed Alan in a meeting with business-development executives he'd never met. He had come to pitch an idea based on the premise that children like to play with their food. The proposal was for a cereal with pieces that interlocked in such a way that children could use them for building things, Legos style. With his pocket-protected laboratory coat and horn-rimmed glasses, Alan looked very much the absent-minded professor. As he entered the conference room where the suited-and-tied executives at his company had assembled, he hung back, apparently uninterested in the PowerPoint slides or the marketing and revenue projections of the business-development experts. His appearance and reticence spoke volumes about him. His type was unmistakable.

When it was Alan's turn, he dumped four boxes of prototype cereal onto the mahogany conference table, to the stunned silence of the executives. Ignoring protocol, he began constructing an elaborate fort, all the while talking furiously about the qualities of the corn flour that kept the pieces and the structure together. Finally, he challenged the executives to see who could build the tallest tower. The executives so enjoyed the demonstration that they green-lighted Alan's project.

While artists—who constituted about 40% of the successful pitchers I observed—are not as polished as show-runners, they are the most creative of the three types. Unlike showrunners and neophytes, artists are fairly transparent. It's harder to fake the part. In other words, they don't play to type; they are the type. Indeed, it is very difficult for someone who is not an artist to pretend to be one, because genuineness is what makes the artist credible.

The Neophyte

Neophytes are the opposite of showrunners. Instead of displaying their expertise, they plead ignorance. Neophytes score points for daring to do the impossible, something catchers see as refreshing.

Unencumbered by tradition or past successes, neophytes present themselves as eager learners. They consciously exploit the power differential between pitcher and catcher by asking directly and boldly for help—not in a desperate way, but with the confidence of a brilliant favorite, a talented student seeking sage advice from a beloved mentor.

Consider the case of one neophyte pitcher I observed, a young, ebullient screenwriter who had just returned from his first trip to Japan. He wanted to develop a show about an American kid (like himself) who travels to Japan to learn to play taiko drums, and he brought his drums and sticks into the pitch session. The fellow looked as though he had walked off the set of Doogie Howser, M.D. With his infectious smile, he confided to his catchers that he was not going to pitch them a typical show, "mainly because I've never done one. But I think my inexperience here might be a blessing."

He showed the catchers a variety of drumming moves, then asked one person in his audience to help him come up with potential camera angles—such as looking out from inside the drum or viewing it from overhead—inquiring how these might play on the screen. When the catcher got down on his hands and knees to show the neophyte a particularly "cool" camera angle, the pitch turned into a collaborative teaching session. Ignoring his lunch appointment, the catcher spent the next half hour offering suggestions for weaving the story of the young drummer into a series of taiko performances in which artistic camera angles and imaginative lighting and sound would be used to mirror the star's emotions.

Many entrepreneurs are natural neophytes. Lou and Sophie McDermott, two sisters from Australia, started the Savage Sisters sportswear line in the late 1990s. Former gymnasts with petite builds and spunky personalities, they cartwheeled into the clothing business with no formal training in fashion or finance. Instead, they relied heavily on their enthusiasm and optimism and a keen curiosity about the fine points of retailing to get a start in the highly competitive world of teen fashion. On their shopping outings at local stores, the McDermott sisters studied merchandising and product placement—all the while asking store owners how they got started, according to the short documentary film Cutting Their Own Cloth.

The McDermott sisters took advantage of their inexperience to learn all they could. They would ask a store owner to give them a tour of the store, and they would pose dozens of questions: "Why do you buy this line and not the other one? Why do you put this dress here and not there? What are your customers like? What do they ask for most?" Instead of being annoying, the McDermotts were charming, friendly, and fun, and the flattered retailers enjoyed being asked to share their knowledge. Once they had struck up a relationship with a retailer, the sisters would offer to bring in samples for the store to test. Eventually, the McDermotts parlayed what they had learned into enough knowledge to start their own retail line. By engaging the store owners as teachers, the McDermotts were able to build a network of expert mentors who wanted to see the neophytes win. Thus neophytes, who constitute about 40% of successful pitchers, achieve their gains largely by sheer force of personality.

Which of the three types is most likely to succeed? Overwhelmingly, catchers look for showrunners, though artists and neophytes can win the day through enchantment and charm. From the catcher's perspective, however, showrunners can also be the most dangerous of all pitchers, because they are the most likely to blind through glitz.

Catchers Beware

When business executives ask me for my insights about creativity in Hollywood, one of the first questions they put to me is, "Why is there so much bad television?" After hearing the stories I've told here, they know the answer: Hollywood executives too often let themselves be wooed by positive stereotypes—particularly that of the showrunner—rather than by the quality of the ideas. Indeed, individuals who become adept at conveying impressions of creative potential, while lacking the real thing, may gain entry into organizations and reach prominence there based on their social influence and impression-management skills, to the catchers' detriment.

Real creativity isn't so easily classified. Researchers such as Sternberg and Lubart have found that people's implicit theories regarding the attributes of creative individuals are off the mark. Furthermore, studies have identified numerous personal attributes that facilitate practical creative behavior. For example, cognitive

flexibility, a penchant for diversity, and an orientation toward problem solving are signs of creativity; it simply isn't true that creative types can't be down-to-earth.

Those who buy ideas, then, need to be aware that relying too heavily on stereotypes can cause them to overlook creative individuals who can truly deliver the goods. In my interviews with studio executives and agents, I heard numerous tales of people who had developed reputations as great pitchers but who had trouble producing usable scripts. The same thing happens in business. One well-known example occurred in 1985, when Coca-Cola announced it was changing the Coke formula. Based on pitches from market researchers who had tested the sweeter, Pepsi-like "new Coke" in numerous focus groups, the company's top management decided that the new formula could effectively compete with Pepsi. The idea was a marketing disaster, of course. There was a huge backlash, and the company was forced to reintroduce the old Coke. In a later discussion of the case and the importance of relying on decision makers who are both good pitchers and industry experts, Roberto Goizueta, Coca-Cola's CEO at the time, said to a group of MBAs, in effect, that there's nothing so dangerous as a good pitcher with no real talent.

If a catcher senses that he or she is being swept away by a positive stereotype match, it's important to test the pitcher. Fortunately, assessing the various creative types is not difficult. In a meeting with a showrunner, for example, the catcher can test the pitcher's expertise and probe into past experiences, just as a skilled job interviewer would, and ask how the pitcher would react to various changes to his or her idea. As for artists and neophytes, the best way to judge their ability is to ask them to deliver a finished product. In Hollywood, smart catchers ask artists and neophytes for finished scripts before hiring them. These two types may be unable to deliver specifics about costs or implementation, but a prototype can allow the catcher to judge quality, and it can provide a concrete basis for further discussion. Finally, it's important to enlist the help of other people in vetting pitchers. Another judge or two can help a catcher weigh the pitcher's—and the idea's—pros and cons and help safeguard against hasty judgments.

One CEO of a Northern California design firm looks beyond the obvious earmarks of a creative type when hiring a new designer. She does this by asking not only about successful projects but also about work that failed and what the designer learned from the failures. That way, she can find out whether the prospect is capable of absorbing lessons well and rolling with the punches of an unpredictable work environment. The CEO also asks job prospects what they collect and read, as well as what inspires them. These kinds of clues tell her about the applicant's creative bent and thinking style. If an interviewee passes these initial tests, the CEO has the prospect work with the rest of her staff on a mock design project. These diverse interview tools give her a good indication about the prospect's ability to combine creativity and organizational skills, and they help her understand how well the applicant will fit into the group.

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One question for pitchers, of course, might be, "How do I make a positive impression if I don't fit into one of the three creative stereotypes?" If you already have a reputation for delivering on creative promises, you probably don't need to disguise yourself as a showrunner, artist, or neophyte—a résumé full of successes is the best calling card of all. But if you can't rely on your reputation, you should at least make an attempt to match yourself to the type you feel most comfortable with, if only because it's necessary to get a foot in the catcher's door.

Another question might be, "What if I don't want the catcher's input into the development of my idea?" This aspect of the pitch is so important that you should make it a priority: Find a part of your proposal that you are willing to yield on and invite the catcher to come up with suggestions. In fact, my observations suggest that you should engage the catcher as soon as possible in the development of the idea. Once the catcher feels like a creative collaborator, the odds of rejection diminish.

Ultimately, the pitch will always remain an imperfect process for communicating creative ideas. But by being aware of stereotyping processes and the value of collaboration, both pitchers and catchers can understand the difference between a pitch and a hit.

How to Kill Your Own Pitch

Before you even get to the stage in the pitch where the catcher categorizes you as a particular creative type, you have to avoid some dangerous pigeonholes: the four negative stereotypes that are guaranteed to kill a pitch. And take care, because negative cues carry more weight than positive ones.

The pushover would rather unload an idea than defend it. ("I could do one of these in red, or if you don't like that, I could do it in blue.") One venture capitalist I spoke with offered the example of an entrepreneur who was seeking funding for a computer networking start-up. When the VCs raised concerns about an aspect of the device, the pitcher simply offered to remove it from the design, leading the investors to suspect that the pitcher didn't really care about his idea.

The robot presents a proposal too formulaically, as if it had been memorized from a how-to book. Witness the entrepreneur who responds to prospective investors' questions about due diligence and other business details with canned answers from his PowerPoint talk.

The used-car salesman is that obnoxious, argumentative character too often deployed in consultancies and corporate sales departments. One vice president of marketing told me the story of an arrogant consultant who put in a proposal to her organization. The consultant's offer was vaguely intriguing, and she asked him to revise his bid slightly. Instead of working with her, he argued with her. Indeed, he tried selling the same package again and again, each time arguing why his proposal would produce the most astonishing bottom-line results the company had ever seen. In the end, she grew so tired of his wheedling insistence and inability to listen courteously to her feedback that she told him she wasn't interested in seeing any more bids from him.

The charity case is needy; all he or she wants is a job. I recall a freelance consultant who had developed a course for executives on how to work with independent screenwriters. He could be seen haunting the halls of production companies, knocking on every open door, giving the same pitch. As soon as he sensed he was being turned down, he began pleading with the catcher, saying he really, really needed to fill some slots to keep his workshop going.

Sternberg, Robert J., Lubart, Todd I., Defying the Crowd: Cultivating Creativity in a Culture of Conformity, Free Press, 1995

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Why Good Projects Fail Anyway

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Big projects fail at an astonishing rate. Whether major technology installations, postmerger integrations, or new growth strategies, these efforts consume tremendous resources over months or even years. Yet as study after study has shown, they frequently deliver disappointing returns—by some estimates, in fact, well over half the time. And the toll they take is not just financial. These failures demoralize employees who have labored diligently to complete their share of the work. One middle manager at a top pharmaceutical company told us, "I've been on dozens of task teams in my career, and I've never actually seen one that produced a result."

The problem is, the traditional approach to project management shifts the project teams' focus away from the end result toward developing recommendations, new technologies, and partial solutions. The intent, of course, is to piece these together into a blueprint that will achieve the ultimate goal, but when a project involves many people working over an extended period of time, it's very hard for managers planning it to predict all the activities and work streams that will be needed. Unless the end product is very well understood, as it is in highly technical engineering projects such as building an airplane, it's almost inevitable that some things will be left off the plan. And even if all the right activities have been anticipated, they may turn out to be difficult, or even impossible, to knit together once they're completed.

Managers use project plans, timelines, and budgets to reduce what we call "execution risk"—the risk that designated activities won't be carried out properly—but they inevitably neglect these two other critical risks—the "white space risk" that some required activities won't be identified in advance, leaving gaps in the project plan, and the "integration risk" that the disparate activities won't come together at the end. So project teams can execute their tasks flawlessly, on time and under budget, and yet the overall project may still fail to deliver the intended results.

We've worked with hundreds of teams over the past 20 years, and we've found that by designing complex projects differently, managers can reduce the likelihood that critical activities will be left off the plan and increase the odds that all the pieces can be properly integrated at the end. The key is to inject into the overall plan a series of miniprojects—what we call rapid-results initiatives—each staffed with a team responsible for a version of the hoped-for overall result in miniature and each designed to deliver its result quickly.

Let's see what difference that would make. Say, for example, your goal is to double sales revenue over two years by implementing a customer relationship management (CRM) system for your sales force. Using a traditional project management approach, you might have one team research and install software packages, another analyze the different ways that the company interacts with customers (e-mail, telephone, and in person, for example), another develop training programs, and so forth. Many months later, however, when you start to roll out the program, you might discover that the salespeople aren't sold on the benefits. So even though they may know how to enter the requisite data into the system, they refuse. This very problem has, in fact, derailed many CRM programs at major organizations.

But consider the way the process might unfold if the project included some rapid-results initiatives. A single team might take responsibility for helping a small number of users—say, one sales group in one region—increase their revenues by 25% within four months. Team members would probably draw on all the

activities described above, but to succeed at their goal, the microcosm of the overall goal, they would be forced to find out what, if anything, is missing from their plans as they go forward. Along the way, they would, for example, discover the salespeople's resistance, and they would be compelled to educate the sales staff about the system's benefits. The team may also discover that it needs to tackle other issues, such as how to divvy up commissions on sales resulting from cross-selling or joint-selling efforts.

When they've ironed out all the kinks on a small scale, their work would then become a model for the next teams, which would either engage in further rapid-results initiatives or roll the system out to the whole organization—but now with a higher level of confidence that the project will have the intended impact on sales revenue. The company would see an early payback on its investment and gain new insights from the team's work, and the team would have the satisfaction of delivering real value.

In the pages that follow, we'll take a close look at rapid-results initiatives, using case studies to show how these projects are selected and designed and how they are managed in conjunction with more traditional project activities.

How Rapid-Results Teams Work

Let's look at an extremely complex project, a World Bank initiative begun in June 2000 that aims to improve the productivity of 120,000 small-scale farmers in Nicaragua by 30% in 16 years. A project of this magnitude entails many teams working over a long period of time, and it crosses functional and organizational boundaries.

They started as they had always done: A team of World Bank experts and their clients in the country (in this case, Ministry of Agriculture officials) spent many months in preparation—conducting surveys, analyzing data, talking to people with comparable experiences in other countries, and so on. Based on their findings, these project strategists, designers, and planners made an educated guess about the major streams of work that would be required to reach the goal. These work streams included reorganizing government institutions that give technical advice to farmers, encouraging the creation of a private-sector market in agricultural support services (such as helping farmers adopt new farming technologies and use improved seeds), strengthening the National Institute for Agricultural Technology (INTA), and establishing an information management system that would help agricultural R&D institutions direct their efforts to the most productive areas of research. The result of all this preparation was a multiyear project plan, a document laying out the work streams in detail.

But if the World Bank had kept proceeding in the traditional way on a project of this magnitude, it would have been years before managers found out if something had been left off the plan or if the various work streams could be integrated—and thus if the project would ultimately achieve its goals. By that time, millions of dollars would have been invested and much time potentially wasted. What's more, even if everything worked according to plan, the project's beneficiaries would have been waiting for years before seeing any payoff from the effort. As it happened, the project activities proceeded on schedule, but a new minister of agriculture came on board two years in and argued that he needed to see results sooner than the plan allowed. His complaint resonated with Norman Piccioni, the World Bank team leader, who was also getting impatient with the project's pace. As he said at the time, "Apart from the minister, the farmers, and me, I'm not sure anyone working on this project is losing sleep over whether farmer productivity will be improved or not."

Over the next few months, we worked with Piccioni to help him and his clients add rapid-results initiatives to the implementation process. They launched five teams, which included not only representatives from the existing work streams but also the beneficiaries of the project, the farmers themselves. The teams differed from traditional implementation teams in three fundamental ways. Rather than being partial, horizontal, and long term, they were results oriented, vertical, and fast. A look at each attribute in turn shows why they were more effective.

Results Oriented. As the name suggests, a rapid-results initiative is intentionally commissioned to produce a measurable result, rather than recommendations, analyses, or partial solutions. And even though the goal is on a smaller scale than the overall objective, it is nonetheless challenging. In Nicaragua, one team's goal

was to increase Grade A milk production in the Leon municipality from 600 to 1,600 gallons per day in 120 days in 60 small and medium-size producers. Another was to increase pig weight on 30 farms by 30% in 100 days using enhanced corn seed. A third was to secure commitments from private-sector experts to provide technical advice and agricultural support to 150 small-scale farmers in the El Sauce (the dry farming region) within 100 days.

This results orientation is important for three reasons. First, it allows project planners to test whether the activities in the overall plan will add up to the intended result and to alter the plans if need be. Second, it produces real benefits in the short term. Increasing pig weight in 30 farms by 30% in just over three months is useful to those 30 farmers no matter what else happens in the project. And finally, being able to deliver results is more rewarding and energizing for teams than plodding along through partial solutions.

The focus on results also distinguishes rapid-results initiatives from pilot projects, which are used in traditionally managed initiatives only to reduce execution risk. Pilots typically are designed to test a preconceived solution, or means, such as a CRM system, and to work out implementation details before rollout. Rapid-results initiatives, by contrast, are aimed squarely at reducing white space and integration risk.

Vertical. Project plans typically unfold as a series of activities represented on a timeline by horizontal bars. In this context, rapid-results initiatives are vertical. They encompass a slice of several horizontal activities, implemented in tandem in a very short time frame. By using the term “vertical,” we also suggest a cross-functional effort, since different horizontal work streams usually include people from different parts of an organization (or even, as in Nicaragua, different organizations), and the vertical slice brings these people together. This vertical orientation is key to reducing white space and integration risks in the overall effort: Only by uncovering and properly integrating any activities falling in the white space between the horizontal project streams will the team be able to deliver its miniresult. (For a look at the horizontal and vertical work streams in the Nicaragua project, see the exhibit “The World Bank’s Project Plan.”)

Fast. How fast is fast? Rapid-results projects generally last no longer than 100 days. But they are by no means quick fixes, which imply shoddy or short-term solutions. And while they deliver quick wins, the more important value of these initiatives is that they change the way teams approach their work. The short time frame fosters a sense of personal challenge, ensuring that team members feel a sense of urgency right from the start that leaves no time to squander on big studies or interorganizational bickering. In traditional horizontal work streams, the gap between current status and the goal starts out far wider, and a feeling of urgency does not build up until a short time before the day of reckoning. Yet it is precisely at that point that committed teams kick into a high-creativity mode and begin to experiment with new ideas to get results. That kick comes right away in rapid-results initiatives.

A Shift in Accountability

When executives assign a team responsibility for a result, however, the team is free—indeed, compelled—to find out what activities will be needed to produce the result and how those activities will fit together. This approach puts white space and integration risk onto the shoulders of the people doing the work. That’s appropriate because, as they work, they can discover on the spot what’s working and what’s not. And in the end, they are rewarded not for performing a series of tasks but for delivering real value. Their success is correlated with benefits to the organization, which will come not only from implementing known activities but also from identifying and integrating new activities.

The milk productivity team in Nicaragua, for example, found out early on that the quantity of milk production was not the issue. The real problem was quality: Distributors were being forced to dump almost half the milk they had bought due to contamination, spoilage, and other problems. So the challenge was to produce milk acceptable to large distributors and manufacturers that complied with international quality standards. Based on this understanding, the team leader invited a representative of Parmalat, the biggest private company in Nicaragua’s dairy sector, to join the team. Collaborating with this customer allowed the team to understand Parmalat’s quality standards and thus introduce proper hygiene practices to the milk producers in Leon. The collaboration also identified the need for simple equipment such as a centrifuge that could test the quality of batches quickly.

The quality of milk improved steadily in the initial stage of the effort. But then the team discovered that its goal of tripling sales was in danger due to a logistics problem: There wasn't adequate storage available for the additional Grade A milk now being produced. Rather than invest in refrigeration facilities, the Parmalat team member (now assured of the quality of the milk) suggested that the company conduct collection runs in the area daily rather than twice weekly.

At the end of 120 days, the milk productivity team (renamed the "clean-milking" team) and the other four teams not only achieved their goals but also generated a new appreciation for the discovery process. As team leader Piccioni observed at a follow-up workshop: "I now realize how much of the overall success of the effort depends on people discovering for themselves what goals to set and what to do to achieve them."

What's more, the work is more rewarding for the people involved. It may seem paradoxical, but virtually all the teams we've encountered prefer to work on projects that have results-oriented goals, even though they involve some risk and require some discovery, rather than implement clearly predefined tasks.

The Leadership Balancing Act

In Nicaragua, the vertical teams drew members from the horizontal teams, but these people continued to work on the horizontal streams as well, and each team benefited from the work of the others. So, for example, when the milk productivity team discovered the need to educate farmers in clean-milking practices, the horizontal training team knew to adjust the design of its overall training programs accordingly.

The adhesive-material and office-product company Avery Dennison took a similar approach, creating a portfolio of rapid-results initiatives and horizontal work streams as the basis for its overall growth acceleration strategy. Just over a year ago, the company was engaged in various horizontal activities like new technology investments and market studies. The company was growing, but CEO Phil Neal and his leadership team were not satisfied with the pace. Although growth was a major corporate goal, the company had increased its revenues by only 8% in two years.

In August 2002, Neal and president Dean Scarborough tested the vertical approach in three North American divisions, launching 15 rapid-results teams in a matter of weeks. One was charged with securing one new order for an enhanced product, refined in collaboration with one large customer, within 100 days. Another focused on signing up three retail chains so it could use that experience to develop a methodology for moving into new distribution channels. A third aimed to book several hundred thousand dollars in sales in 100 days by providing—through a collaboration with three other suppliers—all the parts needed by a major customer. By December, it had become clear that the vertical growth initiatives were producing results, and the management team decided to extend the process throughout the company, supported by an extensive employee communication campaign. The horizontal activities continued, but at the same time dozens of teams, involving hundreds of people, started working on rapid-results initiatives. By the end of the first quarter of 2003, these teams yielded more than $8 million in new sales, and the company was forecasting that the initiatives would realize approximately $50 million in sales by the end of the year.

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Mind Your Pricing Cues

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If you aren't sure, you're not alone: For most of the items they buy, consumers don't have an accurate sense of what the price should be. Consider the findings of a study led by Florida International University professor Peter R. Dickson and University of Florida professor Alan G. Sawyer in which researchers with clipboards stood in supermarket aisles pretending to be stock takers. Just as a shopper would place an item in a cart, a researcher would ask him or her the price. Less than half the customers gave an accurate answer. Most underestimated the price of the product, and more than 20% did not even venture a guess; they simply had no idea of the true price.

This will hardly come as a surprise to fans of The Price Is Right. This game show, a mainstay of CBS's daytime programming since 1972, features contestants in a variety of situations in which they must guess the price of packaged goods, appliances, cars, and other retail products. The inaccuracy of the guesses is legendary, with contestants often choosing prices that are off by more than 50%. It turns out this is reality TV at its most real. Consumers' knowledge of the market is so far from perfect that it hardly deserves to be called knowledge at all.

One would expect this information gap to be a major stumbling block for customers. A woman trying to decide whether to buy a blouse, for example, has several options: Buy the blouse, find a less expensive blouse elsewhere on the racks, visit a competing store to compare prices, or delay the purchase in the hopes that the blouse will be discounted. An informed buying decision requires more than just taking note of a price tag. Customers also need to know the prices of other items, the prices in other stores, and what prices might be in the future.

Yet people happily buy blouses every day. Is this because they don't care what kind of deal they're getting? Have they given up all hope of comparison shopping? No. Remarkably, it's because they rely on the retailer to tell them if they're getting a good price. In subtle and not-so-subtle ways, retailers send signals to customers, telling them whether a given price is relatively high or low.

In this article, we'll review the most common pricing cues retailers use, and we'll reveal some surprising facts about how—and how well—those cues work. All the cues we will discuss—things like sale signs and prices ending in 9—are common marketing techniques. If used appropriately, they can be effective tools for building trust with customers and convincing them to buy your products and services. Used inappropriately, however, these pricing cues may breach customers' trust, reduce brand equity, and give rise to lawsuits.

Sale Signs

The most straightforward of the pricing cues retailers use is the sale sign. It usually appears somewhere near the discounted item, trumpeting a bargain for customers. Our own tests with several mail-order catalogs reveal that using the word "sale" beside a price (without actually varying the price) can increase demand by more than 50%. Similar evidence has been reported in experiments conducted with university students and in retail stores.

Placing a sale sign on an item costs the retailer virtually nothing, and stores generally make no commitment to a particular level of discount when using the signs. Admittedly, retailers do not always use such signs

truthfully. There have been incidents in which a store has claimed that a price has been discounted when, in fact, it hasn't—making for wonderful newspaper articles. Consultant and former Harvard Business School professor Gwen Ortmeyer, in a review of promotional pricing policies, cites a 1990 San Francisco Chronicle article in which a reporter priced the same sofa at several Bay Area furniture stores. The sofa was on sale for $2,170 at one store; the regular price was $2,320. And it cost $2,600—"35% off" the original price of $4,000—at another store. Last year, a research team from the Boston Globe undertook a four-month investigation of prices charged by Kohl's department stores, focusing on the chain's Medford, Massachusetts, location. The team concluded that the store often exaggerated its discounts by inflating its regular prices. For instance, a Little Tikes toy truck was never sold at the regular price throughout the period of the study, according to the Globe article.

So why do customers trust sale signs? Because they are accurate most of the time. Our interviews with store managers, and our own observations of actual prices at department and specialty stores, confirm that when an item is discounted, it almost invariably has a sale sign posted nearby. The cases where sale signs are placed on nondiscounted items are infrequent enough that the use of such signs is still valid.

And besides, customers are not that easily fooled. They learn to recognize that even a dealer of Persian rugs will eventually run out of "special holidays" and occasions to celebrate with a sale. They are quick to adjust their attitudes toward sale signs if they perceive evidence of overuse, which reduces the credibility of discount claims and makes this pricing cue far less effective.

The link between a retailer's credibility and its overuse of sale signs was the subject of a study we conducted involving purchases of frozen fruit juice at a Chicago supermarket chain. The analysis of the sales data revealed that the more sale signs used in the category, the less effective those signs were at increasing demand. Specifically, putting sale signs on more than 30% of the items diminished the effectiveness of the pricing cue. (See the exhibit "The Diminishing Return of Sale Signs.")

A similar test we conducted with a women's clothing catalog revealed that demand for an item with a sale sign went down by 62% when sale signs were also added to other items. Another study we conducted with a publisher revealed a similar falloff in catalog orders when more than 25% of the items in the catalog were on sale. Retailers face a trade-off: Placing sale signs on multiple items can increase demand for those items—but it can also reduce overall demand. Total category sales are highest when some, but not all, items in the category have sale signs. Past a certain point, use of additional sale signs will cause total category sales to fall.

Misuse of sale signs can also result in prosecution. Indeed, several department stores have been targeted by state attorneys general. The cases often involve jewelry departments, where consumers are particularly in the dark about relative quality, but have also come to include a wide range of other retail categories, including furniture and men's and women's clothing. The lawsuits generally argue that the stores have breached state legislation on unfair or deceptive pricing. Many states have enacted legislation addressing this issue, much of it mirroring the Federal Trade Commission's regulations regarding deceptive pricing. Retailers have had to pay fines ranging from $10,000 to $200,000 and have had to agree to desist from such practices.

Prices That End in 9

Another common pricing cue is using a 9 at the end of a price to denote a bargain. In fact, this pricing tactic is so common, you'd think customers would ignore it. Think again. Response to this pricing cue is remarkable. You'd generally expect demand for an item to go down as the price goes up. Yet in our study involving the women's clothing catalog, we were able to increase demand by a third by raising the price of a dress from $34 to $39. By comparison, changing the price from $34 to $44 yielded no difference in demand. (See the exhibit "The Surprising Effect of a 9.")

This favorable effect extends beyond women's clothing catalogs; similar findings have also been reported for groceries. Moreover, the effect is not limited to whole-dollar figures: In their 1996 research, Rutgers University professor Robert Schindler and then-Wharton graduate student Thomas Kibarian randomly mailed customers of a women's clothing catalog different versions of the catalog. One included prices that ended in

00 cents, and the other included prices that ended in 99 cents. The professors found that customers who received the latter version were more likely to place an order. As a result, the clothing company increased its revenue by 8%.

One explanation for this surprising outcome is that the 9 at the end of the price acts the same way as the sale sign does, helping customers evaluate whether they're getting a good deal. Buyers are often more sensitive to price endings than they are to actual price changes, which raises the question: Are prices that end in 9 truly accurate as pricing cues? The answer varies. Some retailers do reserve prices that end in 9 for their discounted items. For instance, J. Crew and Ralph Lauren generally use 00-cent endings on regularly priced merchandise and 99-cent endings on discounted items. Comparisons of prices at major department stores reveal that this is common, particularly for apparel. But at some stores, prices that end in 9 are a miscue—they are used on all products regardless of whether the items are discounted.

Research also suggests that prices ending in 9 are less effective when an item already has a sale sign. This shouldn't be a surprise. The sale sign informs customers that the item is discounted, so little information is added by the price ending.

Signpost Items

For most items, customers do not have accurate price points they can recall at a moment's notice. But each of us probably knows some benchmark prices, typically on items we buy frequently. Many customers, for instance, know the price of a 12-ounce can of Coke or the cost of admission to a movie, so they can distinguish expensive and inexpensive price levels for such "signpost" items without the help of pricing cues.

Research suggests that customers use the prices of signpost items to form an overall impression of a store's prices. That impression then guides their purchase of other items for which they have less price knowledge. While very few customers know the price of baking soda (around 70 cents for 16 ounces), they do realize that if a store charges more than $1 for a can of Coke it is probably also charging a premium on its baking soda. Similarly, a customer looking to purchase a new tennis racket might first check the store's price on a can of tennis balls. If the balls are less than $2, the customer will assume the tennis rackets will also be low priced. If the balls are closer to $4, the customer will walk out of the store without any tennis gear—and the message that the bargains are elsewhere.

The implications for retailers are important, and many already act accordingly. Supermarkets often take a loss on Coke or Pepsi, and many sporting-goods stores offer tennis balls at a price below cost. (Of course, they make up for this with their sales of baking soda and tennis rackets.) If you're considering sending pricing cues through signpost items, the first question is which items to select. Three words are worth keeping in mind: accurate, popular, and complementary. That is, unlike with sale signs and prices that end in 9, the signpost item strategy is intended to be used on products for which price knowledge is accurate. Selecting popular items to serve as pricing signposts increases the likelihood that consumers' price knowledge will be accurate—and may also allow a retailer to obtain volume discounts from suppliers and preserve some margin on the sales. Both of these benefits explain why a department store is more likely to prominently advertise a basic, white T-shirt than a seasonal, floral print. And complementary items can serve as good pricing signposts. For instance, Best Buy sold Spider-Man DVDs at several dollars below wholesale price, on the very first weekend they were available. The retail giant lost money on every DVD sold—but its goal was to increase store traffic and generate purchases of complementary items, such as DVD players.

Signposts can be very effective, but remember that consumers are less likely to make positive inferences about a store's pricing policies and image if they can attribute the low price they're being offered to special circumstances. For example, if everyone knows there is a glut of computer memory chips, then low prices on chip-intensive products might be attributed to the market and not to the retailer's overall pricing philosophy. Phrases such as "special purchase" should be avoided. The retailer's goal should be to convey an overarching image of low prices, which then translates into sales of other items. Two retailers we studied, GolfJoy.com and Baby's Room, include the phrase "our low regular price" in their marketing copy to create the perception that all of their prices are low. And Wal-Mart, of course, is the master of this practice.

A related issue is the magnitude of the claimed discounts. For example, a discount retailer may sell a can of tennis balls for a regular price of $1.99 and a sale price of $1.59, saving the consumer 40 cents. By contrast, a competing, higher-end retailer that matches the discount store's sale price of $1.59 may offer a regular price of $2.59, saving the consumer $1. By using the phrase "low regular price," the low-price retailer explains to consumers why its discounts may be smaller (40 cents versus $1 off) and creates the perception that all of its products are underpriced. For the higher-end competitor, the relative savings it offers to consumers ($1 versus 40 cents off) may increase sales of tennis balls but may also leave consumers thinking that the store's nonsale prices are high.

Use of signpost items to cue customers' purchases and to raise a store's pricing image creates few legal concerns. The reason for this is clear: Customers' favorable responses to this cue arise without the retailer making an explicit claim or promise to support their assumptions. While a retailer may commit itself to selling tennis balls at $2, it does not promise to offer a low price on tennis rackets. Charging low prices on the tennis balls may give the appearance of predatory pricing. But simply selling below cost is generally not sufficient to prove intent to drive competitors out of business.

Pricing Guarantees

So far, we've focused on pricing cues that consumers rely on—and that are reliable. Far less clear is the reliability of another cue, known as price matching. It's a tactic used widely in retail markets, where stores that sell, for example, electronics, hardware, and groceries promise to meet or beat any competitor's price.

Tweeter, a New England retailer of consumer electronics, takes the promise one step further: It self-enforces its price-matching policy. If a competitor advertises a lower price, Tweeter refunds the difference to any customers who paid a higher price at Tweeter in the previous 30 days. Tweeter implements the policy itself, so customers don't have to compare the competitors' prices. If a competitor advertises a lower price for a piece of audio equipment, for example, Tweeter determines which customers are entitled to a refund and sends them a check in the mail.

Do customers find these price-matching policies reassuring? There is considerable evidence that they do. For example, in a study conducted by University of Maryland marketing professors Sanjay Jain and Joydeep Srivastava, customers were presented with descriptions of a variety of stores. The researchers found that when price-matching guarantees were part of the description, customers were more confident that the store's prices were lower than its competitors'.

But is that trust justified? Do companies with price-matching policies really charge lower prices? The evidence is mixed, and, in some cases, the reverse may be true. After a large-scale study of prices at five North Carolina supermarkets, University of Houston professor James Hess and University of California at Davis professor Eitan Gerstner concluded that the effects of price-matching policies are twofold. First, they reduce the level of price dispersion in the market, so that all retailers tend to have similar prices on items that are common across stores. Second, they appear to lead to higher prices overall. Indeed, some pricing experts argue that price-matching policies are not really targeted at customers; rather, they represent an explicit warning to competitors: "If you cut your prices, we will, too." Even more threatening is a policy that promises to beat the price difference: "If you cut your prices, we will undercut you." This logic has led some industry observers to interpret price-matching policies as devices to reduce competition.

Closely related to price-matching policies are the most-favored-nation policies used in business-to-business relationships, under which suppliers promise customers that they will not sell to any other customers at a lower price. These policies are attractive to business customers because they can relax knowing that they are getting the best price. These policies have also been associated with higher prices. A most-favored-nation policy effectively says to your competitors: "I am committing not to cut my prices, because if I did, I would have to rebate the discount to all of my former customers."

Price-matching guarantees are effective when consumers have poor knowledge of the prices of many products in a retailer's mix. But these guarantees are certainly not for every store. For instance, they don't make sense if your prices tend to be higher than your competitors'. The British supermarket chain Tesco learned this when a small competitor, Essential Sports, discounted Nike socks to 10p a pair, undercutting

Tesco by £7.90. Tesco had promised to refund twice the difference and had to refund so much money to customers that one man walked away with 12 new pairs of socks plus more than £90 in his wallet.

To avoid such exposure, some retailers impose restrictions that make the price-matching guarantee difficult to enforce. Don't try it: Customers, again, are not so easily fooled. If the terms of the deal are too onerous, they will recognize that the guarantee lacks substance. Their reaction will be the same if it proves impossible to compare prices across competing stores. (Clearly, the strategy makes no sense for retailers selling private-label or otherwise exclusive brands.) How much of the merchandise needs to be directly comparable for consumers to get a favorable impression of the company? Surprisingly little. When Tweeter introduced its highly effective automatic price-matching policy, only 6% of its transactions were actually eligible for refunds.

Interestingly, some manufacturers are making it harder for consumers to enforce price-matching policies by introducing small differences in the items they supply to different retailers. Such use of branded variants is common in the home-electronics market, where many manufacturers use different model numbers for products shipped to different retailers. The same is true in the mattress market—it is often difficult to find an identical mattress at competing retailers. If customers come to recognize and anticipate these strategies, price-matching policies will become less effective.

Antitrust concerns have been raised with regard to price-matching policies and most-favored-nation clauses. In one pending case, coffin retailer Direct Casket is suing funeral homes in New York for allegedly conspiring to implement price-matching policies. The defendants in this case have adopted a standard defense, arguing that price-matching policies are evidence of vigorous competition rather than an attempt to thwart it. An older, but perhaps even more notorious, example involved price-matching policies introduced by General Electric and Westinghouse in 1963 in the market for electric generators. The practice lasted for many years, but ultimately the U.S. Justice Department, in the early 1980s, concluded that the policies restrained price competition and were a breach of the Sherman Antitrust Act. GE and Westinghouse submitted to a consent decree under which they agreed to abandon the business practice.

Tracking Effectiveness

To maximize the effectiveness of pricing cues, retailers should implement them systematically. Ongoing measurement should be an essential part of any retailer's use of pricing cues. In fact, measurements should begin even before a pricing cue strategy is implemented to help determine which items should receive the cues and how many should be used. Following implementation, testing should focus on monitoring the cues' effectiveness. We've found that three important concerns tend to be overlooked.

First, marketers often fail to consider the long-run impact of the cues. According to some studies, pricing policies that are designed to maximize short-run profits often lead to suboptimal profits in the long run. For example, a study we conducted with a publisher's catalog from 1999 to 2001 investigated how customers respond to price promotions. Do customers return in the future and purchase more often, or do they stock up on the promoted items and come back less frequently in subsequent months? The answer was different for first-time versus established customers. Shoppers who saw deep discounts on their first purchase returned more often and purchased more items when they came back. By contrast, established customers would stock up, returning less often and purchasing fewer items. If the publisher were to overlook these long-run effects, it would set prices too low for established patrons and too high for first-time buyers.

Second, retail marketers tend to focus more on customers' perceptions of price than on their perceptions of quality. (See the sidebar "Quality Has Its Own Cues.") But companies can just as easily monitor quality perceptions by varying their use of pricing cues and by asking customers for feedback.

Finally, even when marketers have such data under their noses, they too often fail to act. They need to both disseminate what is learned and change business policies. For example, to prevent overuse of promotions, May Department Stores explicitly limits the percentage of items on sale in any one department. It's not an obvious move; one might expect that the department managers would be best positioned to determine how many sale signs to use. But a given department manager is focused on his or her own department and may not consider the impact on other departments. Using additional sale signs may

increase demand within one department but harm demand elsewhere. To correct this, a corporatewide policy limits the discretion of the department managers. Profitability depends both on maintaining an effective testing program and institutionalizing the findings.

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Consumers implicitly trust retailers' pricing cues and, in doing so, place themselves in a vulnerable position. Some retailers might be tempted to breach this trust and behave deceptively. That would be a grave mistake. In addition to legal concerns, retailers should recognize that consumers need price information, just as they need products. And they look to retailers to provide both.

Retailers must manage pricing cues in the same way that they manage quality. That is, no store or catalog interested in collecting large profits in the long run would purposely offer a defective product; similarly, no retailer interested in cultivating a long-term relationship with customers would deceive them with inaccurate pricing cues. By reliably signaling which prices are low, companies can retain customers' trust—and overcome their suspicions that they could find a better deal elsewhere.

Cue, Please

Pricing cues like sale signs and prices that end in 9 become less effective the more they are employed, so it's important to use them only where they pack the most punch. That is, use pricing cues on the items for which customers' price knowledge is poor. Consider employing cues on items when one or more of the following conditions apply:

Customers purchase infrequently. The difference in consumers' knowledge of the price of a can of Coke versus a box of baking soda can be explained by the relative infrequency with which most customers purchase baking soda.

Customers are new. Loyal customers generally have better price knowledge than new customers, so it makes sense to make heavier use of sale signs and prices that end in 9 for items targeted at newer customers. This is particularly true if your products are exclusive. If, on the other hand, competitors sell identical products, new customers may have already acquired price knowledge from them.

Product designs vary over time. Because tennis racket manufacturers tend to update their models frequently, customers who are looking to replace their old rackets will always find different models in the stores or on-line, which makes it difficult for them to compare prices from one year to the next. By contrast, the design of tennis balls rarely changes, and the price remains relatively static over time.

Prices vary seasonally. The prices of flowers, fruits, and vegetables vary when supply fluctuates. Because customers cannot directly observe these fluctuations, they cannot judge whether the price of apples is high because there is a shortage or because the store is charging a premium.

Quality or sizes vary across stores. How much should a chocolate cake cost? It all depends on the size and the quality of the cake. Because there is no such thing as a standard-size cake, and because quality is hard to determine without tasting the cake, customers may find it difficult to make price comparisons.

These criteria can help you target the right items for pricing cues. But you can also use them to distinguish among different types of customers. Those who are least informed about price levels will be the most responsive to your pricing cues, and—particularly in an on-line or direct mail setting—you can vary your use of the cues accordingly.

How do you know which customers are least informed? Again, those who are new to a category or a retailer and who purchase only occasionally tend to be most in the dark.

Of course, the most reliable way to identify which customers' price knowledge is poor (and which items they're unsure about) is simply to poll them. Play your own version of The Price Is Right—show a sample of customers your products, and ask them to predict the prices. Different types of customers will have

different answers.

Quality Has Its Own Cues

Retailers must balance their efforts to cultivate a favorable price image with their efforts to protect the company's quality image. Customers often interpret discounts as a signal of weak demand, which may raise doubts about quality.

This trade-off was illustrated in a recent study we conducted with a company that sells premium-quality gifts and jewelry. The merchant was considering offering a plan by which customers could pay for a product in installments without incurring finance charges. Evidence elsewhere suggested that offering such a plan could increase demand. To test the effectiveness of this strategy, the merchant conducted a test mailing in which a random sample of 1,000 customers received a catalog that contained the installment-billing offer, while another 1,000 customers received a version of the catalog without any such offer. The company received 13% fewer orders from the installment-billing version, and follow-up surveys revealed that the offer had damaged the overall quality image of the catalog. As one customer cogently put it: "People must be cutting back, or maybe they aren't as rich as [the company] thought, because suddenly everything is installment plan. It makes [the company] look tacky to have installment plans."

Sale signs may also raise concerns about quality. It is for this reason that we see few sale signs in industries where perceptions of high quality are essential. For instance, an eye surgeon in the intensely competitive market for LASIK procedures commented: "Good medicine never goes on sale."

The owner of a specialty women's clothing store in Atlanta offered a similar rationale for why she does not use sale signs to promote new items. Her customers interpret sale items as leftovers from previous seasons, or mistakes, for which demand is disappointing because the item is unfashionable.

The Diminishing Return of Sale Signs; Chart; The Surprising Effect of a 9; Chart; Cue, Please; Textbox; Quality Has Its Own Cues; Textbox

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The Fruitful Flaws of Strategy Metaphors

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At the height of the dot-com boom, I joined a few academic colleagues in a meeting with senior executives of a large insurance company to discuss how they might respond to the challenges posed by the Internet. The group was glum—and for good reason. Founded early in the twentieth century, the company had laboriously built its preeminent position in the classic way, office by office, agent by agent. Suddenly, the entire edifice looked hopelessly outdated. Its several thousand agents, in as many brick-and-mortar offices, were distributed across the country to optimize their proximity to customers—customers who, at that very moment, were logging on in droves to purchase everything from tofu to vacations on-line.

Corporate headquarters had put together a team of experts to draft a strategic response to the Internet threat. Once the team had come up with a master plan, it would be promulgated to the individual offices. It was in this context that, when my turn came to speak, I requested a few minutes to talk about Charles Darwin's conceptual breakthrough in formulating the principles of evolution.

Darwin? Eyebrows went up, but apparently the situation was sufficiently worrisome to the executives that they granted me permission—politely, but warily—to proceed with this seeming digression. As my overview of the famous biologist's often misunderstood theories about variation and natural selection gave way to questions and more rambling on my part, a heretical notion seemed to penetrate our discussion: Those agents' offices, instead of being strategic liabilities in a suddenly virtual age, might instead represent the very mechanism for achieving an incremental but powerful corporate transformation in response to the changing business environment.

A species evolves because of variation among individual members and the perpetuation of beneficial traits through natural selection and inheritance. Could the naturally occurring variation—in practices, staffing, use of technology, and the like—that distinguished one office of the insurance company from another provide the raw material for adaptive change and a renewed strategic direction?

This wonderful construction had only one problem: It was wrong, or at least incomplete. The competitive forces in nature are, as Tennyson so aptly put it, "red in tooth and claw"; to unleash such forces in unrestrained form within an organization would jeopardize a company's very integrity. As our discussion continued, though, the metaphor would be expanded and reshaped, ultimately spurring some intriguing thoughts about ways in which the insurance company might change.

The business world is rife with metaphors these days, as managers look to other disciplines for insights into their own challenges. Some of the metaphors are ingenious; take, for instance, insect colonies as a way to think about networked intelligence. Others are simplistic or even silly, like ballroom dancing as a source of leadership lessons. Many quickly become clichés, such as warfare as a basis for business strategy. No matter how clever or thought provoking, metaphors are easy to dismiss, especially if you're an executive whose concerns about the bottom line take precedence over ruminations on how your company is like a symphony orchestra.

That is a pity. Metaphors can be powerful catalysts for generating new business strategies. The problem is that, because of their very nature, metaphors are often improperly used, their potential left unrealized. We tend to look for reassuring parallels in business metaphors instead of troubling differences—clear models to

follow rather than cloudy metaphors to explore. In fact, using metaphors to generate new strategic perspectives begins to work only when the metaphors themselves don't work, or at least don't seem to. The discussion about Darwin at the besieged insurance company offers, in a somewhat compressed form, an example of how this process can play itself out.

Minds Lagging a Little Behind

Metaphors have two primary uses, and each involves the transfer of images or ideas from one domain of reality to another. (This notion is embedded in the Greek roots of the word "metaphor": "phor," meaning "to carry or bear," and "meta," meaning "across.") Both kinds of metaphors were recognized and studied in antiquity, but one of them has been virtually ignored until the relatively recent past.

The rhetorical metaphor—you know, the literary device you learned about in school—pervades the business world. Think of guerrilla marketing (from military affairs), viral marketing (from epidemiology), or the Internet bubble (from physics). A metaphor of this type both compresses an idea for the sake of convenience and expands it for the sake of evocation. When top management praises a business unit for having launched a breakthrough product by saying it has hit a home run, the phrase captures in a few short words the achievement's magnitude. It also implicitly says to members of the business unit, "You are star performers in this organization"—and it's motivating to be thought a star. But as powerful as they may be in concisely conveying multifaceted meaning, such metaphors offer little in the way of new perspectives or insights.

Indeed, linguists would rather uncharitably classify most rhetorical metaphors used in business (home run included) as dead metaphors. Consider "bubble," in its meaning of speculative frenzy or runaway growth. The image no longer invites us to reflect on the nature of a bubble—its internal pressure and the elasticity and tension of the film. The word evokes little more than the bubble's explosive demise—and perhaps the soap that lands on one's face in the aftermath. Such dead metaphors are themselves collapsed bubbles, once appealing and iridescent with multiple interpretations, but now devoid of the tension that gave them meaning.

The cognitive metaphor is much less commonly employed and has completely different functions: discovery and learning. Aristotle, who examined both types of metaphor in great depth, duly emphasized the metaphor's cognitive potential. Effective metaphors, he wrote, are either "those that convey information as fast as they are stated…or those that our minds lag just a little behind." Only in such cases is there "some process of learning," the philosopher concluded.

Aristotle recognized that a good metaphor is powerful often because its relevance and meaning are not immediately clear. In fact, it should startle and puzzle us. Attracted by familiar elements in the metaphor but repelled by the unfamiliar connection established between them, our minds briefly "lag behind," engulfed in a curious mixture of understanding and incomprehension. It is in such delicately unsettled states of mind that we are most open to creative ways of looking at things.

The idea of the cognitive metaphor—virtually ignored over the centuries—is as relevant now and in the context of business as it was more than 2,000 years ago in the context of poetry and public speaking. The metaphor's value as a fundamental cognitive mechanism has been realized in a broad range of fields, from linguistics to biology, from philosophy to psychology. The biggest barrier to the acceptance of the metaphor's cognitive status has been its rather flaky reputation among scientists—not to mention business executives—as a mere ornament and literary device. But, while it is true that metaphors—rhetorical or cognitive—are mental constructions of our imagination and therefore unruly denizens in the realm of rational discourse, it is also true that the strict exercise of rationality serves us best in pruning ideas, not in creating them. Metaphors, and the mental journeys that they engender, are instrumental in sprouting the branches for rationality to prune.

A cognitive metaphor juxtaposes two seemingly unrelated domains of reality. Whereas rhetorical metaphors use something familiar to the audience (for example, the infectious virus, which passes from person to person) to shed light on something less familiar (a new form of marketing that uses e-mail to spread a message), cognitive metaphors often work the other way around. They may use something relatively

unfamiliar (for example, evolutionary biology) to spark creative thinking about something familiar (business strategy).

Linguists call the topic being investigated (business strategy, in the case of the insurance company) the "target domain" and the topic providing the interpretive lens (evolutionary biology) the "source domain." The nomenclature is appropriately metaphorical in its own right, suggesting a source of light emanating from one domain and shining on the other. Alternatively (as all metaphors can be interpreted in multiple ways), the source domain can be viewed as a wellspring of inspiration that can serve to refresh and revive the target domain.

However viewed, the source domain can perform its function only if the audience makes an effort to overcome its unfamiliarity with the subject. Superficial comparisons between two domains generate little in the way of truly new thinking. But it is crucial to keep one's priorities straight. The ultimate aim isn't to become an expert in the source domain; executives don't need to know the subtleties of evolutionary biology. Rather, the purpose is to reeducate ourselves about the world we know—in this case, business—which, because of its very familiarity, appears to have been wrung free of the potential for innovation. This reeducation is achieved by shaking up the familiar domain with fresh ideas extracted from a domain that, by virtue of its unfamiliarity, fairly bursts with potentially useful insights.

The Conundrum of Change

My motivation for discussing Darwin's ideas with insurance executives was to see if we could find a way to reconceptualize the basic idea of change itself, as we examined how the company might change to meet the challenges posed by the Internet.

The question of how societies, species, or even single organisms transform themselves has perplexed thinkers from the very beginning of recorded thought. Some pre-Socratic philosophers seem to have accepted the reality of change in the natural world and even proposed some fairly novel theories to account for it. Others, along with their great successors Plato and Aristotle, finessed the question by declaring change an illusion, one that corrupted the unchanging "essence" of reality hidden to mere humans. To the inveterate essentialist, all individual horses, for example, were more or less imperfect manifestations of some underlying and fundamental essence of "horseness." Change was either impossible or required some force acting directly on the essence.

During the Middle Ages, the very idea of change seemed to have vanished. More likely, it went underground to escape the guardians of theological doctrine who viewed anything that could contradict the dogma of divine order—preordained and thus immutable—with profound suspicion and evinced a remarkable readiness to light a fire under erring and unrepentant thinkers. Ultimately, though, the idea of evolution proved stronger than dogma, resurfacing in the eighteenth century.

It found its most coherent, pre-Darwinian formulation in the theories of the naturalist Jean-Baptiste Lamarck, who believed that individuals pass on to their offspring features they acquire during their lifetimes. Lamarck famously proposed that the necks of individual giraffes had lengthened as they strove to reach the leaves in the trees and that they passed this characteristic on to their offspring, who also stretched to reach their food, resulting in necks that got longer with each generation. Although Lamarck was wrong, his was the first coherent attempt to provide an evolutionary mechanism for change.

Darwin's revolutionary proposal—that natural selection was the key engine of adaptation—traces its pedigree to the intellectual ferment of the English Enlightenment, which was characterized by a belief in the need for careful empirical observation and a wariness of grand theorizing. Long before Darwin, English thinkers in a number of fields had concluded that worldly perfection, as exemplified by their country's legal system and social institutions, had evolved gradually and without conscious design, human or otherwise. In economics, this train of thought culminated in the work of Adam Smith. It is no coincidence that the metaphorical "invisible hand" is as disconnected from a guiding brain as Darwin's natural selection is free of a purposeful Creator.

Darwin's great accomplishment was to establish that a species is in fact made up of unique and naturally

varying individuals. His book On the Origin of Species, published in 1859, broke the backbone of essentialism in biology by showing that variation among individuals of the same species, rather than representing undesirable deviations from an ideal essence, was the raw material and the prerequisite for change and adaptation.

As my digression on natural evolution neared its end, the drift of the metaphor had clearly captured the imagination of the insurance executives in the room. It was increasingly evident that Darwin's frontal assault on essentialism might be in some way related to the company's current approach to organizational change. Imposing a master plan created at headquarters on the thousands of field offices might not be the only or the ideal way to get the company to change. Viewed through the lens of evolutionary biology, the thousands of agents and field offices might be seen as thousands of independent seeds of variation and natural selection, instead of imperfect incarnations of a corporate essence. If one dared to loosen the tethers that tied the individual offices to headquarters—by no means a minor step in an industry where bureaucracy has some undeniable virtues—these individual offices might provide the means for the company to successfully adapt to the new business environment.

Finding Fault with Metaphors

To highlight the unique potential and limits of cognitive metaphors in thinking about business strategy, we need only contrast them with models. Although both constructs establish a conceptual relationship between two distinct domains, the nature of the relationship is very different, as are its objectives—answers, in the case of models, and innovation, in the case of metaphors.

In a model, the two domains must exhibit a one-to-one correspondence. For example, a financial model of the firm will be valid only if its variables and the relations among them correspond precisely to those of the business itself. Once satisfied that a model is sound, you can—and this is the great charm of modeling—transfer everything you know about the source domain into the target domain. If you have a good model—and are in search of explanations rather than new thinking—you may not want to bother with a metaphor.

Like the model, the metaphor bridges two domains of reality. For it to be effective, those domains must clearly share some key and compelling traits. But this correspondence differs from the direct mapping of a model. Rather than laying claim to verifiable validity, as the model must do, the metaphor must renounce such certainty, lest it become a failed model. Metaphors can be good or bad, brilliantly or poorly conceived, imaginative or dreary—but they cannot be "true."

Consider the metaphor of warfare. Occasional journalistic hyperbole notwithstanding, business is not war. But there are revealing similarities. In his magnum opus On War, Carl von Clausewitz, the great Prussian military thinker, pondered the question of whether warfare was an art or a science. He concluded that it was neither and that "we could more accurately compare it to commerce, which is also a conflict of human interests and activities."

Reversing Clausewitz's reasoning, you can usefully compare business with war—but only when you take the interpretive liberties granted by metaphorical thought. While Clausewitz's strategic principles can serve as a source of potential insights into business strategy, they do not offer, as a model would, ready-made lessons for CEOs. It takes conceptual contortions to map all the key elements of war onto key elements of business. For example, there are no customers on a battlefield. (You could argue that an army's customers are the citizens who pay, in the form of taxes and sometimes blood, for the military effort, but this is sophistry, at best.) The effort to turn war into a model for business is twice misguided—for turning a rich source domain into a wretchedly flawed model and for destroying a great metaphor in the process.

Models and metaphors don't compete with one another for relevance; they complement each other. Metaphorical thought may in fact lead to a successful model, as has so often been the case in scientific discovery. Indeed, revolutionary models are just as likely to begin as exploratory metaphors than as equations. Einstein's theory of special relativity grew out of a mental experiment in which he imagined how the world would appear to an observer riding a beam of light.

The problem is that, in business, a potential metaphor is all too often and all too quickly pressed into service

as a model. As we have noted, the distinction between the two is not an inconsequential matter of semantics but a fundamental divergence between applying existing knowledge and searching for new knowledge, between knowing and learning. By eschewing the model's promise of explanation served up ready for application to business, we gain the metaphor's promise of novel thinking, which has always been the true wellspring of business innovation. The model represents closure at the end of a search for validity; the metaphor is an invitation to embark on a road of discovery.

Along that road, the mapping of elements from a source domain onto the business world, and vice versa, ultimately breaks down. It is here—at what I call the fault line—that provocative questions are most likely to be raised and intriguing insights to emerge. Why? Those elements of the source domain that lie on the far side of the fault line—the ones that cannot be mapped onto business without resorting to artifice—must for that very reason be unknown in business. These elements may seem irrelevant to business, or even undesirable, but we can still ask ourselves the crucial question, What would it take to import rather than map the element in question? Can we, in plainer words, steal it and make it work for us?

For example, in exploring almost any biological metaphor, you will encounter sex as a key mechanism. Sex has no generally accepted counterpart in business. The crucial step across this fault line involves asking what mechanism you could create—not merely find, as in a model—in your business that could provide that missing function. What novel functions or structures in your business could play the paramount role that sex has in biology, of replenishing variety through chance recombinations of existing traits? The bold pursuit of the metaphor to the fault line is the prerequisite for this sort of questioning and probing.

Of course, it isn't just novelty you seek but relevant and beneficial novelty. Many things in biology do not map onto business, and most—consider the perplexing mechanism of cell division—may not ultimately be relevant to business. The challenge in making the metaphor do its innovative work resides in zeroing in on a few incongruent elements of the source domain that are pregnant with possible meaning back in the target domain. (For one way to harvest the potential of metaphors in business, see the sidebar "A Gallery of Metaphors.")

At the Fault Line

The greatest value of a good cognitive metaphor—as it makes no pretense of offering any definitive answers—lies in the richness and rigor of the debate it engenders. Early in its life, the metaphor exists as the oscillation between two domains within a single mind. But in fruitful maturity, it takes the form of an oscillation of ideas among many minds.

As my part in the discussion about Darwin came to a natural end, our hosts at the insurance company eagerly entered the conceptual fray, offering their thoughts on the relevance—and irrelevance—of Darwin's theories to the strategic challenges their company faced. They had no problem seeing the key parallels. Like individual organisms of a species, the company's thousands of field offices resembled each other and the parent organization from which they descended. These offices were living organisms that had to compete for nutrients, inputs that they metabolized into outputs; they had to be productive to survive. They also exhibited more or less subtle deviations from one another as well as from their parent. The variety in business practices that individual offices may have introduced, through commission or omission, was akin to mutation in natural organisms, and the differential success of offices undoubtedly had an effect akin to selection.

In violation of this facile comparison, however, the offices operated generally in accordance with a central master plan—and only a change in this plan could in principle drive a species-wide transformation. Here at the fault line, we again encountered the dogma of essentialism that Darwin had challenged and laid to rest in biology. As the discussion continued, yet another divergence emerged. A central tenet of evolutionary biology is that there is no purpose in nature, no preestablished goal toward which a species or an ecosystem (or nature as a whole) is evolving. This is not a consequence of modern agnosticism but a theoretical requirement without which the entire edifice of evolutionary theory would come tumbling down. If the metaphorical mapping between biological evolution and business development were as precise as in a model, we would have no choice but to declare that business, too, must be without purpose—a plausible proposition to some, perhaps, but a risky place to start with a group of business executives.

There was another wrinkle. The modern formulation of Darwin's theory rejects the possibility of an individual organism acquiring inheritable characteristics during its lifetime. Rather, those who happen to be born with adaptive traits will succeed at passing them on to more offspring than those having less beneficial traits, thus bringing about change in the population of the species over time. Yet in a well-run insurance company, one must assume that individual agents and offices are perfectly capable of adopting beneficial characteristics and sharing them with other offices—something that, following an unforgiving interpretation of the evolutionary metaphor, would amount to the Lamarckian heresy in biology.

Two other particularly promising discrepancies—not immediately apparent to me or to the others—beckoned from the far side of the fault line. One exposed a gap between the ways in which the process of selection can occur. The company executives had quickly warmed to the idea that thousands of field offices, developing more autonomously than they had in the past, could generate a wealth of adaptive initiatives. But they were doubtful about how natural processes would separate the wheat from the chaff.

Some noted that, while natural selection may be an appropriate metaphorical notion for eliminating failure in the context of the economy at large, its ruthless finality is irreconcilable with the intent of forging a culture within a working community. In fact, the closest acceptable approximation of natural selection that we could come up with was self-criticism by the increasingly autonomous offices. This clearly was a pale substitute for nature's pitiless means of suppressing the deleterious traits that arise from variation among individual organisms. Indeed, absent that harsh discipline, a surge in variation among the offices could lead to serious deficiencies and organizational chaos.

The fault line also cut through the concept of inheritance. Although Darwin had no inkling of the existence of genetic material, his grand evolutionary engine is inconceivable without a precise mechanism for passing on traits to the next generation. But there is no precise and definable reproductive mechanism in business and hence no readily discernible equivalent to inheritance in biology. Without such a mechanism, there is little to be gained, it seems, from giving field offices greater freedom to experiment and develop their own modes of survival because there is no assurance that good practices will spread throughout the organization over time.

So here we were, looking across a multifractured fault line—the position of choice for the serious practitioner of metaphorical thinking. Only from this location can you pose the question that is metaphor's reward: What innovative new mechanism might eliminate the voids in the domain of business that have been illuminated by the metaphorical light shone on it from the domain of biology? In response, we found ourselves straying from Darwin's theory per se and instead examining the history of evolutionary theory—focusing in particular on a cognitive metaphor that Darwin himself used in the development of his own innovative ideas.

Among Darwin's many pursuits was the breeding of pigeons, an activity in which he practiced the ancient art of artificial selection. He knew that, by meticulously eliminating pigeons with undesirable traits and by encouraging sexual relations between carefully selected individual pigeons whose desirable traits could complement each other, he could swiftly achieve remarkable improvements in his flock. The genius of Darwin's evolutionary theory was that it made clear how haphazard conditions in nature could combine to have an effect similar to that of breeding, albeit at a much slower pace and without the specific direction a breeder might pursue. Darwin's mental oscillation between the two domains of change through breeding and change in the wild is a sparkling illustration of the cognitive metaphor at work.

Of what possible relevance could this expanded metaphor be to a business setting where the forces of natural selection—and the slow promulgation of desirable traits through generations of reproduction—were absent? How could particularly adaptive ideas developed by one insurance office be made to spread throughout the organization without recourse to a central model?

In the give-and-take triggered by such ideas and questions, it gradually became clear that the practice of breeding pigeons was the more revealing metaphor for the company than Darwin's theory of evolution in the wild. You could grant individual offices substantial degrees of freedom in certain areas while ensuring that headquarters retained control in others. The offices could develop their own individual metrics for

evaluating progress in a way that reflected local differences and the need for local adaptation. Weaker-performing offices could be more or less gently encouraged to seek advice from more successful ones, but they could retain the freedom to determine which offices they wished to emulate. Rotating managers among field offices or creating an organizational structure specifically designed to encourage—but not mandate—the spread of successful practices developed by distant offices could serve similar ends.

Such measures are arguably more akin to the interventions of a breeder than to the vagaries of nature. The metaphorical journey had led us to notions that judiciously combined a deep awareness of and deference to the natural processes reminiscent of biology with the obligation—of business managers and breeders alike—to provide intelligent purpose and strategy. We had failed spectacularly at modeling business practice to anything recognizable—and that was precisely the gain. Working the metaphor, we had come up with ideas for achieving strategic adaptation through the establishment of guidelines for managing the variation that leads to change—instead of engineering the change itself.

Working Metaphors

A few weeks later, the executive who had led the meeting of senior company managers asked me to attend a gathering of several dozen regional managers and agents in the field. At the end of his remarks to the group, which dealt with the business challenges posed by the Internet, he launched into a serious and compelling discussion of the basics of Darwinian evolution. This was not the casually invoked rhetorical metaphor, to be tossed aside as soon as its initial charm fades. It was a genuine invitation to explore the cognitive metaphor and see where it might lead. We must work on metaphors in order to make them work for us. This executive had done so—and was ready to engage other eyes and minds in further work.

As our earlier discussion of Darwinism had shown, such work—if it is to be productive—will be marked by several characteristics. We must familiarize ourselves with the similarities that bridge the two domains of the metaphor but escape the straitjacket of modeling, freeing us to push beyond a metaphor's fault line. The cognitive metaphor is not a "management tool" but a mode of unbridled yet systematic thought; it should open up rather than focus the mind.

We must similarly resist the temptation to seek the "right" metaphor for a particular problem. On the contrary, we should always be willing to develop a suite of promising ones: While it may be bad literary style to mix one's metaphors, no such stricture exists in cognitive pursuits. Evolution may be a particularly compelling metaphor because, I believe, essentialist modes of thought still permeate our basic beliefs about the workings of business. As such, it is wise to keep evolution in one's metaphorical treasury. But we must be wary of declaring evolution—or any metaphor—a universal metaphor for business. We must always be ready to work with alternative metaphors in response to the maddening particulars of a business situation. Moreover, because language is social and metaphors are part of language, it should be no surprise that our best metaphorical thinking is done in the company of others. Perhaps most important, the discussion that a metaphor prompts shouldn't be concerned with the search for truth or validity; it should strike out playfully and figuratively in search of novelty.

A Gallery of Metaphors

If metaphorical thinking offers potentially rich strategic insights, how does one capture compelling and potentially useful metaphors to explore?

The answer may lie as close as your next conversation. Human beings create metaphors almost as fast as they talk. In fact, metaphor mongering, unlike logical discourse, comes naturally to most people. Pay close attention to business conversations, especially in informal settings, and you will be surprised by the frequency of casual remarks linking an aspect of a company's situation or practices to a different domain, whether it be a related industry or something as far-flung as fly-fishing.

But you can also gather metaphors in a more purposeful way. Three years ago, the Strategy Institute of the Boston Consulting Group decided to act on its belief that the search for novel strategies is intimately associated with metaphorical exploration. After all, it is common and sound practice in consulting to adapt for use in one industry frameworks and insights gleaned from another. But such explorations need not be

confined to the world of business. We wanted to expand our sphere of metaphors.

The result was an ambitious intranet site—called the Strategy Gallery—that includes dozens of text or text-and-image exhibits related to biology, history, philosophy, anthropology, and many other disciplines. BCG consultants are invited to wander freely among the exhibits and select those that seem stimulating points of departure for imaginative strategic thinking. The gallery metaphor is central to the site's design, which seeks to elicit the sense of surprise, excitement, and inspiration that one can experience in an art gallery.

Strictly speaking, the site is not a gallery of metaphors but of potential, or "truncated," metaphors: Although the target domain is always business strategy, the nature of the link between the exhibit and business is left open. An early and heated debate over the form and function of the gallery involved the question of whether its primary mission should be to instruct visitors—by showing potential applications of the metaphors to business strategy—or, less practically but more ambitiously, to inspire them. The overwhelming response from consultants to the initial, rather timid mock-up of the site: Inspire us! Make the gallery bolder.

The consultants pointed out that they already had access to a vast array of business intelligence and proven strategy frameworks. The gallery had to promise something different: the possibility of novelty. They dismissed attempts at curatorial interpretation and told us that the gallery was worth constructing only if it could be consistently surprising, even shocking, in a way that challenged visitors to think for themselves. The aim of the exercise isn't to find the right metaphor but to catalyze strategic thinking through exposure to diverse domains.

A tour of the gallery can be somewhat bewildering—bewilderment is often a necessary prelude to creative thinking—as visitors stumble upon exhibits with such unlikely titles as "Spaghetti Western," "Spider Divination," and "The Mind of a London Taxi Driver." The initial surprise typically gives way to recognition, however, as visitors begin to realize the themes explored in such exhibits: in the above examples, the emergence of an unexpected new film genre in the face of seemingly impossible constraints, traditional soothsaying practices as a foil to "rational" decision making, and the construction of cognitive maps in a complex maze.

As noted, the exhibits are presented with a minimum of interpretation lest they inhibit rather than inspire the visitor's own novel responses. For example, a text describing the methods used by the Inca in the fifteenth century to integrate diverse peoples into their ever-expanding empire may well resonate with the business practitioner engaged in a postmerger integration. But it would be foolish to reduce this vibrant metaphor to a few pat lessons for the daunting task of corporate integration.

At the same time, exhibits are grouped in a number of ways—for example, around business concepts—which makes a tour through the gallery more than simply random.

The Strategy Gallery was created to address BCG's particular need to provide novel insights into strategic problems. The underlying idea of collecting metaphors systematically could, however, help any company to open up richer and broader sources of innovative thinking.

—David Gray

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A Gallery of Metaphors; Textbox

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Innovating for Cash

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A little over three decades ago, Bruce Henderson, the Boston Consulting Group's founder, warned managers, "The majority of products in most companies are cash traps. They will absorb more money forever than they will generate." His apprehensions were entirely justified. Most new products don't generate substantial financial returns despite companies' almost slavish worship of innovation. According to several studies, between five, and as many as nine, out of ten new products end up being financial failures. Even truly innovative products often don't make as much money as organizations invest in them. Apple Computer, for instance, stopped making the striking G4 Cube less than 12 months after its launch in July 2000 because the company was losing too much cash on the investment. In fact, many corporations make the lion's share of profits from only a handful of their products.

In 2002, just 12 of Procter & Gamble's 250-odd brands generated half of its sales and an even bigger share of net profits.

Yet most corporations presume that they can boost profits by fostering creativity. During the innovation spree of the 1990s, for instance, a large number of companies set up new business incubators, floated venture capital funds, and nurtured intrapreneurs. Companies passionately searched for new ways to become more creative, believing that returns on innovation investments would shoot up if they generated more ideas. However, hot ideas and cool products, no matter how many a company comes up with, aren't enough to sustain success. "The fact that you can put a dozen inexperienced people in a room and conduct a brainstorming session that produces exciting new ideas shows how little relative importance ideas themselves actually have," wrote Harvard Business School professor Theodore Levitt in his 1963 HBR article "Creativity Is Not Enough." In fact, there's an important difference between being innovative and being an innovative enterprise: The former generates lots of ideas; the latter generates lots of cash.

For the past 15 years, we've worked with companies on their innovation programs and commercialization practices. Based on that experience, we've spent the last two years analyzing more than 200 large (mainly Fortune Global 1000) corporations. The companies operate in a variety of industries, from steel to pharmaceuticals to software, and are headquartered mostly in developed economies like the United States, France, Germany, and Japan. Our study suggests there are three ways for a company to take a new product to market. Each of these innovation approaches, as we call them, influences the key drivers of the product's profitability differently and generates different financial returns for the company. The approach that a business uses to commercialize an innovation is therefore critical because it helps determine how much money the business will make from that product over the years. In fact, many ideas have failed to live up to their potential simply because businesses went about developing and commercializing them the wrong way.

Each of the three approaches has its own investment profile, profitability pattern, and risk profile as well as skill requirements. Most organizations are instinctively integrators: They manage all the steps needed to take a product to market. Organizations can also choose to be orchestrators: They focus on some parts of the commercialization process and depend on partners to manage the rest. Finally, companies can be licensors: They sell or license a new product to another organization that handles the rest of the commercialization process. In our study of the three approaches, we found that they can produce very different profit levels, with the best approach often yielding two or three times the profits of the least

optimal approach for the same innovation.

In the following pages, we'll explore the strengths and weaknesses of each approach. We'll show how choosing the wrong one can lead to the failure of both innovation and innovator, as happened at Polaroid. We'll also describe how companies like Whirlpool have changed approaches to ensure that their innovations take off in the marketplace. Indeed, we'll demonstrate that a company's ability to use different innovation approaches may well be a source of competitive advantage.

Three Approaches to Innovation

First, let us explain in more detail what we mean by an innovation approach. It is, simply, a broad management framework that helps companies turn ideas into financial returns. Corporations use innovation approaches when launching new products or services, introducing improvements to products or services, or exploiting new business opportunities and disruptive technologies. The approaches are neither innovation strategies such as first mover and fast follower, nor ownership structures like joint ventures and strategic alliances, but they can be used alongside them. And they extend beyond processes such as new product development or product life cycle management but certainly incorporate them.

Many companies manage all the stages of the process by which they turn ideas into profits—what we call the innovation-to-cash chain. By being integrators and controlling each link in the chain, companies often assume they can reduce their chances of failure. Intel exemplifies the do-it-all-yourself approach. The $26 billion company invested $4 billion in semiconductor research in 2002, manufactured its products almost entirely at company-owned facilities, and managed the marketing, branding, and distribution of its chips. Intel has even introduced high-tech toys and PC cameras to stimulate demand for semiconductors. Most large companies believe that integration is the least risky innovation approach, partly because they are most familiar with it. But integration requires manufacturing expertise, marketing skills, and cross-functional cooperation to succeed. It also demands the most up-front investment of all the approaches and takes the most time to commercialize an innovation.

By comparison, the orchestrator approach usually requires less investment. Companies can draw on the assets or capabilities of partners, and the orchestrators' own assets and capabilities contribute to only part of the process. For example, Handspring (which recently agreed to merge with Palm) became one of the leaders in the personal digital assistant market, but its success depended on the company's relationships with IDEO, which helped design the devices, and Flextronics, which manufactured them. Companies often try the orchestrator approach when they want to launch products quickly or reduce investment costs. When Porsche, for instance, was unable to meet demand for the Boxster after its launch in 1997, it used Valmet in Finland to manufacture the coupe instead of setting up a new facility. But this approach isn't easy to manage and can be riskier than integration. Organizations must be adept at managing projects across companies and skilled at developing partnerships. They must also know how to protect their intellectual property because the flow of information between partners increases the risk of knowledge theft and piracy. Most companies also find it difficult to focus only on areas where they can add value, hand over all other activities to partners, and still take responsibility for a product's success or failure, as orchestrators must.

Corporations are waking up to the potential of the third innovation approach, licensing. It is widely used in industries like biotech and information technology, where the pace of technological change is rapid and risks are high. For example, in 2002 Amgen earned $330 million and IBM, $351 million, from royalties of products and technologies they let other companies take to market. In other industries, companies have used licensing to profit from innovations that didn't fit with their strategies. Instead of worrying that they might be selling the next "big idea," smart licensors ask for equity stakes in the ventures that commercialize orphans. That lets the innovator retain an interest in the new product's future. For instance, in early 2003 GlaxoSmithKline transferred the patents, technology, and marketing rights for a new antibiotic to Affinium Pharmaceuticals in exchange for an equity stake and a seat on the board. Licensors may play a role only in the early stages of the innovation-to-cash cycle, but they need intellectual property management, legal, and negotiation capabilities in order to succeed. In addition, they must be hard-nosed enough to sell off innovations whenever it makes financial sense, despite the objections of employees who may be attached to the ideas they've developed.

Each of the three approaches entails a different level of investment, with the integrator usually being the highest, and the licensor being the lowest. Orchestration usually falls somewhere in between, but it often doesn't require much capital investment because the company's contribution is intangible (brand management skills, for example). Since capital requirements differ, the cash flows, risks, and returns vary from approach to approach. Companies must analyze all those elements when planning the development of new products. Doing so can improve a project's economics by changing the way managers plan to take the product to market. Executives gain not only better financial insights but also a greater understanding of the key trade-offs involved when they analyze all three approaches.

Too often, however, companies find themselves wedded to one approach, usually out of sheer habit. The old favorite appears less risky because companies have become comfortable with it. Moreover, we've found that many companies don't know enough about all the approaches or how to weigh their advantages and disadvantages. Because no one likes to "give away part of the margin"—a complaint we hear often—the orchestrator and licensor approaches are evaluated in the most cursory fashion, if at all. Indeed, the choice of innovation approach isn't even built into the decision-making processes of most companies. That can lead to the failure of a new product, and also the company itself—as Polaroid found when it entered the digital photography market.

Polaroid's Mistake

Polaroid didn't lack the ideas, resources, or opportunities to succeed in the digital photography business. The world leader in instant photography for decades, the company had a great brand, brilliant engineers and scientists, and a large global marketing and distribution network. Polaroid wasn't caught unawares by the shift to digital photography; it was one of the first companies to start investing in the area, in the early 1980s. Nor did the corporation lose to faster-moving upstarts; it was beaten by old, well-established foes like Kodak and Sony. So what went wrong?

Polaroid had enjoyed a near monopoly in instant photography, but it sensed early that the digital photography market would be different. The company would face intense competition not just from traditional photography companies but also from consumer electronics giants and computer manufacturers. However, it didn't realize how accustomed its engineers were to long product development cycles as well as 20-year patent protection. Similarly, Polaroid's manufacturing processes were vertically integrated, with the company making almost everything itself. But Polaroid's manufacturing skills wouldn't be of much help in the digital market, where Moore's Law governed the costs and capabilities of a key new component, computer chips. In addition, the company's expertise lay in optics, perception, and film technology—not electronic digital signal processing, software, and storage technologies. As a result, Polaroid had to invest heavily to establish itself in the digital-imaging market.

Still, Polaroid chose to enter the digital space as an integrator. The company used the output of in-house research to manufacture its own high-quality, new-to-the-world products—just as it had always done. But Polaroid's first digital offerings were expensive and didn't catch on. For instance, Helios, a digital laser-imaging system meant to replace conventional X-ray printing, consumed several hundred million dollars in investment but never became successful. Launched in 1993, the business was sold by 1996, the year Polaroid launched its first digital camera, the PDC-2000. Technically sophisticated, the PDC-2000 was targeted mainly at commercial photographers but was also intended as a platform for entering the consumer market. However, the PDC-2000 retailed for between $2,995 and $4,995, when other digital cameras were available for well below $1,000. In fact, Polaroid's real thrust into the consumer market didn't start until late 1997—five years after its rivals' products had shipped.

Polaroid could have leveraged its advantages differently. It could have focused its research and budgets on key digital technologies, outsourced the manufacturing of digital cameras to other companies, and licensed its image-processing software to third parties. That would have allowed it to offer high-quality digital cameras at inexpensive prices. Since the brand was still powerful, and the company enjoyed good relationships with retailers, commercial customers, and consumers, Polaroid could have carved out a strong position for itself in the marketplace—without having to invest so heavily. Instead, the approach Polaroid chose resulted in its digital cameras being too slow to market and too expensive for consumers.

By the time Polaroid realized its mistake, it was too late. The company discontinued the PDC-2000 in 1998 and turned into an orchestrator. For the first time in its history, the company outsourced the manufacturing of digital cameras to companies in Taiwan, added some cosmetic features, and sold them under its brand name. Polaroid was the first to sell digital cameras through Wal-Mart, and its market share jumped from 0.1% of the U.S. market in 1999 to 10.4% by 2000. However, the company couldn't command premium prices with a brand that several others had overtaken by then. Trapped by declining instant-film sales, an inability to generate sufficient profits from the digital business, and rising demands for investment in technology, the company ran out of time. Relying on the wrong innovation approach proved fatal for Polaroid, which finally filed for Chapter 11 bankruptcy court protection in October 2001.

Choosing the Right Tack

We don't have a "black box" that helps managers choose the most effective innovation approach. The selection process entails a systematic analysis of three dimensions of the opportunity: the industry, the innovation, and the risks. That may sound familiar, but we find that most companies base their commercialization decisions on fragmented and partial evaluations of these factors. Managers make assumptions—"We are as low cost as any supplier can be"—and fail to explore consequences—"We'll be the leader even if we're late to market." Only a rigorous three-pronged analysis captures what's unique and important about the innovation and points to the approach that will maximize a company's profits.

The Industry. A company has to take into account the structure of the industry it's trying to enter, particularly if the industry is unfamiliar to the company. Four factors, we find, should be analyzed when thinking about an industry and the choice of approach:

The physical assets needed to enter the industry. (For example, will we need to invest heavily in factories?)

The nature of the supply chain. (Are partners mature or unsophisticated? Are they tied to rivals?)

The importance of brands. (Will our brand provide a permanent or temporary advantage?)

The intensity of rivalry. (What strategies will rivals use to respond to our entry?)

The exact metrics that executives use for the analysis are often less important than the direction they suggest. If a company needs to invest heavily in physical assets, partner maturity levels are low, and rivals will probably use standard weapons to fight back, the integrator approach may be a good fit. That's why most companies in the white goods industry, like Maytag and Whirlpool, are integrators. However, if the supplier base is sophisticated, rivalry will be intense, and the value attributed to brands is high, the orchestrator approach may be best in order to share both risks and investments. Players in the computer hardware and consumer electronics industries, like Cisco and Sony, tend to be orchestrators.

The Innovation. The characteristics of an innovation play a central role in the choice of approach—a realization that surprises most managers. For instance, it's very important to look at the product's potential life cycle in order to figure out the window available to recoup investments. Disk-drive makers like Western Digital have only six to nine months before the next set of technological advances spell the end of their products. Such companies prefer to be orchestrators and work with many partners to keep incorporating the latest technologies into products.

If the product is a radical breakthrough rather than an incremental innovation, it will require additional resources for both educating the market and ramping up production quickly when demand takes off. When TiVo launched digital video recorders in 1999, for example, it realized that large investments would be necessary to communicate the product's benefits to customers. So the start-up focused its efforts on growing the market and handed off the manufacturing of the product. Later, TiVo even licensed the technology to Sony and Toshiba in order to drive adoption while it continued to use its resources to educate consumers.

Other innovation characteristics to consider are a product's complements and infrastructure. For example, U.S. automakers are racing to develop hydrogen-based engines, but it isn't clear who will build the

hydrogen fuel stations (the complements) and transmission networks (the infrastructure) that will also be needed. If the Big Three don't factor that into their innovation approaches, they may spend too much time and money developing everything on their own, or they may enter the market with a technology that no one can use. What else is required, and when, needs to be factored into the choice of an approach. It's also important to note that as long as an innovation enjoys patent protection, a company will gravitate toward the integrator approach because competitive pressures won't be seen as so critical.

Callaway's Big Bertha golf club illustrates how important the nature of the innovation is to picking an approach. While Big Bertha wasn't a true breakthrough because it wasn't the first oversized golf club, it did offer several patented features, including a design that eliminated most of the weight from the club shaft, and, most important, better performance. It was different enough for founder Ely Callaway not to license the design or market the product through another company. So to bring Big Bertha to market, he built the brand, the manufacturing capability, the sales and marketing infrastructure, and a research department. Callaway Golf became a leader in golf clubs, balls, and sportswear, all built by the integrator approach on the back of Big Bertha's success.

Risks. There are four risks a company should be particularly mindful of when deciding which innovation approach to use. The first risk is whether the innovation will work in a technical sense. Can the new product actually deliver the improved performance it promises? If Callaway had doubted Big Bertha's ability to deliver the terrific performance improvement it promised, it might have made more sense for the company to license the unusual design for a small royalty. The second risk is that customers may not buy the new product even if it works. The incremental improvement or the breakthrough may not be exciting enough for customers, and they may not bite. For instance, people are waiting longer than before to buy PCs because they don't see enough of a difference between old and new models.

The third risk comes from substitutes, whose availability shrinks margins. Even pharmaceutical companies with patented products face competition from rival drugs with similar benefits. For instance, Merck's Mevacor was the first in a new class of cholesterol-lowering drugs, called statins, to gain FDA approval in 1987. But Bristol-Myers Squibb's Pravachol and Merck's own Zocor arrived in 1991, and Pfizer's Lipitor followed in 1997. Mevacor's 20-year patent couldn't insulate it from competition for more than four years.

Finally, the innovation's risk profile will also be influenced by the investment that the company needs to commercialize it. Some products, clearly, are more expensive to bring to market than others are (jet aircraft versus industrial fasteners, for instance).

By analyzing all four risk factors, managers can decide early on if the company should favor an approach that passes on some of the risks—and rewards—to other companies. We must warn, though, that unwarranted optimism seeps in at this stage because the innovation's backers want it to succeed and almost everyone in the company will want to do it all in-house.

Managers must take great care not to focus on any one dimension but instead to consider the composite picture that the analysis offers. Such a broad perspective will align the innovation's requirements for commercial success with marketplace conditions. At the same time, picking the right approach is not a mechanical process. Each business opportunity is different, and the choice of approach is often a judgment call.

In general, the integrator approach generates the greatest level of returns in situations where conditions are relatively stable: an existing market, well-understood customer tastes, proven technology, and relatively long product life cycles, for example. In addition, the approach tends to work best for companies that have strong market positions and have already made the investments that are needed to commercialize innovations. The orchestrator approach usually works best in situations where a company has developed a breakthrough innovation that is a step removed from its core business, where there are several capable suppliers and potential partners, and where time to market is critical. And the licensor model makes sense when the market is new to the company, when strong intellectual property protection for the innovation is possible, when there is a need for complements or infrastructure to the new product, and when the innovator's brand isn't critical for success.

Sometimes, companies won't be able to use their preferred innovation approach because competitors have preempted their first choice. For instance, when Microsoft decided to enter the video game industry with its software, its best option was licensing its products. However, the company couldn't take that route because Sony and Nintendo dominated the video game market. They had already developed their own software, and they didn't want to risk becoming too dependent on Microsoft's operating system. So the high-tech giant became an orchestrator instead of a licensor: Flextronics assembles the consoles while Microsoft focuses on winning over game developers and marketing its entry, the Xbox. The company loses money on every console it sells, but it loses less by being an orchestrator than it would have as an integrator. Moreover, Microsoft is gaining a toehold in a market that it wants to be in for strategic reasons.

Getting a sense of which innovation approach is best for an opportunity is not enough; managers must also gauge which approach will fit best with a company's internal skills. To successfully commercialize the product, the company's capabilities—those it has or can muster quickly—must match the requirements of the approach. Executives will need to honestly assess the company's starting position and how it can win in the industry. If an integrator approach is called for, does the company have the financial, human, and physical assets necessary to ramp up production quickly? If it has to be an orchestrator, is the company skilled at managing projects across several different organizations? If it must be a licensor, does the organization have the ability to protect intellectual property and to structure the right long-term deal? Companies should match their skills with the demands of the approaches only after they have evaluated all three models; otherwise, the capabilities overtake the decision, and companies often end up using their favorite approach instead of the most effective one.

If there isn't a good match between the organization and the approach, or the company can't use the desired approach, managers have two options. They can use a less-attractive approach to take the product to market. Or, they can invest time and money to develop the skills needed for the optimum approach. Companies will often start with the less-attractive approach as they build the capabilities to move to the optimum one. Switching to an unfamiliar approach is hard because companies have to learn to operate outside their comfort zones. But it isn't impossible, as companies like Whirlpool have shown.

How Whirlpool Changed Its Approach

The team was told to commercialize the series of innovations, dubbed the Gladiator line, as inexpensively as possible because money was tight, and no one knew how big the market would be. Most people at Whirlpool took it for granted that the Gladiator team would develop the new products using the integrator model, as the company had always done. But CEO David Whitwam had given the team the freedom to commercialize the new line the way it wanted to, even if that meant a radical departure from company practices.

In September 2001, based on consumer research, the project received $2 million in funding. But the funding came with a caveat: If Gladiator couldn't show revenues, customers, and a product line by the end of 2002, the project would be shelved. Compounding the problem, the project team realized that they would need a full line of products at launch; otherwise, consumers would not understand the idea that the system would "transform the garage." A full line would also extend the time Whirlpool could command premium prices because the competition would find it harder to duplicate the product line.

The Gladiator team also realized that Whirlpool's traditional approach of in-house design and manufacturing would take more time and money than it had at its disposal. So the team outsourced the manufacturing of everything except the appliances—a move that met with resistance in other parts of the company. Whirlpool plants asked the Gladiator team why components were being made by vendors when they themselves could do it more cheaply. But the fact was, they couldn't deliver the same cost, quality, and turnaround times. The Gladiator team also tried working with suppliers who were new to Whirlpool in order to save money. For example, it sourced tooling from a supplier that delivered it at one-third the cost and one-third the time of the company's current suppliers. Similarly, the team utilized the design capabilities of several suppliers in order to save time.

Despite using an innovation approach that was new to Whirlpool, the Gladiator team pulled off the project. The company tested the products in a few Lowe's stores in Charlotte, North Carolina, in the fall of 2002,

and they are currently being rolled out nationally. Getting the products to market in just over a year from the time the project was funded was fast in the appliances industry, where it normally takes three to five years to launch new products. Whirlpool reports that the products have exceeded expectations. Moreover, the project has taught Whirlpool how to be an orchestrator, with the Gladiator team transferring those skills to the company's units all over the world.

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Which Model Works for You?

Integrator

Description

Manage all the steps necessary to generate profits from an idea.

Investment requirements

High. Capital may be needed to set up new manufacturing facilities, for instance.

Capability requirements

Strong cross-functional links within organization

Product design

Manufacturing-process design skills

Technical talent sourcing

Best used when

speed-to-market is not critical.

technology is proven.

customer tastes are stable.

innovation is incremental.

Orchestrator

Description

Focus on some steps and link with partners to carry out the rest.

Investment requirements

Medium. Capital may be needed only to market the product, for example.

Capability requirements

Ability to collaborate with several partners simultaneously, while not having direct control

Complex project-management skills

Customer insight

Brand management

Culture that can let go of certain areas, while focusing on core competencies

Ability to move quickly; nimbleness

Best used when

there is a mature supplier/partner base.

there is intense competition—a need for constant innovation.

strong substitutes exist.

technology is in early stages.

Licensor

Description

License the innovation to another company to take it to market.

Investment requirements

Low. Manufacturing and marketing expenses are borne by other companies.

Capability requirements

Intellectual-property management skills

Basic research capabilities

Contracting skills

Ability to influence standards

Best used when

there is strong intellectual property protection.

importance of innovator's brand is low.

market is new to the innovator.

significant infrastructure is needed but not yet developed.

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Which Model Works for You?; Table

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Why Hard-Nosed Executives Should Care About Management Theory

Clayton M. Christensen; Michael E. Raynor
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Imagine going to your doctor because you're not feeling well. Before you've had a chance to describe your symptoms, the doctor writes out a prescription and says, "Take two of these three times a day, and call me next week."

"But—I haven't told you what's wrong," you say. "How do I know this will help me?"

"Why wouldn't it?" says the doctor. "It worked for my last two patients."

No competent doctors would ever practice medicine like this, nor would any sane patient accept it if they did. Yet professors and consultants routinely prescribe such generic advice, and managers routinely accept such therapy, in the naive belief that if a particular course of action helped other companies to succeed, it ought to help theirs, too.

Consider telecommunications equipment provider Lucent Technologies. In the late 1990s, the company's three operating divisions were reorganized into 11 "hot businesses." The idea was that each business would be run largely independently, as if it were an internal entrepreneurial start-up. Senior executives proclaimed that this approach would vault the company to the next level of growth and profitability by pushing decision making down the hierarchy and closer to the marketplace, thereby enabling faster, better-focused innovation. Their belief was very much in fashion; decentralization and autonomy appeared to have helped other large companies. And the start-ups that seemed to be doing so well at the time were all small, autonomous, and close to their markets. Surely what was good for them would be good for Lucent.

It turned out that it wasn't. If anything, the reorganization seemed to make Lucent slower and less flexible in responding to its customers' needs. Rather than saving costs, it added a whole new layer of costs.

How could this happen? How could a formula that helped other companies become leaner, faster, and more responsive have caused the opposite at Lucent?

It happened because the management team of the day and those who advised it acted like the patient and the physician in our opening vignette. The remedy they used—forming small, product-focused, close-to-the-customer business units to make their company more innovative and flexible—actually does work, when business units are selling modular, self-contained products. Lucent's leading customers operated massive telephone networks. They were buying not plug-and-play products but, rather, complicated system solutions whose components had to be knit together in an intricate way to ensure that they worked correctly and reliably. Such systems are best designed, sold, and serviced by employees who are not hindered from coordinating their interdependent interactions by being separated into unconnected units. Lucent's managers used a theory that wasn't appropriate to their circumstance—with disastrous results.

Theory, you say? Theory often gets a bum rap among managers because it's associated with the word "theoretical," which connotes "impractical." But it shouldn't. A theory is a statement predicting which actions will lead to what results and why. Every action that managers take, and every plan they formulate, is based on some theory in the back of their minds that makes them expect the actions they contemplate will lead to the results they envision. But just like Monsieur Jourdain in Molière's Le Bourgeois Gentilhomme, who didn't

realize he had been speaking prose all his life, most managers don't realize that they are voracious users of theory.

Good theories are valuable in at least two ways. First, they help us make predictions. Gravity, for example, is a theory. As a statement of cause and effect, it allows us to predict that if we step off a cliff we will fall, without requiring that we actually try it to see what happens. Indeed, because reliable data are available solely about the past, using solid theories of causality is the only way managers can look into the future with any degree of confidence. Second, sound theories help us interpret the present, to understand what is happening and why. Theories help us sort the signals that portend important changes in the future from the noise that has no strategic meaning.

Establishing the central role that theory plays in managerial decision making is the first of three related objectives we hope to accomplish in this article. We will also describe how good theories are developed and give an idea of how a theory can improve over time. And, finally, we'd like to help managers develop a sense, when they read an article or a book, for what theories they can and cannot trust. Our overarching goal is to help managers become intelligent consumers of managerial theory so that the best work coming out of universities and consulting firms is put to good use—and the less thoughtful, less rigorous work doesn't do too much harm.

Where Theory Comes From

The construction of a solid theory proceeds in three stages. It begins with a description of some phenomenon we wish to understand. In physics, the phenomenon might be the behavior of high-energy particles; in business, it might be innovations that succeed or fail in the marketplace. In the exhibit at right, this stage is depicted as a broad foundation. That's because unless the phenomenon is carefully observed and described in its breadth and complexity, good theory cannot be built. Researchers surely head down the road to bad theory when they impatiently observe a few successful companies, identify some practices or characteristics that these companies seem to have in common, and then conclude that they have seen enough to write an article or book about how all companies can succeed. Such articles might suggest the following arguments, for example:

Because Europe's wireless telephone industry was so successful after it organized around a single GSM standard, the wireless industry in the United States would have seen higher usage rates sooner if it, too, had agreed on a standard before it got going.

If you adopt this set of best practices for partnering with best-of-breed suppliers, your company will succeed as these companies did.

Such studies are dangerous exactly because they would have us believe that because a certain medicine has helped some companies, it will help all companies. To improve understanding beyond this stage, researchers need to move to the second step: classifying aspects of the phenomenon into categories. Medical researchers sort diabetes into adult onset versus juvenile onset, for example. And management researchers sort diversification strategies into vertical versus horizontal types. This sorting allows researchers to organize complex and confusing phenomena in ways that highlight their most meaningful differences. It is then possible to tackle stage three, which is to formulate a hypothesis of what causes the phenomenon to happen and why. And that's a theory.

How do researchers improve this preliminary theory, or hypothesis? As the downward loop in the diagram below suggests, the process is iterative. Researchers use their theory to predict what they will see when they observe further examples of the phenomenon in the various categories they had defined in the second step. If the theory accurately predicts what they are observing, they can use it with increasing confidence to make predictions in similar circumstances.1

In their further observations, however, researchers often see something the theory cannot explain or predict, an anomaly that suggests something else is going on. They must then cycle back to the categorization stage and add or eliminate categories—or, sometimes, rethink them entirely. The researchers then build an improved theory upon the new categorization scheme. This new theory still explains the

previous observations, but it also explains those that had seemed anomalous. In other words, the theory can now predict more accurately how the phenomenon should work in a wider range of circumstances.

To see how a theory has improved, let's look at the way our understanding of international trade has evolved. It was long thought that countries with cheap, abundant resources would have an advantage competing in industries in which such resources are used as important inputs of production. Nations with inexpensive electric power, for example, would have a comparative advantage in making products that require energy-intensive production methods. Those with cheap labor would excel in labor-intensive products, and so on. This theory prevailed until Michael Porter saw anomalies the theory could not account for. Japan, with no iron ore and little coal, became a successful steel producer. Italy became the world's dominant producer of ceramic tile, even though its electricity costs were high and it had to import much of the clay.

Porter's theory of competitive clusters grew out of his efforts to account for these anomalies. Clusters, he postulated, lead to intense competition, which leads companies to optimize R&D, production, training, and logistics processes. His insights did not mean that prior notions of advantages based on low-cost resources were wrong, merely that they didn't adequately predict the outcome in every situation. So, for example, Canada's large pulp and paper industry can be explained in terms of relatively plentiful trees, and Bangalore's success in computer programming can be explained in terms of plentiful, low-cost, educated labor. But the competitive advantage that certain industries in Japan, Italy, and similar places have achieved can be explained only in terms of industry clusters. Porter's refined theory suggests that in one set of circumstances, where some otherwise scarce and valuable resource is relatively abundant, a country can and should exploit this advantage and so prosper. In another set of circumstances, where such resources are not available, policy makers can encourage the development of clusters to build process-based competitive advantages. Governments of nations like Singapore and Ireland have used Porter's theory to devise cluster-building policies that have led to prosperity in just the way his refined theory predicts.

We'll now take a closer look at three aspects of the theory-building process: the importance of explaining what causes an outcome (instead of just describing attributes empirically associated with that outcome); the process of categorization that enables theorists to move from tentative understanding to reliable predictions; and the importance of studying failures to building good theory.

Pinpointing Causation

In the early stages of theory building, people typically identify the most visible attributes of the phenomenon in question that appear to be correlated with a particular outcome and use those attributes as the basis for categorization. This is necessarily the starting point of theory building, but it is rarely ever more than an important first step. It takes a while to develop categories that capture a deep understanding of what causes the outcome.

Consider the history of people's attempts to fly. Early researchers observed strong correlations between being able to fly and having feathers and wings. But when humans attempted to follow the "best practices" of the most successful flyers by strapping feathered wings onto their arms, jumping off cliffs, and flapping hard, they were not successful because, as strong as the correlations were, the would-be aviators had not understood the fundamental causal mechanism of flight. When these researchers categorized the world in terms of the most obvious visible attributes of the phenomenon (wings versus no wings, feathers versus no feathers, for example), the best they could do was a statement of correlation—that the possession of those attributes is associated with the ability to fly.

Researchers at this stage can at best express their findings in terms of degrees of uncertainty: "Because such a large percentage of those with wings and feathers can fly when they flap (although ostriches, emus, chickens, and kiwis cannot), in all probability I will be able to fly if I fabricate wings with feathers glued on them, strap them to my arms, and flap hard as I jump off this cliff." Those who use research still in this stage as a guide to action often get into trouble because they confuse the correlation between attributes and outcomes with the underlying causal mechanism. Hence, they do what they think is necessary to succeed, but they fail.

A stunning number of articles and books about management similarly confuse the correlation of attributes and outcomes with causality. Ask yourself, for example, if you've ever seen studies that:

contrast the success of companies funded by venture capital with those funded by corporate capital (implying that the source of capital funding is a cause of success rather than merely an attribute that can be associated with a company that happens to be successful for some currently unknown reason).

contend that companies run by CEOs who are plain, ordinary people earn returns to shareholders that are superior to those of companies run by flashy CEOs (implying that certain CEO personality attributes cause company performance to improve).

assert that companies that have diversified beyond those SIC codes that define their core businesses return less to their shareholders than firms that kept close to their core (thus leaping to the conclusion that the attributes of diversification or centralization cause shareholder value creation).

conclude that 78% of female home owners between the ages of 25 and 35 prefer this product over that one (thus implying that the attributes of home ownership, age, and gender somehow cause people to prefer a specific product).

None of these studies articulates a theory of causation. All of them express a correlation between attributes and outcomes, and that's generally the best you can do when you don't understand what causes a given outcome. In the first case, for example, studies have shown that 20% of start-ups funded by venture capitalists succeed, another 50% end up among the walking wounded, and the rest fail altogether. Other studies have shown that the success rate of start-ups funded by corporate capital is much, much lower. But from such studies you can't conclude that your start-up will succeed if it is funded by venture capital. You must first know what it is about venture capital—the mechanism—that contributes to a start-up's success.

In management research, unfortunately, many academics and consultants intentionally remain at this correlation-based stage of theory building in the mistaken belief that they can increase the predictive power of their "theories" by crunching huge databases on powerful computers, producing regression analyses that measure the correlations of attributes and outcomes with ever higher degrees of statistical significance. Managers who attempt to be guided by such research can only hope that they'll be lucky—that if they acquire the recommended attributes (which on average are associated with success), somehow they too will find themselves similarly blessed with success.

The breakthroughs that lead from categorization to an understanding of fundamental causality generally come not from crunching ever more data but from highly detailed field research, when researchers crawl inside companies to observe carefully the causal processes at work. Consider the progress of our understanding of Toyota's production methods. Initially, observers noticed that the strides Japanese companies were making in manufacturing outpaced those of their counterparts in the United States. The first categorization efforts were directed vaguely toward the most obvious attribute—that perhaps there was something in Japanese culture that made the difference.

When early researchers visited Toyota plants in Japan to see its production methods (often called "lean manufacturing"), though, they observed more significant attributes of the system—inventories that were kept to a minimum, a plant-scheduling system driven by kanban cards instead of computers, and so on. But unfortunately, they leaped quickly from attributes to conclusions, writing books assuring managers that if they, too, built manufacturing systems with these attributes, they would achieve improvements in cost, quality, and speed comparable to those Toyota enjoys. Many manufacturers tried to make their plants conform to these lean attributes—and while many reaped some improvements, none came close to replicating what Toyota had done.

The research of Steven Spear and Kent Bowen has advanced theory in this field from such correlations by suggesting fundamental causes of Toyota's ability to continually improve quality, speed, and cost. Spear went to work on several Toyota assembly lines for some time. He began to see a pattern in the way people thought when they designed any process—those for training workers, for instance, or installing car seats, or maintaining equipment. From this careful and extensive observation, Spear and Bowen concluded that all

processes at Toyota are designed according to four specific rules that create automatic feedback loops, which repeatedly test the effectiveness of each new activity, pointing the way toward continual improvements. (For a detailed account of Spear and Bowen's theory, see "Decoding the DNA of the Toyota Production System," HBR September–October 1999.) Using this mechanism, organizations as diverse as hospitals, aluminum smelters, and semiconductor fabricators have begun achieving improvements on a scale similar to Toyota's, even though their processes often share few visible attributes with Toyota's system.

Moving Toward Predictability

Manned flight began to be possible when Daniel Bernoulli's study of fluid mechanics helped him understand the mechanism that creates lift. Even then, though, understanding the mechanism itself wasn't enough to make manned flight perfectly predictable. Further research was needed to identify the circumstances under which that mechanism did and did not work.

When aviators used Bernoulli's understanding to build aircraft with airfoil wings, some of them still crashed. They then had to figure out what it was about those circumstances that led to failure. They, in essence, stopped asking the question, "What attributes are associated with success?" and focused on the question, "Under what circumstances will the use of this theory lead to failure?" They learned, for example, that if they climbed too steeply, insufficient lift was created. Also, in certain types of turbulence, pockets of relatively lower-density air forming under a wing could cause a sudden down spin. As aviators came to recognize those circumstances that required different technologies and piloting techniques and others that made attempting flight too dangerous, manned flight became not just possible but predictable.

In management research, similar breakthroughs in predictability occur when researchers not only identify the causal mechanism that ties actions to results but go on to describe the circumstances in which that mechanism does and does not result in success. This enables them to discover whether and how managers should adjust the way they manage their organizations in these different circumstances. Good theories, in other words, are circumstance contingent: They define not just what causes what and why, but also how the causal mechanism will produce different outcomes in different situations.

For example, two pairs of researchers have independently been studying why it is so difficult for companies to deliver superior returns to shareholders over a sustained period. They have recently published carefully researched books on the question that reach opposing conclusions. Profit from the Core observes that the firms whose performance is best and lasts longest are, on average, those that have sought growth in areas close to the skills they'd honed in their core businesses. It recommends that other managers follow suit. Creative Destruction, in contrast, concludes that because most attractive businesses ultimately lose their luster, managers need to bring the dynamic workings of entrepreneurial capitalism inside their companies and be willing to create new core businesses.

Because they've juxtaposed their work in such a helpful way, we can see that what the researchers actually have done is define the critical question that will lead to the predictability stage of the theory-building cycle: "Under what circumstances will staying close to the core help me sustain superior returns, and when will it be critical to set the forces of creative destruction to work?" When the researchers have defined the set of different situations in which managers might find themselves relative to this question and then articulated a circumstance-contingent theory, individuals can begin following their recommendations with greater confidence that they will be on the right path for their situation.

Circumstance-contingent theories enable managers to understand what it is about their present situation that has enabled their strategies and tactics to succeed. And they help managers recognize when important circumstances in their competitive environment are shifting so they can begin "piloting their plane" differently to sustain their success in the new circumstance. Theories that have advanced to this stage can help make success not only possible and predictable but sustainable. The work of building ever-better theory is never finished. As valuable as Porter's theory of clusters has proven, for example, there is a great opportunity for a researcher now to step in and find out when and why clusters that seem robust can disintegrate. That will lead to an even more robust theory of international competitive advantage.

The Importance of Failures

Note how critical it is for researchers, once they have hypothesized a causal mechanism, to identify circumstances in which companies did exactly what was prescribed but failed. Unfortunately, many management researchers are so focused on how companies succeed that they don't study failure. The obsession with studying successful companies and their "best practices" is a major reason why platitudes and fads in management come and go with such alarming regularity and why much early-stage management thinking doesn't evolve to the next stage. Managers try advice out because it sounds good and then discard it when they encounter circumstances in which the recommended actions do not yield the predicted results. Their conclusion most often is, "It doesn't work."

The question, "When doesn't it work?" is a magical key that enables statements of causality to be expressed in circumstance-contingent ways. For reasons we don't fully understand, many management researchers and writers are afraid to turn that key. As a consequence, many a promising stream of research has fallen into disuse and disrepute because its proponents carelessly claimed it would work in every instance instead of seeking to learn when it would work, when it wouldn't, and why.

In a good doctor-patient relationship, doctors usually can analyze and diagnose what is wrong with a specific patient and prescribe an appropriate therapy. By contrast, the relationship between managers, on the one hand, and those who research and write about management, on the other, is a distant one. If it is going to be useful, research must be conducted and written in ways that make it possible for readers to diagnose their situation themselves. When managers ask questions like, "Does this apply to my industry?" or "Does it apply to service businesses as well as product businesses?" they really are probing to understand the circumstances under which a theory does and does not work. Most of them have been burned by misapplied theory before. To know unambiguously what circumstance they are in, managers need also to know what circumstances they are not in. That is why getting the circumstance-defined categories right is so important in the process of building useful theory.

In our studies, we have observed that industry-based or product-versus-service-based categorization schemes almost never constitute a useful foundation for reliable theory because the circumstances that make a theory fail or succeed rarely coincide with industry boundaries. The Innovator's Dilemma, for example, described how precisely the same mechanism that enabled upstart companies to upend the leading, established firms in disk drives and computers also toppled the leading companies in mechanical excavators, steel, retailing, motorcycles, and accounting software. The circumstances that matter to this theory have nothing to do with what industry a company is in. They have to do with whether an innovation is or is not financially attractive to a company's business model. The mechanism—the resource allocation process—causes the established leaders to win the competitive fights when an innovation is financially attractive to their business model. And the same mechanism disables them when they are attacked by disruptive innovators whose products, profit models, and customers are not attractive to their model.

We can trust a theory only when, as in this example, its statement describing the actions that must lead to success explains how they will vary as a company's circumstances change. This is a major reason why the world of innovating managers has seemed quite random—because shoddy categorization by researchers has led to one-size-fits-all recommendations that have led to poor results in many circumstances. Not until we begin developing theories that managers can use in a circumstance-contingent way will we bring predictable success to the world of management.

Let's return to the Lucent example. The company is now in recovery: Market share in key product groups has stabilized, customers report increased satisfaction, and the stock price is recovering. Much of the turnaround seems to have been the result, in a tragic irony, not just of undoing the reorganization of the 1990s but of moving to a still more centralized structure. The current management team explicitly recognized the damage the earlier decentralization initiatives created and, guided by a theory that is appropriate to the complexity of Lucent's products and markets, has been working hard to put back in place an efficient structure that is aligned with the needs of Lucent's underlying technologies and products.

The moral of this story is that in business, as in medicine, no single prescription cures all ills. Lucent's managers felt pressured to grow in the 1990s. Lucent had a relatively centralized decision-making structure

and its fair share of bureaucracy. Because most of the fast-growing technology companies of the day were comparatively unencumbered with such structures, management concluded that it should mimic them—a belief not only endorsed but promulgated by a number of management researchers. What got overlooked, with disastrous consequences, was that Lucent was emulating the attributes of small, fast-growing companies when its circumstances were fundamentally different. The management needed a theory to guide it to the organizational structure that was optimal for the circumstances the company was actually in.

Becoming a Discerning Consumer of Theory

Managers with a problem to solve will want to cut to the chase: Which theory will help them? How can they tell a good theory from a bad one? That is, when is a theory sufficiently well developed that its categorization scheme is indeed based not on coincidences but on causal links between circumstances, action, and results? Here are some ideas to help you judge how appropriate any theory or set of recommendations will be for your company's situation.

When researchers are just beginning to study a problem or business issue, articles that simply describe the phenomenon can become an extremely valuable foundation for subsequent researchers' attempts to define categories and then to explain what causes the phenomenon to occur. For example, early work by Ananth Raman and his colleagues shook the world of supply chain studies simply by showing that companies with even the most sophisticated bar code–scanning systems had notoriously inaccurate inventory records. These observations led them to the next stage, in which they classified the types of errors the scanning systems produced and the sorts of stores in which those kinds of errors most often occurred. Raman and his colleagues then began carefully observing stocking processes to see exactly what kinds of behaviors could cause these errors. From this foundation, then, a theory explaining what systems work under what circumstances can emerge.

Beware of work urging that revolutionary change of everything is needed. This is the fallacy of jumping directly from description to theory. If the authors imply that their findings apply to all companies in all situations, don't trust them. Usually things are the way they are for pretty good reasons. We need to know not only where, when, and why things must change but also what should stay the same. Most of the time, new categorization schemes don't completely overturn established thinking. Rather, they bring new insight into how to think and act in circumstance-contingent ways. Porter's work on international competitiveness, for example, did not overthrow preexisting trade theory but rather identified a circumstance in which a different mechanism of action led to competitive advantage.

If the authors classify the phenomenon they're describing into categories based upon its attributes, simply accept that the study represents only a preliminary step toward a reliable theory. The most you can know at this stage is that there is some relationship between the characteristics of the companies being studied and the outcomes they experience. These can be described in terms of a general tendency of a population (20% of all companies funded by venture capital become successful; fewer of those funded by corporate capital do). But, if used to guide the actions of your individual company, they can easily send you on a wing-flapping expedition.

Correlations that masquerade as causation often take the form of adjectives—humble CEOs create shareholder value, for instance, or venture-capital funding helps start-ups succeed. But a real theory should include a mechanism—a description of how something works. So a theory of how funding helps start-ups succeed might suggest that what venture capitalists do that makes the difference is meter out small amounts of funds to help the companies feel their way, step by step, toward a viable strategy. Funding in this way encourages start-ups to abandon unsuccessful initiatives right away and try new approaches. What corporate capitalists often do that's less effective is to flood a new business with a lot of money initially, allowing it to pursue the wrong strategy far longer. Then they pull the plug, thus preventing it from trying different approaches to find out what will work. During the dot-com boom, when venture capitalists flooded start-ups with money, the fact that it was venture money per se didn't help avert the predictable disaster.

Remember that a researcher's findings can almost never be considered the final word. The discovery of a circumstance in which a theory did not accurately predict an outcome is a triumph, not a failure. Progress comes from refining theories to explain situations in which they previously failed, so without continuing our

examination of failure, management theory cannot advance.

When Caveat Emptor Is Not Enough

In shopping for ideas, there is no Better Business Bureau managers can turn to for an assessment of how useful a given theory will be to them. Editors of management journals publish a range of different views on important issues—leaving it to the readers to decide which theories they should use to guide their actions.

But in the marketplace of ideas, caveat emptor—letting the reader beware—shirks the duty of research. For most managers, trying out a new idea to see if it works is simply not an option: There is too much at stake. Our hope is that an understanding of what constitutes good theory will help researchers do a better job of discovering the mechanisms that cause the outcomes managers care about, and that researchers will not be satisfied with measuring the statistical significance of correlations between attributes and outcomes. We hope they will see the value in asking, "When doesn't this work?" Researching that question will help them decipher the set of circumstances in which managers might find themselves and then frame contingent statements of cause and effect that take those circumstances into account.

We hope that a deeper understanding of what makes theory useful will enable editors to choose which pieces of research they will publish—and managers to choose which articles they will read and believe—on the basis of something other than authors' credentials or past successes. We hope that managers will exploit the fact that good theories can be judged on a more objective basis to make their "purchases" far more confidently.

1. Karl Popper asserted that when a researcher reaches the phase in which a theory accurately predicts what has been observed, the researcher can state only that the test or experiment "failed to disconfirm" the theory. See The Logic of Scientific Discovery (Harper & Row, 1968).

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The Quest for Resilience

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Call it the resilience gap. The world is becoming turbulent faster than organizations are becoming resilient. The evidence is all around us. Big companies are failing more frequently. Of the 20 largest U.S. bankruptcies in the past two decades, ten occurred in the last two years. Corporate earnings are more erratic. Over the past four decades, year-to-year volatility in the earnings growth rate of S&P 500 companies has increased by nearly 50%—despite vigorous efforts to "manage" earnings. Performance slumps are proliferating. In each of the years from 1973 to 1977, an average of 37 Fortune 500 companies were entering or in the midst of a 50%, five-year decline in net income; from 1993 to 1997, smack in the middle of the longest economic boom in modern times, the average number of companies suffering through such an earnings contraction more than doubled, to 84 each year.

Even perennially successful companies are finding it more difficult to deliver consistently superior returns. In their 1994 best-seller Built to Last, Jim Collins and Jerry Porras singled out 18 "visionary" companies that had consistently outperformed their peers between 1950 and 1990. But over the last ten years, just six of these companies managed to outperform the Dow Jones Industrial Average. The other twelve—a group that includes companies like Disney, Motorola, Ford, Nordstrom, Sony, and Hewlett-Packard—have apparently gone from great to merely OK. Any way you cut it, success has never been so fragile.

In less turbulent times, established companies could rely on the flywheel of momentum to sustain their success. Some, like AT&T and American Airlines, were insulated from competition by regulatory protection and oligopolistic practices. Others, like General Motors and Coca-Cola, enjoyed a relatively stable product paradigm—for more than a century, cars have had four wheels and a combustion engine and consumers have sipped caffeine-laced soft drinks. Still others, like McDonald's and Intel, built formidable first-mover advantages. And in capital-intensive industries like petroleum and aerospace, high entry barriers protected incumbents.

The fact that success has become less persistent strongly suggests that momentum is not the force it once was. To be sure, there is still enormous value in having a coterie of loyal customers, a well-known brand, deep industry know-how, preferential access to distribution channels, proprietary physical assets, and a robust patent portfolio. But that value has steadily dissipated as the enemies of momentum have multiplied. Technological discontinuities, regulatory upheavals, geopolitical shocks, industry deverticalization and disintermediation, abrupt shifts in consumer tastes, and hordes of nontraditional competitors—these are just a few of the forces undermining the advantages of incumbency.

In the past, executives had the luxury of assuming that business models were more or less immortal. Companies always had to work to get better, of course, but they seldom had to get different—not at their core, not in their essence. Today, getting different is the imperative. It's the challenge facing Coca-Cola as it struggles to raise its "share of throat" in noncarbonated beverages. It's the task that bedevils McDonald's as it tries to rekindle growth in a world of burger-weary customers. It's the hurdle for Sun Microsystems as it searches for ways to protect its high-margin server business from the Linux onslaught. And it's an imperative for the big pharmaceutical companies as they confront declining R&D yields, escalating price pressure, and the growing threat from generic drugs. For all these companies, and for yours, continued success no longer hinges on momentum. Rather, it rides on resilience—on the ability to dynamically reinvent business models and strategies as circumstances change.

Strategic resilience is not about responding to a onetime crisis. It's not about rebounding from a setback. It's about continuously anticipating and adjusting to deep, secular trends that can permanently impair the earning power of a core business. It's about having the capacity to change before the case for change becomes desperately obvious.

Zero Trauma

Successful companies, particularly those that have enjoyed a relatively benign environment, find it extraordinarily difficult to reinvent their business models. When confronted by paradigm-busting turbulence, they often experience a deep and prolonged reversal of fortune. Consider IBM. Between 1990 and 1993, the company went from making $6 billion to losing nearly $8 billion. It wasn't until 1997 that its earnings reached their previous high. Such a protracted earnings slump typically provokes a leadership change, and in many cases the new CEO—be it Gerstner at IBM or Ghosn at Nissan or Bravo at Burberry—produces a successful, if wrenching, turnaround. However celebrated, a turnaround is a testament to a company's lack of resilience. A turnaround is transformation tragically delayed.

Imagine a ratio where the numerator measures the magnitude and frequency of strategic transformation and the denominator reflects the time, expense, and emotional energy required to effect that transformation. Any company that hopes to stay relevant in a topsy-turvy world has no choice but to grow the numerator. The real trick is to steadily reduce the denominator at the same time. To thrive in turbulent times, companies must become as efficient at renewal as they are at producing today's products and services. Renewal must be the natural consequence of an organization's innate resilience.

The quest for resilience can't start with an inventory of best practices. Today's best practices are manifestly inadequate. Instead, it must begin with an aspiration: zero trauma. The goal is a strategy that is forever morphing, forever conforming itself to emerging opportunities and incipient trends. The goal is an organization that is constantly making its future rather than defending its past. The goal is a company where revolutionary change happens in lightning-quick, evolutionary steps—with no calamitous surprises, no convulsive reorganizations, no colossal write-offs, and no indiscriminate, across-the-board layoffs. In a truly resilient organization, there is plenty of excitement, but there is no trauma.

Sound impossible? A few decades ago, many would have laughed at the notion of "zero defects." If you were driving a Ford Pinto or a Chevy Vega, or making those sorry automobiles, the very term would have sounded absurd. But today we live in a world where Six Sigma, 3.4 defects per million, is widely viewed as an achievable goal. So why shouldn't we commit ourselves to zero trauma? Defects cost money, but so do outdated strategies, missed opportunities, and belated restructuring programs. Today, many of society's most important institutions, including its largest commercial organizations, are not resilient. But no law says they must remain so. It is precisely because resilience is such a valuable goal that we must commit ourselves to making it an attainable one. (See the sidebar "Why Resilience Matters.")

Any organization that hopes to become resilient must address four challenges:

The Cognitive Challenge: A company must become entirely free of denial, nostalgia, and arrogance. It must be deeply conscious of what's changing and perpetually willing to consider how those changes are likely to affect its current success.

The Strategic Challenge: Resilience requires alternatives as well as awareness—the ability to create a plethora of new options as compelling alternatives to dying strategies.

The Political Challenge: An organization must be able to divert resources from yesterday's products and programs to tomorrow's. This doesn't mean funding flights of fancy; it means building an ability to support a broad portfolio of breakout experiments with the necessary capital and talent.

The Ideological Challenge: Few organizations question the doctrine of optimization. But optimizing a business model that is slowly becoming irrelevant can't secure a company's future. If renewal is to become continuous and opportunity-driven, rather than episodic and crisis-driven, companies will need to embrace a

creed that extends beyond operational excellence and flawless execution.

Few organizations, if any, can claim to have mastered these four challenges. While there is no simple recipe for building a resilient organization, a decade of research on innovation and renewal allows us to suggest a few starting points.

Conquering Denial

Every business is successful until it's not. What's amazing is how often top management is surprised when "not" happens. This astonishment, this belated recognition of dramatically changed circumstances, virtually guarantees that the work of renewal will be significantly, perhaps dangerously, postponed.

Why the surprise? Is it that the world is not only changing but changing in ways that simply cannot be anticipated—that it is shockingly turbulent? Perhaps, but even "unexpected" shocks can often be anticipated if one is paying close attention. Consider the recent tech sector meltdown—an event that sent many networking and computer suppliers into a tailspin and led to billions of dollars in write-downs.

Three body blows knocked the stuffing out of IT spending: The telecom sector, traditionally a big buyer of networking gear, imploded under the pressure of a massive debt load; a horde of dot-com customers ran out of cash and stopped buying computer equipment; and large corporate customers slashed IT budgets as the economy went into recession. Is it fair to expect IT vendors to have anticipated this perfect storm? Yes.

They knew, for example, that the vast majority of their dot-com customers were burning through cash at a ferocious rate but had no visible earnings. The same was true for many of the fledgling telecom outfits that were buying equipment using vendor financing. These companies were building fiber-optic networks far faster than they could be utilized. With bandwidth increasing more rapidly than demand, it was only a matter of time before plummeting prices would drive many of these debt-heavy companies to the wall. There were other warning signs. In 1990, U.S. companies spent 19% of their capital budgets on information technology. By 2000, they were devoting 59% of their capital spending to IT. In other words, IT had tripled its share of capital budgets—this during the longest capital-spending boom in U.S. history. Anyone looking at the data in 2000 should have been asking, Will capital spending keep growing at a double-digit pace? And is it likely that IT spending will continue to grow so fast? Logically, the answer to both questions had to be no. Things that can't go on forever usually don't. IT vendors should have anticipated a major pullback in their revenue growth and started "war gaming" postboom options well before demand collapsed.

It is unfair, of course, to single out one industry. What happened to a few flat-footed IT companies can happen to any company—and often does. More than likely, Motorola was startled by Nokia's quick sprint to global leadership in the mobile phone business; executives at the Gap probably received a jolt when, in early 2001, their company's growth engine suddenly went into reverse; and CNN's management team was undoubtedly surprised by the Fox News Channel's rapid climb up the ratings ladder.

But they, like those in the IT sector, should have been able to see the future's broad outline—to anticipate the point at which a growth curve suddenly flattens out or a business model runs out of steam. The fact that serious performance shortfalls so often come as a surprise suggests that executives frequently take refuge in denial. Greg Blonder, former chief technical adviser at AT&T, admitted as much in a November 2002 Barron's article: "In the early 1990s, AT&T management argued internally that the steady upward curve of Internet usage would somehow collapse. The idea that it might actually overshadow traditional telephone service was simply unthinkable. But the trend could not be stopped—or even slowed—by wishful thinking and clever marketing. One by one, the props that held up the long-distance business collapsed." For AT&T, as for many other companies, the future was less unknowable than it was unthinkable, less inscrutable than unpalatable.

Denial puts the work of renewal on hold, and with each passing month, the cost goes up. To be resilient, an organization must dramatically reduce the time it takes to go from "that can't be true" to "we must face the world as it is." So what does it take to break through the hard carapace of denial? Three things.

First, senior managers must make a habit of visiting the places where change happens first. Ask yourself

how often in the last year you have put yourself in a position where you had the chance to see change close-up—where you're weren't reading about change in a business magazine, hearing about it from a consultant, or getting a warmed-over report from an employee, but were experiencing it firsthand. Have you visited a nanotechnology lab? Have you spent a few nights hanging out in London's trendiest clubs? Have you spent an afternoon talking to fervent environmentalists or antiglobalization activists? Have you had an honest, what-do-you-care-about conversation with anyone under 18? It's easy to discount secondhand data; it's hard to ignore what you've experienced for yourself. And if you have managed to rub up against what's changing, how much time have you spent thinking through the second- and third-order consequences of what you've witnessed? As the rate of change increases, so must the personal energy you devote to understanding change.

Second, you have to filter out the filterers. Most likely, there are people in your organization who are plugged tightly in to the future and understand well the not-so-sanguine implications for your company's business model. You have to find these people. You have to make sure their views are not censored by the custodians of convention and their access is not blocked by those who believe they are paid to protect you from unpleasant truths. You should be wary of anyone who has a vested interest in your continued ignorance, who fears that a full understanding of what's changing would expose his own failure to anticipate it or the inadequacy of his response.

There are many ways to circumvent the courtiers and the self-protecting bureaucrats. Talk to potential customers who aren't buying from you. Go out for drinks and dinner with your most freethinking employees. Establish a shadow executive committee whose members are, on average, 20 years younger than the "real" executive committee. Give this group of 30-somethings the chance to review capital budgets, ad campaigns, acquisition plans, and divisional strategies—and to present their views directly to the board. Another strategy is to periodically review the proposals that never made it to the top—those that got spiked by divisional VPs and unit managers. Often it's what doesn't get sponsored that turns out to be most in tune with what's changing, even though the proposals may be out of tune with prevailing orthodoxies.

Finally, you have to face up to the inevitability of strategy decay. On occasion, Bill Gates has been heard to remark that Microsoft is always two or three years away from failure. Hyperbole, perhaps, but the message to his organization is clear: Change will render irrelevant at least some of what Microsoft is doing today—and it will do so sooner rather than later. While it's easy to admit that nothing lasts forever, it is rather more difficult to admit that a dearly beloved strategy is rapidly going from ripe to rotten.

Strategies decay for four reasons. Over time they get replicated; they lose their distinctiveness and, therefore, their power to produce above-average returns. Ford's introduction of the Explorer may have established the SUV category, but today nearly every carmaker—from Cadillac to Nissan to Porsche—has a high-standing, gas-guzzling monster in its product line. No wonder Ford's profitability has recently taken a hit. With a veritable army of consultants hawking best practices and a bevy of business journalists working to uncover the secrets of high-performing companies, great ideas get replicated faster than ever. And when strategies converge, margins collapse.

Good strategies also get supplanted by better strategies. Whether it's made-to-order PCs à la Dell, flat-pack furniture from IKEA, or downloadable music via KaZaA, innovation often undermines the earning power of traditional business models. One company's creativity is another's destruction. And in an increasingly connected economy, where ideas and capital travel at light speed, there's every reason to believe that new strategies will become old strategies ever more quickly.

Strategies get exhausted as markets become saturated, customers get bored, or optimization programs reach the point of diminishing returns. One example: In 1995, there were approximately 91 million active mobile phones in the world. Today, there are more than 1 billion. Nokia rode this growth curve more adeptly than any of its rivals. At one point its market value was three-and-a-half times that of its closest competitor. But the number of mobile phones in the world is not going to increase by 1,000% again, and Nokia's growth curve has already started to flatten out. Today, new markets can take off like a rocket. But the faster they grow, the sooner they reach the point where growth begins to decelerate. Ultimately, every strategy exhausts its fuel supply.

Finally, strategies get eviscerated. The Internet may not have changed everything, but it has dramatically accelerated the migration of power from producers to consumers. Customers are using their newfound power like a knife, carving big chunks out of once-fat margins. Nowhere has this been more evident than in the travel business, where travelers are using the Net to wrangle the lowest possible prices out of airlines and hotel companies. You know all those e-business efficiencies your company has been reaping? It's going to end up giving most of those productivity gains back to customers in the form of lower prices or better products and services at the same price. Increasingly it's your customers, not your competitors, who have you—and your margins—by the throat.

An accurate and honest appraisal of strategy decay is a powerful antidote to denial. (See the sidebar "Anticipating Strategy Decay" for a list of diagnostic questions.) It is also the only way to know whether renewal is proceeding fast enough to fully offset the declining economic effectiveness of today's strategies.

Valuing Variety

Life is the most resilient thing on the planet. It has survived meteor showers, seismic upheavals, and radical climate shifts. And yet it does not plan, it does not forecast, and, except when manifested in human beings, it possesses no foresight. So what is the essential thing that life teaches us about resilience? Just this: Variety matters. Genetic variety, within and across species, is nature's insurance policy against the unexpected. A high degree of biological diversity ensures that no matter what particular future unfolds, there will be at least some organisms that are well-suited to the new circumstances.

Evolutionary biologists aren't the only ones who understand the value of variety. As any systems theorist will tell you, the larger the variety of actions available to a system, the larger the variety of perturbations it is able to accommodate. Put simply, if the range of strategic alternatives your company is exploring is significantly narrower than the breadth of change in the environment, your business is going to be a victim of turbulence. Resilience depends on variety.

Big companies are used to making big bets—Disney's theme park outside Paris, Motorola's satellite-phone venture Iridium, HP's acquisition of Compaq, and GM's gamble on hydrogen-powered cars are but a few examples. Sometimes these bets pay off; often they don't. When audacious strategies fail, companies often react by imposing draconian cost-cutting measures. But neither profligacy nor privation leads to resilience. Most companies would be better off if they made fewer billion-dollar bets and a whole lot more $10,000 or $20,000 bets—some of which will, in time, justify more substantial commitments. They should steer clear of grand, imperial strategies and devote themselves instead to launching a swarm of low-risk experiments, or, as our colleague Amy Muller calls them, stratlets.

The arithmetic is clear: It takes thousands of ideas to produce dozens of promising stratlets to yield a few outsize successes. Yet only a handful of companies have committed themselves to broad-based, small-scale strategic experimentation. Whirlpool is one. The world's leading manufacturer of domestic appliances, Whirlpool competes in an industry that is both cyclical and mature. Growth is a function of housing starts and product replacement cycles. Customers tend to repair rather than replace their old appliances, particularly in tough times. Megaretailers like Best Buy squeeze margins mercilessly. Customers exhibit little brand loyalty. The result is zero-sum competition, steadily declining real prices, and low growth. Not content with this sorry state of affairs, Dave Whitwam, Whirlpool's chairman, set out in 1999 to make innovation a core competence at the company. He knew the only way to counter the forces that threatened Whirlpool's growth and profitability was to generate a wide assortment of genuinely novel strategic options.

Over the subsequent three years, the company involved roughly 10,000 of its 65,000 employees in the search for breakthroughs. In training sessions and workshops, these employees generated some 7,000 ideas, which spawned 300 small-scale experiments. From this cornucopia came a stream of new products and businesses—from Gladiator Garage Works, a line of modular storage units designed to reduce garage clutter; to Briva, a sink that features a small, high-speed dishwasher; to Gator Pak, an all-in-one food and entertainment center designed for tailgate parties. (For more on Whirlpool's strategy for commercializing the Gladiator line, see "Innovating for Cash" in the September 2003 issue.)

Having institutionalized its experimentation process, Whirlpool now actively manages a broad pipeline of

ideas, experiments, and major projects from across the company. Senior executives pay close attention to a set of measures—an innovation dashboard—that tracks the number of ideas moving through the pipeline, the percentage of those ideas that are truly new, and the potential financial impact of each one. Whirlpool's leadership team is learning just how much variety it must engender at the front end of the pipeline, in terms of nascent ideas and first-stage experiments, to produce the earnings impact it's looking for at the back end.

Experiments should go beyond just products. While virtually every company has some type of new-product pipeline, few have a process for continually generating, launching, and tracking novel strategy experiments in the areas of pricing, distribution, advertising, and customer service. Instead, many companies have created innovation ghettos—incubators, venture funds, business development functions, and skunk works—to pursue ideas outside the core. Cut off from the resources, competencies, and customers of the main business, most of these units produce little in the way of shareholder wealth, and many simply wither away.

The isolation—and distrust—of strategic experimentation is a leftover from the industrial age, when variety was often seen as the enemy. A variance, whether from a quality standard, a production schedule, or a budget, was viewed as a bad thing—which it often was. But in many companies, the aversion to unplanned variability has metastasized into a general antipathy toward the nonconforming and the deviant. This infatuation with conformance severely hinders the quest for resilience.

Our experience suggests that a reasonably large company or business unit—having $5 billion to $10 billion in revenues, say—should generate at least 100 groundbreaking experiments every year, with each one absorbing between $10,000 and $20,000 in first-stage investment funds. Such variety need not come at the expense of focus. Starting in the mid-1990s, Nokia pursued a strategy defined by three clear goals—to "humanize" technology (via the user interface, product design, and aesthetics); to enable "virtual presence" (where the phone becomes an all-purpose messaging and data access device); and to deliver "seamless solutions" (by bundling infrastructure, software, and handsets in a total package for telecom operators). Each of these "strategy themes" spawned dozens of breakthrough projects. It is a broadly shared sense of direction, rather than a tightly circumscribed definition of served market or an allegiance to one particular business model, that reins in superfluous variety.

Of course, most billion-dollar opportunities don't start out as sure things—they start out as highly debatable propositions. For example, who would have predicted, in December 1995, when eBay was only three months old, that the on-line auctioneer would have a market value of $27 billion in the spring of 2003—two years after the dot-com crash? Sure, eBay is an exception. Success is always an exception. To find those exceptions, you must gather and sort through hundreds of new strategic options and then test the promising ones through low-cost, well-designed experiments—building prototypes, running computer simulations, interviewing progressive customers, and the like. There is simply no other way to reconnoiter the future. Most experiments will fail. The issue is not how many times you fail, but the value of your successes when compared with your failures. What counts is how the portfolio performs, rather than whether any particular experiment pans out.

Liberating Resources

Facing up to denial and fostering new ideas are great first steps. But they'll get you nowhere if you can't free up the resources to support a broad array of strategy experiments within the core business. As every manager knows, reallocating resources is an intensely political process. Resilience requires, however, that it become less so.

Institutions falter when they invest too much in "what is" and too little in "what could be." There are many ways companies overinvest in the status quo: They devote too much marketing energy to existing customer segments while ignoring new ones; they pour too many development dollars into incremental product enhancements while underfunding breakthrough projects; they lavish resources on existing distribution channels while starving new go-to-market strategies. But whatever the manifestation, the root cause is always the same: Legacy strategies have powerful constituencies; embryonic strategies do not.

In most organizations, a manager's power correlates directly with the resources he or she controls—to lose

resources is to lose stature and influence. Moreover, personal success often turns solely on the performance of one's own unit or program. It is hardly surprising, then, that unit executives and program managers typically resist any attempt to reallocate "their" capital and talent to new initiatives—no matter how attractive those new initiatives may be. Of course, it's unseemly to appear too parochial, so managers often hide their motives behind the facade of an ostensibly prudent business argument. New projects are deemed "untested," "risky," or a "diversion." If such ruses are successful, and they often are, those seeking resources for new strategic options are forced to meet a higher burden of proof than are those who want to allocate additional investment dollars to existing programs. Ironically, unit managers seldom have to defend the risk they are taking when they pour good money into a slowly decaying strategy or overfund an activity that is already producing diminishing returns.

The fact is, novelty implies nothing about risk. Risk is a function of uncertainty, multiplied by the size of one's financial exposure. Newness is a function of the extent to which an idea defies precedent and convention. The Starbucks debit card, which allows regular customers to purchase their daily fix of caffeine without fumbling through their pockets for cash, was undoubtedly an innovation for the quick-serve restaurant industry. Yet it's not at all clear that it was risky. The card offers customers a solid benefit, and it relies on proven technology. Indeed, it was an immediate hit. Within 60 days of its launch, convenience-minded customers had snapped up 2.3 million cards and provided Starbucks with a $32 million cash float.

A persistent failure to distinguish between new ideas and risky ideas reinforces companies' tendency to overinvest in the past. So too does the general reluctance of corporate executives to shift resources from one business unit to another. A detailed study of diversified companies by business professors Hyun-Han Shin and René Stulz found that the allocation of investment funds across business units was mostly uncorrelated with the relative attractiveness of investment opportunities within those units. Instead, a business unit's investment budget was largely a function of its own cash flow and, secondarily, the cash flow of the firm as a whole. It seems that top-level executives, removed as they are from day-to-day operations, find it difficult to form a well-grounded view of unit-level, or subunit-level, opportunities and are therefore wary of reallocating resources from one unit to another.

Now, we're not suggesting that a highly profitable and growing business should be looted to fund some dim-witted diversification scheme. Yet if a company systematically favors existing programs over new initiatives, if the forces of preservation regularly trounce the forces of experimentation, it will soon find itself overinvesting in moribund strategies and outdated programs. Allocational rigidities are the enemy of resilience.

Just as biology can teach us something about variety, markets can teach us something about what it takes to liberate resources from the prison of precedent. The evidence of the past century leaves little room for doubt: Market-based economies outperform those that are centrally planned. It's not that markets are infallible. Like human beings, they are vulnerable to mania and despair. But, on average, markets are better than hierarchies at getting the right resources behind the right opportunities at the right time. Unlike hierarchies, markets are apolitical and unsentimental; they don't care whose ox gets gored. The average company, though, operates more like a socialist state than an unfettered market. A hierarchy may be an effective mechanism for applying resources, but it is an imperfect device for allocating resources. Specifically, the market for capital and talent that exists within companies is a whole lot less efficient than the market for talent and capital that exists between companies.

In fact, a company can be operationally efficient and strategically inefficient. It can maximize the efficiency of its existing programs and processes and yet fail to find and fund the unconventional ideas and initiatives that might yield an even higher return. While companies have many ways of assessing operational efficiency, most firms are clueless when it comes to strategic efficiency. How can corporate leaders be sure that the current set of initiatives represents the highest value use of talent and capital if the company hasn't generated and examined a large population of alternatives? And how can executives be certain that the right resources are lined up behind the right opportunities if capital and talent aren't free to move to high-return projects or businesses? The simple answer is, they can't.

When there is a dearth of novel strategic options, or when allocational rigidities lock up talent and cash in existing programs and businesses, managers are allowed to "buy" resources at a discount, meaning that

they don't have to compete for resources against a wide array of alternatives. Requiring that every project and business earn its cost of capital doesn't correct this anomaly. It is perfectly possible for a company to earn its cost of capital and still fail to put its capital and talent to the most valuable uses.

To be resilient, businesses must minimize their propensity to overfund legacy strategies. At one large company, top management took an important step in this direction by earmarking 10% of its $1 billion-a-year capital budget for projects that were truly innovative. To qualify, a project had to have the potential to substantially change customer expectations or industry economics. Moreover, the CEO announced his intention to increase this percentage over time. He reasoned that if divisional executives were not funding breakout projects, the company was never going to achieve breakout results. The risk of this approach was mitigated by a requirement that each division develop a broad portfolio of experiments, rather than bet on one big idea.

Freeing up cash is one thing. Getting it into the right hands is another. Consider, for a moment, the options facing a politically disenfranchised employee who hopes to win funding for a small-scale strategy experiment. One option is to push the idea up the chain of command to the point where it can be considered as part of the formal planning process. This requires four things: a boss who doesn't peremptorily reject the idea as eccentric or out of scope; an idea that is, at first blush, "big" enough to warrant senior management's attention; executives who are willing to divert funds from existing programs in favor of the unconventional idea; and an innovator who has the business acumen, charisma, and political cunning to make all this happen. That makes for long odds.

What the prospective innovator needs is a second option: access to many, many potential investors—analogous to the multitude of investors to which a company can appeal when it is seeking to raise funds. How might this be accomplished? In large organizations there are hundreds, perhaps thousands, of individuals who control a budget of some sort—from facilities managers to sales managers to customer service managers to office managers and beyond. Imagine if each of these individuals were a potential source of funding for internal innovators. Imagine that each could occasionally play the role of angel investor by providing seed funding for ideas aimed at transforming the core business in ways large and small. What if everyone who managed a budget were allowed to invest 1% or 3% or 5% of that budget in strategy experiments? Investors within a particular department or region could form syndicates to take on slightly bigger risks or diversify their investment portfolios. To the extent that a portfolio produced a positive return, in terms of new revenues or big cost savings, a small bonus would go back to those who had provided the funds and served as sponsors and mentors. Perhaps investors with the best track records would be given the chance to invest more of their budgets in breakout projects. Thus liberated, capital would flow to the most intriguing possibilities, unfettered by executives' protectionist tendencies.

When it comes to renewal, human skills are even more critical than cash. So if a market for capital is important, a market for talent is essential. Whatever their location, individuals throughout a company need to be aware of all the new projects that are looking for talent. Distance, across business unit boundaries or national borders, should not diminish this visibility. Employees need a simple way to nominate themselves for project teams. And if a project team is eager to hire a particular person, no barriers should stand in the way of a transfer. Indeed, the project team should have a substantial amount of freedom in negotiating the terms of any transfer. As long as the overall project risk is kept within bounds, it should be up to the team to decide how much to pay for talent.

Executives shouldn't be too worried about protecting employees from the downside of a failed project. Over time, the most highly sought-after employees will have the chance to work on multiple projects, spreading their personal risk. However, it is important to ensure that successful projects generate meaningful returns, both financial and professional, for those involved, and that dedication to the cause of experimentation is always positively recognized. But irrespective of the financial rewards, ambitious employees will soon discover that transformational projects typically offer transformational opportunities for personal growth.

Embracing Paradox

The final barrier to resilience is ideological. The modern corporation is a shrine to a single, 100-year-old ideal—optimization. From "scientific management" to "operations research" to "reengineering" to "enterprise

resource planning" to "Six Sigma," the goal has never changed: Do more, better, faster, and cheaper. Make no mistake, the ideology of optimization, and its elaboration into values, metrics, and processes, has created enormous material wealth. The ability to produce millions of gadgets, handle millions of transactions, or deliver a service to millions of customers is one of the most impressive achievements of humankind. But it is no longer enough.

The creed of optimization is perfectly summed up by McDonald's in its famous slogan, "Billions Served." The problem comes when some of those billions want to be served something else, something different, something new. As an ideal, optimization is sufficient only as long as there's no fundamental change in what has to be optimized. But if you work for a record company that needs to find a profitable on-line business model, or for an airline struggling to outmaneuver Southwest, or for a hospital trying to deliver quality care despite drastic budget cuts, or for a department store chain getting pummeled by discount retailers, or for an impoverished school district intent on curbing its dropout rate, or for any other organization where more of the same is no longer enough, then optimization is a wholly inadequate ideal.

An accelerating pace of change demands an accelerating pace of strategic evolution, which can be achieved only if a company cares as much about resilience as it does about optimization. This is currently not the case. Oh sure, companies have been working to improve their operational resilience—their ability to respond to the ups and downs of the business cycle or to quickly rebalance their product mix—but few have committed themselves to systematically tackling the challenge of strategic resilience. Quite the opposite, in fact. In recent years, most companies have been in retrenchment mode, working to resize their cost bases to accommodate a deflationary economy and unprecedented competitive pressure. But retrenchment can't revitalize a moribund business model, and great execution can't reverse the process of strategy decay.

It's not that optimization is wrong; it's that it so seldom has to defend itself against an equally muscular rival. Diligence, focus, and exactitude are reinforced every day, in a hundred ways—through training programs, benchmarking, improvement routines, and measurement systems. But where is the reinforcement for strategic variety, wide-scale experimentation, and rapid resource redeployment? How have these ideals been instantiated in employee training, performance metrics, and management processes? Mostly, they haven't been. That's why the forces of optimization are so seldom interrupted in their slow march to irrelevance.

When you run to catch a cab, your heart rate accelerates—automatically. When you stand up in front of an audience to speak, your adrenal glands start pumping—spontaneously. When you catch sight of someone alluring, your pupils dilate—reflexively. Automatic, spontaneous, reflexive. These words describe the way your body's autonomic systems respond to changes in your circumstances. They do not describe the way large organizations respond to changes in their circumstances. Resilience will become something like an autonomic process only when companies dedicate as much energy to laying the groundwork for perpetual renewal as they have to building the foundations for operational efficiency.

In struggling to embrace the inherent paradox between the relentless pursuit of efficiency and the restless exploration of new strategic options, managers can learn something from constitutional democracies, particularly the United States. Over more than two centuries, America has proven itself to be far more resilient than the companies it has spawned. At the heart of the American experiment is a paradox—unity and diversity—a single nation peopled by all nations. To be sure, it's not easy to steer a course between divisive sectarianism and totalitarian conformity. But the fact that America has managed to do this, despite some sad lapses, should give courage to managers trying to square the demands of penny-pinching efficiency and break-the-rules innovation. Maybe, just maybe, all those accountants and engineers, never great fans of paradox, can learn to love the heretics and the dreamers.

The Ultimate Advantage

Perhaps there are still some who believe that large organizations can never be truly resilient, that the goal of "zero trauma" is nothing more than a chimera. We believe they are wrong. Yes, size often shelters a company from the need to confront harsh truths. But why can't size also provide a shelter for new ideas? Size often confers an inappropriate sense of invincibility that leads to foolhardy risk-taking. But why can't size also confer a sense of possibility that encourages widespread experimentation? Size often implies

inertia, but why can't it also imply persistence? The problem isn't size, but success. Companies get big because they do well. Size is a barrier to resilience only if those who inhabit large organizations fall prey to the delusion that success is self-perpetuating.

Battlefield commanders talk about "getting inside the enemy's decision cycle." If you can retrieve, interpret, and act upon battlefield intelligence faster than your adversary, they contend, you will be perpetually on the offensive, acting rather than reacting. In an analogous way, one can think about getting inside a competitor's "renewal cycle." Any company that can make sense of its environment, generate strategic options, and realign its resources faster than its rivals will enjoy a decisive advantage. This is the essence of resilience. And it will prove to be the ultimate competitive advantage in the age of turbulence—when companies are being challenged to change more profoundly, and more rapidly, than ever before.

Revolution, Renewal, and Resilience: A Glossary for Turbulent Times

What's the probability that your company will significantly outperform the world economy over the next few years? What's the chance that your company will deliver substantially better returns than the industry average? What are the odds that change, in all its guises, will bring your company considerably more upside than downside? Confidence in the future of your business—or of any business—depends on the extent to which it has mastered three essential forms of innovation.

Revolution

In most industries it's the revolutionaries—like JetBlue, Amgen, Costco, University of Phoenix, eBay, and Dell—that have created most of the new wealth over the last decade. Whether newcomer or old timer, a company needs an unconventional strategy to produce unconventional financial returns. Industry revolution is creative destruction. It is innovation with respect to industry rules.

Renewal

Newcomers have one important advantage over incumbents—a clean slate. To reinvent its industry, an incumbent must first reinvent itself. Strategic renewal is creative reconstruction. It requires innovation with respect to one's traditional business model.

Resilience

It usually takes a performance crisis to prompt the work of renewal. Rather than go from success to success, most companies go from success to failure and then, after a long, hard climb, back to success. Resilience refers to a capacity for continuous reconstruction. It requires innovation with respect to those organizational values, processes, and behaviors that systematically favor perpetuation over innovation.

Why Resilience Matters

Some might argue that there is no reason to be concerned with the resilience of any particular company as long as there is unfettered competition, a well-functioning market for corporate ownership, a public policy regime that doesn't protect failing companies from their own stupidity, and a population of start-ups eager to exploit the sloth of incumbents. In this view, competition acts as a spur to perpetual revitalization. A company that fails to adjust to its changing environment soon loses its relevance, its customers, and, ultimately, the support of its stakeholders. Whether it slowly goes out of business or gets acquired, the company's human and financial capital gets reallocated in a way that raises the marginal return on those assets.

This view of the resilience problem has the virtue of being conceptually simple. It is also simpleminded. While competition, new entrants, takeovers, and bankruptcies are effective as purgatives for managerial incompetence, these forces cannot be relied on to address the resilience problem efficiently and completely. There are several reasons why.

First, and most obvious, thousands of important institutions lie outside the market for corporate control,

from privately owned companies like Cargill to public-sector agencies like Britain's National Health Service to nonprofits like the Red Cross. Some of these institutions have competitors; many don't. None of them can be easily "taken over." A lack of resilience may go uncorrected for a considerable period of time, while constituents remain underserved and society's resources are squandered.

Second, competition, acquisitions, and bankruptcies are relatively crude mechanisms for reallocating resources from poorly managed companies to well-managed ones. Let's start with the most draconian of these alternatives—bankruptcy. When a firm fails, much of its accumulated intellectual capital disintegrates as teams disperse. It often takes months or years for labor markets to redeploy displaced human assets. Takeovers are a more efficient reallocation mechanism, yet they, too, are a poor substitute for organizational resilience. Executives in underperforming companies, eager to protect their privileges and prerogatives, will typically resist the idea of a takeover until all other survival options have been exhausted. Even then, they are likely to significantly underestimate the extent of institutional decay—a misjudgment that is often shared by the acquiring company. Whether it be Compaq's acquisition of a stumbling Digital Equipment Corporation or Ford's takeover of the deeply troubled Jaguar, acquisitions often prove to be belated, and therefore expensive, responses to institutional decline.

And what about competition, the endless warfare between large and small, old and young? Some believe that as long as a society is capable of creating new organizations, it can afford to be unconcerned about the resilience of old institutions. In this ecological view of resilience, the population of start-ups constitutes a portfolio of experiments, most of which will fail but a few of which will turn into successful businesses.

In this view, institutions are essentially disposable. The young eat the old. Leaving aside for the moment the question of whether institutional longevity has a value in and of itself, there is a reason to question this "who needs dumb, old incumbents when you have all these cool start-ups" line of reasoning. Young companies are generally less efficient than older companies—they are at an earlier point on the road from disorderly innovation to disciplined optimization. An economy composed entirely of start-ups would be grossly inefficient. Moreover, start-ups typically depend on established companies for funding, managerial talent, and market access. Classically, Microsoft's early success was critically dependent on its ability to harness IBM's brand and distribution power. Start-ups are thus not so much an alternative to established incumbents, as an insurance policy against the costs imposed on society by those incumbents that prove themselves to be unimaginative and slow to change. As is true in so many other situations, avoiding disaster is better than making a claim against an insurance policy once disaster has struck. Silicon Valley and other entrepreneurial hot spots are a boon, but they are no more than a partial solution to the problem of nonadaptive incumbents.

To the question, Can a company die an untimely death? an economist would answer no. Barring government intervention or some act of God, an organization fails when it deserves to fail, that is, when it has proven itself to be consistently unsuccessful in meeting the expectations of its stakeholders. There are, of course, cases in which one can reasonably say that an organization "deserves" to die. Two come immediately to mind: when an organization has fulfilled its original purpose or when changing circumstances have rendered the organization's core purpose invalid or no longer useful. (For example, with the collapse of Soviet-sponsored communism in Eastern Europe, some have questioned the continued usefulness of NATO.)

But there are cases in which organizational death should be regarded as premature in that it robs society of a future benefit. Longevity is important because time enables complexity. It took millions of years for biological evolution to produce the complex structures of the mammalian eye and millions more for it to develop the human brain and higher consciousness. Likewise, it takes years, sometimes decades, for an organization to elaborate a simple idea into a robust operational model. Imagine for a moment that Dell, currently the world's most successful computer maker, had died in infancy. It is at least possible that the world would not now possess the exemplary "build-to-order" business model Dell so successfully constructed over the past decade—a model that has spurred supply chain innovation in a host of other industries. This is not an argument for insulating a company from its environment; it is, however, a reason to imbue organizations with the capacity to dynamically adjust their strategies as they work to fulfill their long-term missions.

There is a final, noneconomic, reason to care about institutional longevity, and therefore resilience. Institutions are vessels into which we as human beings pour our energies, our passions, and our wisdom. Given this, it is not surprising that we often hope to be survived by the organizations we serve. For if our genes constitute the legacy of our individual, biological selves, our institutions constitute the legacy of our collective, purposeful selves. Like our children, they are our progeny. It is no wonder that we hope they will do well and be well treated by our successors. This hope for the future implies a reciprocal responsibility—that we be good stewards of the institutions we have inherited from our forebears. The best way of honoring an institutional legacy is to extend it, and the best way to extend it is to improve the organization's capacity for continual renewal.

Once more, though, we must be careful. A noble past doesn't entitle an institution to an illustrious future. Institutions deserve to endure only if they are capable of withstanding the onslaught of new institutions. A society's freedom to create new institutions is thus a critical insurance policy against its inability to recreate old ones. Where this freedom has been abridged as in, say, Japan, managers in incumbent institutions are able to dodge their responsibility for organizational renewal.

Anticipating Strategy Decay

Business strategies decay in four ways—by being replicated, supplanted, exhausted, or eviscerated. And across the board, the pace of strategy decay is accelerating. The following questions, and the metrics they imply, make up a panel of warning lights that can alert executives to incipient decline.

The fact that renewal so often lags decay suggests that corporate leaders regularly miss, or deny, the signs of strategy decay. A diligent, honest, and frequent review of these questions can help to remedy this situation.

Replication

Is our strategy losing its distinctiveness?

Does our strategy defy industry norms in any important ways?

Do we possess any competitive advantages that are truly unique?

Is our financial performance becoming less exceptional and more average?

Supplantation

Is our strategy in danger of being superseded?

Are there discontinuities (social, technical, or political) that could significantly reduce the economic power of our current business model?

Are there nascent business models that might render ours irrelevant?

Do we have strategies in place to co-opt or neutralize these forces of change?

Exhaustion

Is our strategy reaching the point of exhaustion?

Is the pace of improvement in key performance metrics (cost per unit or marketing expense per new customer, for example) slowing down?

Are our markets getting saturated; are our customers becoming more fickle?

Is our company's growth rate decelerating, or about to start doing so?

Evisceration

Is increasing customer power eviscerating our margins?

To what extent do our margins depend on customer ignorance or inertia?

How quickly, and in what ways, are customers gaining additional bargaining power?

Do our productivity improvements fall to the bottom line, or are we forced to give them back to customers in the form of lower prices or better products and services at the same price?

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Technology and Human Vulnerability

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For most of the last 50 years, technology knew its place. We all spent a lot of time with technology—we drove to work, flew on airplanes, used telephones and computers, and cooked with microwaves. But even five years ago, technology seemed external, a servant. These days, what's so striking is not only technology's ubiquity but also its intimacy.

On the Internet, people create imaginary identities in virtual worlds and spend hours playing out parallel lives. Children bond with artificial pets that ask for their care and affection. A new generation contemplates a life of wearable computing, finding it natural to think of their eyeglasses as screen monitors, their bodies as elements of cyborg selves. Filmmakers reflect our anxieties about these developments, present and imminent. In Wim Wenders's Until the End of the World, human beings become addicted to a technology that shows video images of their dreams. In The Matrix, the Wachowski brothers paint a future in which people are plugged into a virtual reality game. In Steven Spielberg's AI: Artificial Intelligence, a woman struggles with her feelings for David, a robot child who has been programmed to love her.

Today, we are not yet faced with humanoid robots that demand our affection or with parallel universes as developed as the Matrix. Yet we're increasingly preoccupied with the virtual realities we now experience. People in chat rooms blur the boundaries between their on-line and off-line lives, and there is every indication that the future will include robots that seem to express feelings and moods. What will it mean to people when their primary daily companion is a robotic dog? Or to a hospital patient when her health care attendant is built in the form of a robot nurse? Both as consumers and as businesspeople, we need to take a closer look at the psychological effects of the technologies we're using today and of the innovations just around the corner.

Indeed, the smartest people in the field of technology are already doing just that. MIT and Cal Tech, providers of much of the intellectual capital for today's high-tech business, have been turning to research that examines what technology does to us as well as what it does for us. To probe these questions further, HBR senior editor Diane L. Coutu met with Sherry Turkle, the Abby Rockefeller Mauzé Professor in the Program in Science, Technology, and Society at MIT. Turkle is widely considered one of the most distinguished scholars in the area of how technology influences human identity.

Few people are as well qualified as Turkle to understand what happens when mind meets machine. Trained as a sociologist and psychologist, she has spent more than 20 years closely observing how people interact with and relate to computers and other high-tech products. The author of two groundbreaking books on people's relationship to computers—The Second Self: Computers and the Human Spirit and Life on the Screen: Identity in the Age of the Internet—Turkle is currently working on the third book, with the working title Intimate Machines, in what she calls her "computational trilogy." At her home in Boston, she spoke with Coutu about the psychological dynamics between people and technology in an age when technology is increasingly redefining what it means to be human.

You're at the frontier of research being done on computers and their effects on society. What has changed in the past few decades?

To be in computing in 1980, you had to be a computer scientist. But if you're an architect now, you're in

computing. Physicians are in computing. Businesspeople are certainly in computing. In a way, we're all in computing; that's just inevitable. And this means that the power of the computer—with its gifts of simulation and visualization—to change our habits of thought extends across the culture.

My most recent work reflects that transformation. I have turned my attention from computer scientists to builders, designers, physicians, executives, and to people, generally, in their everyday lives. Computer software changes how architects think about buildings, surgeons about bodies, and CEOs about businesses. It also changes how teachers think about teaching and how their students think about learning. In all of these cases, the challenge is to deeply understand the personal effects of the technology in order to make it better serve our human purposes.

A good example of such a challenge is the way we use PowerPoint presentation software, which was originally designed for business applications but which has become one of the most popular pieces of educational software. In my own observations of PowerPoint in the classroom, I'm left with many positive impressions. Just as it does in business settings, it helps some students organize their thoughts more effectively and serves as an excellent note-taking device. But as a thinking technology for elementary school children, it has limitations. It doesn't encourage students to begin a conversation—rather, it encourages them to make points. It is designed to confer authority on the presenter, but giving a third or a fourth grader that sense of presumed authority is often counterproductive. The PowerPoint aesthetic of bullet points does not easily encourage the give-and-take of ideas, some of them messy and unformed. The opportunity here is to acknowledge that PowerPoint, like so many other computational technologies, is not just a tool but an evocative object that affects our habits of mind. We need to meet the challenge of using computers to develop the kinds of mind tools that will support the most appropriate and stimulating conversations possible in elementary and middle schools. But the simple importation of a technology perfectly designed for the sociology of the boardroom does not meet that challenge.

If a technology as simple as PowerPoint can raise such difficult questions, how are people going to cope with the really complex issues waiting for us down the road—questions that go far more to the heart of what we consider our specific rights and responsibilities as human beings? Would we want, for example, to replace a human being with a robot nanny? A robot nanny would be more interactive and stimulating than television, the technology that today serves as a caretaker stand-in for many children. Indeed, the robot nanny might be more interactive and stimulating than many human beings. Yet the idea of a child bonding with a robot that presents itself as a companion seems chilling.

We are ill prepared for the new psychological world we are creating. We make objects that are emotionally powerful; at the same time, we say things such as "technology is just a tool" that deny the power of our creations both on us as individuals and on our culture. At MIT, I began the Initiative on Technology and Self, in which we look into the ways technologies change our human identities. One of our ongoing activities, called the Evocative Objects seminar, looks at the emotional, cognitive, and philosophical power of the "objects of our lives." Speakers present objects, often technical ones, with significant personal meaning. We have looked at manual typewriters, programming languages, hand pumps, e-mail, bicycle gears, software that morphs digital images, personal digital assistants—always focusing on what these objects have meant in people's lives. What most of these objects have in common is that their designers saw them as "just tools" but their users experience them as carriers of meanings and ideas, even extensions of themselves.

The image of the nanny robot raises a question: Is such a robot capable of loving us?

Let me turn that question around. In Spielberg's AI, scientists build a humanoid robot, David, who is programmed to love. David expresses his love to a woman who has adopted him as her child. In the discussions that followed the release of the film, emphasis usually fell on the question of whether such a robot could really be developed. Was this technically feasible? And if it were feasible, how long would we have to wait for it? People thereby passed over another question, one that historically has contributed to our fascination with the computer's burgeoning capabilities. The question is not what computers can do or what computers will be like in the future, but rather, what we will be like. What we need to ask is not whether robots will be able to love us but rather why we might love robots.

Some things are already clear. We create robots in our own image, we connect with them easily, and then we become vulnerable to the emotional power of that connection. When I studied children and robots that were programmed to make eye contact and mimic body movements, the children's responses were striking: When the robot made eye contact with the children, followed their gaze, and gestured toward them, they responded to the robot as if it were a sentient, and even caring, being. This was not surprising; evolution has clearly programmed us to respond to creatures that have these capabilities as though they were sentient. But it was more surprising that children responded in that way to very simple robots—like Furby, the little owl-like toy that learned to speak "Furbish" and to play simple games with children. So, for example, when I asked the question, "Do you think the Furby is alive?" children answered not in terms of what the Furby could do but in terms of how they felt about the Furby and how it might feel about them.

Interestingly, the so-called theory of object relations in psychoanalysis has always been about the relationships that people—or objects—have with one another. So it is somewhat ironic that I'm now trying to use the psychodynamic object-relations tradition to write about the relationships people have with objects in the everyday sense of the word. Social critic Christopher Lasch wrote that we live in a "culture of narcissism." The narcissist's classic problem involves loneliness and fear of intimacy. From that point of view, in the computer we have created a very powerful object, an object that offers the illusion of companionship without the demands of intimacy, an object that allows you to be a loner and yet never be alone. In this sense, computers add a new dimension to the power of the traditional teddy bear or security blanket.

So how exactly do the robot toys that you are describing differ from traditional toys?

Well, if a child plays with a Raggedy Ann or a Barbie doll or a toy soldier, the child can use the doll to work through whatever is on his or her mind. Some days, the child might need the toy soldier to fight a battle; other days, the child might need the doll to sit quietly and serve as a confidante. Some days, Barbie gets to attend a tea party; other days, she needs to be punished. But even the relatively simple artificial creatures of today, such as Hasbro's My Real Baby or Sony's dog robot AIBO, give the appearance of having minds of their own, agendas of their own. You might say that they seem to have their own lives, psychologies, and needs. Indeed, for this reason, some children tire easily of the robots—they simply are not flexible enough to accommodate childhood fantasies. These children prefer to play with hand puppets and will choose simple robots over complicated ones. It was common for children to remark that they missed their Tamagotchis [a virtual pet circa 1997 that needed to be cleaned, fed, amused, and disciplined in order to grow] because although their more up-to-date robot toys were "smarter," their Tamagotchis "needed" them more.

If we can relate to machines as psychological beings, do we have a moral responsibility to them?

When people program a computer that develops some intelligence or social competency, they tend to feel as though they've nurtured it. And so, they often feel that they owe it something—some loyalty, some respect. Even when roboticists admit that they have not succeeded in building a machine that has consciousness, they can still feel that they don't want their robot to be mistreated or tossed in the dustheap as though it were just a machine. Some owners of robots do not want them shut off unceremoniously, without a ritualized "good night." Indeed, when given the chance, people wanted to "bury" their "dead" Tamagotchi in on-line Tamagotchi graveyards. So once again, I want to turn your question around. Instead of trying to get a "right" answer to the question of our moral responsibility to machines, we need to establish the boundaries at which our machines begin to have those competencies that allow them to tug at our emotions.

In this respect, I found one woman's comment on AIBO, Sony's dog robot, especially striking in terms of what it might augur for the future of person-machine relationships: "[AIBO] is better than a real dog…It won't do dangerous things, and it won't betray you…Also, it won't die suddenly and make you feel very sad." The possibilities of engaging emotionally with creatures that will not die, whose loss we will never need to face, presents dramatic questions. The sight of children and the elderly exchanging tenderness with robotic pets brings philosophy down to earth. In the end, the question is not whether children will come to love their toy robots more than their parents, but what will loving itself come to mean?

What sort of relational technologies might a manager turn to?

We've already developed machines that can assess a person's emotional state. So for example, a machine could measure a corporate vice president's galvanic skin response, temperature, and degree of pupil dilation precisely and noninvasively. And then it might say, "Mary, you are very tense this morning. It is not good for the organization for you to be doing X right now. Why don't you try Y?" This is the kind of thing that we are going to see in the business world because machines are so good at measuring certain kinds of emotional states. Many people try to hide their emotions from other people, but machines can't be easily fooled by human dissembling.

So could machines take over specific managerial functions? For example, might it be better to be fired by a robot?

Well, we need to draw lines between different kinds of functions, and they won't be straight lines. We need to know what business functions can be better served by a machine. There are aspects of training that machines excel at—for example, providing information—but there are aspects of mentoring that are about encouragement and creating a relationship, so you might want to have another person in that role. Again, we learn about ourselves by thinking about where machines seem to fit and where they don't. Most people would not want a machine to notify them of a death; there is a universal sense that such a moment is a sacred space that needs to be shared with another person who understands its meaning. Similarly, some people would argue that having a machine fire someone would show lack of respect. But others would argue that it might let the worker who is being fired save face.

Related to that, it's interesting to remember that in the mid-1960s computer scientist Joseph Weizenbaum wrote the ELIZA program, which was "taught" to speak English and "make conversation" by playing the role of a therapist. The computer's technique was mainly to mirror what its clients said to it. Thus, if the patient said, "I am having problems with my girlfriend," the computer program might respond, "I understand that you are having problems with your girlfriend." Weizenbaum's students and colleagues knew and understood the program's limitations, and yet many of these very sophisticated users related to ELIZA as though it were a person. With full knowledge that the program could not empathize with them, they confided in it and wanted to be alone with it. ELIZA was not a sophisticated program, but people's experiences with it foreshadowed something important. Although computer programs today are no more able to understand or empathize with human problems than they were 40 years ago, attitudes toward talking things over with a machine have gotten more and more positive. The idea of the nonjudgmental computer, a confidential "ear" and information resource, seems increasingly appealing. Indeed, if people are turning toward robots to take roles that were once the sole domain of people, I think it is fair to read this as a criticism of our society. So when I ask people why they like robot therapists, I find it's because they see human ones as pill pushers or potentially abusive. When I've found sympathy for the idea of computer judges, it is usually because people fear that human judges are biased along lines of gender, race, or class. Clearly, it will be awhile before people say they prefer to be given job counseling or to be fired by a robot, but it's not a hard stretch for the imagination.

The story of people wanting to spend time with ELIZA brings me to what some have termed "computer addiction." Is it unhealthy for people to spend too much time with a computer?

Usually, the fear of addiction comes up in terms of the Internet. In my own studies of Internet social experience, I have found that the people who make the most of their "lives on the screen" are those who approach on-line life in a spirit of self-reflection. They look at what they are doing with their virtual selves and ask what these actions say about their desires, perhaps unmet, as well as their need for social connection, perhaps unfilled. If we stigmatize the medium as "addictive" (and try to strictly control it as if it were a drug), we will not learn how to more widely nurture this discipline of self-reflection. The computer can in fact serve as a kind of mirror. A 13-year-old boy once said to me that when you are with a computer, "you take a little piece of your mind and put it into the computer's mind...and you start to see yourself differently." This sense of the computer as second self is magnified in cyberspace.

For some people, cyberspace is a place to act out unresolved conflicts, to play and replay personal difficulties on a new and exotic stage. For others, it provides an opportunity to work through significant

problems, to use the new materials of "cybersociality" to reach for new resolutions. These more positive identity effects follow from the fact that for some, cyberspace provides what psychologist Erik Erikson would have called a "psychosocial moratorium," a central element in how Erikson thought about identity development in adolescence. Today, the idea of the college years as a consequence-free time-out seems of another era. But if our culture no longer offers an adolescent time-out, virtual communities often do. It is part of what makes them seem so attractive. Time in cyberspace reworks the notion of the moratorium because it may now exist on an always-available window.

A parent whose child is on heroin needs to get the child off the drug. A parent whose child spends a great deal of time on the Internet needs, first and foremost, to be curious about what the child is doing there. Does the child's life on the screen point to things that might be missing in the rest of his or her life? When contemplating a person's computer habits, it is more constructive to think of the Internet as a Rorschach than as a narcotic. In on-line life, people are engaged in identity play, but it is very serious identity play.

Isn't there a risk that we'll start to confuse simulation with reality?

Yes, there certainly is. When my daughter was seven years old, I took her on a vacation in Italy. We took a boat ride in the postcard-blue Mediterranean. She saw a creature in the water, pointed to it excitedly, and said, "Look, Mommy, a jellyfish. It looks so realistic." When I told this to a research scientist at Walt Disney, he responded by describing the reaction of visitors to Animal Kingdom, Disney's newest theme park in Orlando, populated by "real," that is, biological, animals. He told me that the first visitors to the park expressed disappointment that the biological animals were not realistic enough. They did not exhibit the lifelike behavior of the more active robotic animals at Disney World, only a few miles away. What is the gold standard here? For me, this story is a cautionary tale. It means that in some way the essence of a crocodile has become not an actual living crocodile but its simulation. In business, one is tempted to sell the simulation if that is what people have come to expect. But how far should you go in selling the simulation by marketing it as authentic?

You've said that computers change the way we think about ourselves. How so?

People tend to define what is special about being human by comparing themselves to their "nearest neighbors," so when our nearest neighbors were pets, people were special because of their intellects. When computers were primitive machines and began to be analogized to people, people were superior because of their superior intellects. As the computers became smarter, the emphasis shifted to the soul and the spirit in the human machine. When Gary Kasparov lost his match against IBM's chess computer, "Deep Blue," he declared that at least he had feelings about losing. In other words, people were declared unique because they were authentically emotional. But when robot cats and dogs present themselves as needing people to take care of them in order to function well and thrive, they present themselves as if they had emotions. As a consequence, for many people I interview, feelings begin to seem less special, less specifically human. I am hearing people begin to describe humans and robots as though they somehow shared emotional lives.

If emotions are not what set us apart from machines, then people search for what does, and they come up with the biological. What makes human beings special in this new environment is the fact that we are biological beings rather than mechanical ones. In the language of children, the robot is smart and can be a friend but doesn't have "a real heart or blood." An adult confronting an "affective" computer program designed to function as a psychotherapist says, "Why would I want to talk about sibling rivalry to something that was never born?" It would be too simple to say that our feelings are devalued; it would be closer to the mark to say that they no longer seem equal to the task of putting enough distance between ourselves and the robots we have created in our image. Our bodies, our sexuality, our sensuality do a better job.

Of course, defining people in biological terms creates its own problems. For one thing, we are already blurring the distinction between people and machines by making machines out of biological materials and using machine parts within the human body. And we are treating our bodies as things—in our investigations of our genetic code, in the way we implant pumps and defibrillators in our flesh, in our digitizing of our bodies for education, research, and therapeutic purposes. Additionally, a psychopharmacologist might well say, "Excuse me, sir, but have you noticed that you are taking ten psychotropic medications to alter your mental programming?" In terms of our identities, we're getting squeezed in every direction as new

technologies provoke us to rethink what it means to be authentically human.

A recent New Yorker cartoon summed up these recent anxieties: Two grown-ups face a child in a wall of solidarity, explaining, “We’re neither software nor hardware. We’re your parents.” This cartoon reminds me of a statement someone I interviewed once made about simulation and authenticity: “Simulated thinking can be thinking, but simulated feeling can never be feeling. Simulated love is never love.” The more we manipulate ourselves and the more our artifacts seek pride of place beside us as social and psychological equals, the more we find the issue of authenticity confronting us. Authenticity is becoming to us what sex was to the Victorians—an object of threat and obsession, of taboo and fascination.

Could you expand on that?

In many intellectual circles, notions of traditional, unitary identity have long been exiled as passé—identity is fluid and multiple. In a way, the experience of the Internet with its multiple windows and multiple identities brings that philosophy down to earth. But human beings are complex, and with fluidity comes a search for what seems solid. Our experiences with today’s technologies pose questions about authenticity in new, urgent ways. Are you really you if you have a baboon’s heart inside, had your face resculpted by Brazil’s finest plastic surgeons, and are taking Zoloft to give you a competitive edge at work? Clearly, identity comes to be seen as malleable when the distinction between the real and the artificial fades. Personally, I find it amazing how in less than one generation people have gotten used to the idea of giving their children Ritalin—not because the children are hyperactive but because it will enhance their performance in school. Who are you, anyway—your unmedicated self or your Ritalin self? For a lot of people, it has become unproblematic that their self is their self with Ritalin or their self with the addition of a Web connection as an extension of mind. As one student with a wearable computer with a 24-hour Internet connection put it, “I become my computer. It’s not just that I remember people or know more. I feel invincible, sociable, better prepared. I am naked without it. With it, I’m a better person.”

In our culture, technology has moved from being a tool to a prosthetic to becoming part of our cyborg selves. And as a culture, we’ve become more comfortable with these closer bonds through our increasingly intimate connections with the technologies that we have allowed onto and into our person. For most people, it hasn’t been through technologies as exotic as a wearable computer. It’s been through technologies as banal as a Palm Pilot (which, of course, when you think about it, is a wearable computer). In the Evocative Objects seminar at the Initiative on Technology and Self, one woman, a successful journalist, described the experience of losing the contents of her PDA: “When my Palm crashed, it was like a death. More than I could handle. I had lost my mind.” Such objects are intimate machines because we experience them as extensions of self.

Do you think that kind of dependence is dangerous?

Not necessarily. Nursing homes in Japan increasingly make use of robots that give elders their medicine, take their blood pressure, and serve as companions. The Japanese are committed to this form of care for their elders; some say that they see it as more respectful than bringing in foreigners from different cultural backgrounds. When I first heard about this trend toward the use of robotics for elder care, I felt troubled. I feared that in our country there might be a danger that the widespread use of robotics would be used to legitimate social policy that does not make elder care a priority and does not set aside the resources, both in time and money, to have people there for the elderly. However, I have been doing fieldwork with robots for the elderly in local nursing homes. My project is to introduce simple robotic creatures—for example, robotic dogs and robotic baby dolls—in nursing homes and see what kinds of relationships the elderly form with these robots. Of course, when you look at particular institutions, families, and individuals, the question of the humane use of robotics for elder care is in fact quite complex.

At one nursing home, for example, the nursing staff has just gone out and bought five robot baby dolls with their own funds. The nurses are not doing this so that each elderly person can go to his or her room with a robot baby. They are doing this because it gives the elders something to talk about and share together, a community use of the robots that was totally unexpected when I began the project and which is quite promising.

One goal of my work is to help designers, businesspeople, and consumers keep human purposes in mind as they design and deploy technology and then choose how to make it part of daily life. For me, authenticity in relationships is a human purpose. So, from that point of view, the fact that our parents and grandparents might say "I love you" to a robot, who will say "I love you" in return, does not feel completely comfortable to me and raises, as I have said, questions about what kind of authenticity we require of our technology. We should not have robots saying things that they could not possibly "mean." Robots do not love. They might, by giving timely reminders to take medication or call a nurse, show a kind of caretaking that is appropriate to what they are, but it's not quite as simple as that. Elders come to love the robots that care for them, and it may be too frustrating if the robot does not say the words "I love you" back to the older person, just as I can already see that it is extremely frustrating if the robot is not programmed to say the elderly person's name. These are the kinds of things we need to investigate, with the goal of having the robots serve our human purposes.

How can we make sure that happens?

It's my hope that as we become more sophisticated consumers of computational technology—and realize how much it is changing the way we see our world and the quality of our relationships—we will become more discerning producers and consumers. We need to fully discuss human purposes and our options in technical design before a technology becomes widely available and standardized. Let me give you an example. Many hospitals have robots that help health care workers lift patients. The robots can be used to help turn paralyzed or weak patients over in bed, to clean them, bathe them, or prevent bedsores. Basically, they're like an exoskeleton with hydraulic arms that are directly controlled by the human's lifting movements.

Now, there are two ways of looking at this technology. It can be designed, built, and marketed in ways that emphasize its identity as a mechanical "flipper." With this approach, it will tend to be seen as yet another sterile, dehumanizing machine in an increasingly cold health care environment. Alternatively, we can step back and imagine this machine as a technological extension of the body of one human being trying to care for another. Seen in the first light, one might argue that the robot exoskeleton comes between human beings, that it eliminates human contact. Seen in the second light, this machine can be designed, built, and marketed in ways that emphasize its role as an extension of a person in a loving role.

During one seminar at the Initiative on Technology and Self in which we were discussing this robotic technology, a woman whose mother had just died spoke about how much she would have loved to have had robot arms such as these to help her lift her mother when she was ill. Relatively small changes in how we imagine our technologies can have very large consequences on our experiences with them. Are the robot arms industrial "flippers" or extensions of a daughter's touch?

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A Blogger in Their Midst

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Will Somerset, the CEO of Lancaster-Webb Medical Supply, a manufacturer of disposable gloves and other medical products, needed time alone to think, and he had hoped an early morning jog would provide it. But even at 6 am, as he walked out to the edge of the luscious lawn surrounding Disney World's Swan Hotel, Will had unwanted companions: Mickey and Minnie Mouse were in his line of sight, waving their oversized, gloved hands and grinning at him. Instead of smiling back at the costumed characters, he grimaced. He was about to lose a million-dollar sale and a talented employee, both in the same day.

Will finished his hamstring stretches and began his laps around the grounds, leaving the mice in the dust and recalling events from the day before. Industry conferences are always a little tense, but never to the extent this one had turned out to be. Lancaster-Webb—by far the best-known brand in the medical-disposables arena—was introducing a remarkable nitrile glove at the gathering. Will was good at announcements like this; during his 30-year career, he had probably given more speeches and launched more products at trade conferences than any other chief executive in his field. But attendance at yesterday's rollout event had been sparse.

Evan Jones, vice president of marketing at Lancaster-Webb, had guaranteed the appearance of a big sales prospect, Samuel Taylor, medical director of the Houston Clinic. Will knew that impressing Taylor could mean a million-dollar sale for Lancaster-Webb. But before the presentation, Evan was nervously checking his shiny Rolex, as if by doing so he could make Sam Taylor materialize in one of the empty seats in the Pelican room. At five minutes to show time, only about 15 conference-goers had shown up to hear Will, and Taylor was nowhere in sight.

Will walked out of the ballroom to steady his nerves. He noticed a spillover crowd down the hall. He made a "What's up?" gesture to Judy Chen, the communications chief at Lancaster-Webb. She came over.

"It's Glove Girl. You know, the blogger," she said, as if this explained anything. "I think she may have stolen your crowd, boss."

"Who is she?" Will asked.

Judy's eyebrows shot up. "You mean you don't read her stuff on the Web?" Will's expression proved he didn't. "Evan hasn't talked to you about her?" Will gave her another blank look. "OK, um, she works for us. And you know how we've been seeing all this new demand for the old SteriTouch glove? She's the one behind it. She's been on a roll for a while, talking it up on her blog."

Evan joined them in the hall just in time to catch the end of Judy's comments. "Right," he said. "Glove Girl. Guess I'd better go hear what she's telling folks." He glanced at his boss, a little sheepishly. "You won't mind, I hope, if I'm not in the room for your presentation?"

"No problem," Will said. He watched Evan and Judy hurry toward the room down the hall. With a sigh, he headed back into the Pelican room. As he delivered his remarks to the small group that had gathered, the words "blog" and "Glove Girl" and that wonderful but mystifying news about the surge in SteriTouch sales kept swimming around in his head. The speech he gave was shorter than usual. In fact, he was already on

his way to the Mockingbird room when Glove Girl's session ended in applause.

As the doors opened and people began streaming into the corridor, Will spotted her. She was wearing a gold lamé cocktail dress and a pair of pale green surgical gloves. They looked like evening gloves on her. Extraordinary. But the people filing past him appeared to have taken her quite seriously. "I liked how she handled the last question," one was saying. Will overheard Judy talking to Evan: "She's very good, isn't she?" And Evan's response: "No kidding."

Will pulled both of his employees aside. "We need to have a meeting about this. ASAP."

Beware the Blog

That evening, the three were in Will's suite, huddled around a speakerphone. Conferencing in from Lancaster-Webb's headquarters in Cupertino, California, were Jordan Longstreth, the company's legal counsel, and Tom Heffernan, vice president of human resources. Judy was briefing them all on blogging, who Glove Girl was, and what she could possibly be up to.

"It's short for Web logging," Judy explained to the group. "A blog is basically an on-line journal where the author—the blogger—keeps a running account of whatever she's thinking about. Every day or so, the blogger posts a paragraph or two on some subject. She may even weave hyperlinks to related Web sites into the text."

"It's amazing the stuff some of these people write," Evan added, "and how many people find their way to the sites. My brother-in-law, who lives in New York, is a blogger. And he gets e-mail from the weirdest places—Iceland, Liberia...everywhere.

"One day, a blogger might write something about her cat, the next day about the technology conference she just attended, or software bug fixes, or her coworkers," Evan went on. "You find that kind of thing especially in the blogs of dot-com casualties; they never learned to separate their work lives from their personal lives."

Evan meant that last remark to be pointed. Glove Girl's site juxtaposed her commentary on blood-borne pathogens with tales about her love life. Frequent visitors to her blog knew all about her rags-to-riches journey from emergency room nurse to COO of a Web-based company that peddled health advice; her subsequent bankruptcy; her fruitless attempts to land a good corporate communications position; and her life as an assistant foreman at the Compton plant of Lancaster-Webb's surgical gloves unit. Few would mistake Glove Girl's blog for Lancaster-Webb's own site, but they might not know the company hadn't authorized it.

The site's existence wasn't so troubling by itself, Will thought. But when Judy explained that Glove Girl had been blogging about the pending launch of the nitrile gloves and about competitors' products and customers' practices, Will became alarmed. To top things off, Judy revealed—somewhat hesitantly—that last week Glove Girl had written on her site, "Will Somerset wears a hairpiece." The room went silent.

"OK, she's outta here. Get her a copy of Who Moved My Cheese?" he said to his team, knowing it would get a big laugh in the room and on the speakerphone. "All right, I'll join the Hair Club for Men. Now tell me the really bad news: What did she write about the Houston Clinic deal? Are we going to lose it?"

Before Judy could answer, Jordan's voice came over the line: "Can I add one thing? Getting fired would be just the beginning of her troubles if she's sharing confidential product information."

Judy explained that Glove Girl had reported on her site that Lancaster-Webb would be making a big sales pitch to the Houston Clinic. Glove Girl had learned that the clinic's cesarean delivery rate was off the charts, and she was questioning the ethics of doing business with a facility like that. Fort Worth General, she'd noticed, did a third as many C-sections.

"Maybe that's why Taylor didn't show," Will remarked, as the pieces began to come together.

“Sorry, boss. We had a chat with her a few weeks ago about discussing our customers on her blog, and she promised to be more careful. I guess it didn’t make much difference,” Judy said.

“You’ve documented that?” Tom asked. Judy assured him she had.

Evan then described how surprised he was to hear that the company’s older SteriTouch gloves had suddenly started flying out of the warehouse. “We hadn’t been marketing them lately. The thing was, Glove Girl was raving about them on-line. Sales shot up right after she linked her blog to one of our Web pages. You remember that book Gonzo Marketing I gave you last year, Will? Her blog works just like that. These things get close to the customer in ways that an ad campaign just can’t.”

“Can I give you more bad news, boss?” Judy asked. “She’s got a pen pal in our factory in China who’s been writing about conditions there. Glove Girl doesn’t always paint a pretty picture.”

Evan jumped in again. “Wait a minute. Did you search the whole blog? There were also some e-mails from people saying we should be paying our plant workers in China what the workers get here. And Glove Girl defended us really well on that point.”

“Tell me,” Will said, “how the heck did she end up on the conference schedule?”

“Apparently, the chief organizer is a big Glove Girl fan and asked her to discuss blogging as ‘the ultimate customer intimacy tool,’” Judy said with a sigh. “I’m sorry. I tried to get him to change the time of her session.”

“I know it’s late,” Will told his team, “but before we make any decisions about Glove Girl, I’m heading to the business center to look at her blog. Evan, apparently you know your way around it. Why don’t you come with me?”

With the meeting adjourned, Will and Evan made their way through the hotel to the business center, discussing the issues Glove Girl had raised. As the two men approached the entrance to the center, a petite blond was leaving. She held the door for them, and then walked away as Evan pointed and whispered, “That’s her. She was probably in here posting a new entry. Let’s check.” He typed “glove girl” into Google. Her blog came up as the number one listing against 1,425 hits. He clicked to it.

Evan showed his boss the post. “See the time and date stamp? She just posted this”—the entry was Glove Girl’s mild swipe at the food being served at the conference.

“I can’t disagree with her,” the CEO said. “So where do we start?”

Evan gave Will a quick cybertour, and then had to run to another conference call, leaving his boss to fend for himself. Will spent the next hour alternately enthralled and enraged by what he read on Glove Girl’s blog.

An Underground Resource?

One foot in front of the other. That was the thing Will loved about jogging—you just keep putting one foot in front of the other, he thought, as he took another circuit around the hotel grounds. A lot easier than grappling with this blogging business. There was a lanky runner ahead of him. It was Rex Croft, medical director at Fort Worth General. They both finished at about the same time and greeted one another as they did their cooldown stretches against a sidewalk railing.

“Hey, Will, we love what you’re doing with Glove Girl. Houston’s head of nursing showed me the site, and it’s amazing,” Rex said, to Will’s complete surprise.

“She’s got the story on the clinic’s cesareans wrong, though. It’s true that the rate is the highest in the country, but that’s because Houston’s been doing pioneering work that’s attracted hundreds of women from

all over the country," he explained. "Do you think you can get Glove Girl to post that?"

"I'll certainly try. This blogging thing is new to me, you know."

"You guys are really ahead of the curve on this. I'd like to meet Glove Girl," Rex added.

So would I, Will thought. "I'll see what I can do," he said quickly. "I'm heading in. I'll talk to her about putting those cesarean statistics in the right context."

As Rex sauntered off, Will flipped open his cell phone and called Evan. "Get her," is all he had to say. "Business center, in an hour."

Showered and shaved, Will made it there before the others. Evan arrived alone—he'd come up empty-handed. "I can't find her. She's not in her room. She didn't respond to my e-mails. I even left her a message at the front desk to call my cell. Nothing so far."

"Great. Now what?" Will rolled back in his chair.

"Wait," Evan said. He got on-line and went to her Web log. "Check this out. She's in the health club blogging. There must be a terminal there."

"You can blog anywhere?"

"Yep. The blogging interfaces reside on Internet servers for the most part, not on your computer. Some people do wireless blogging. Some do audio blogging with a cell phone. Hey, read this. Glove Girl got a manicure with Houston's head of nursing and found out why the cesarean rate is so high. She's posted a correction."

"My lucky day," Will said. "I think. Evan, do you have a clue how much she's said about yesterday's product release?"

"We can search the site. Watch." Evan typed in the words "nitrile gloves," and a few listings appeared.

They both began to read. It was clear she'd done a very detailed job of describing the surgical gloves' benefits and features—the same ones Will had outlined in his speech.

"She's definitely thorough," Evan had to admit.

"Yes, and she's got good questions," Will said as he kept reading.

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At noon, the sun was high in a cloudless sky. Will and Evan were at Kimonos, waiting to be seated.

The Houston Clinic's Sam Taylor spotted Will. "It's a good thing you took care of that," he said.

"I didn't have anything to do with it," Will said, correcting him. "She's a free agent. You need to thank your head of nursing for giving her the facts."

"I'll do that," Taylor said, and then rather abruptly excused himself.

Rex Croft was standing a few feet away. He came over, smiling broadly. "We want to sign a deal—you'll be the exclusive supplier of our surgical gloves," he said.

Will shook his hand happily. "Great."

"But we also want to hire Glove Girl," Rex whispered. "My people say we need her in a big way. I hate to

admit it, but her blog is a lot more persuasive than your advertising. Can you spare her?"

"I'm not sure," Will said, genuinely perplexed.

What should Lancaster-Webb do about Glove Girl?Four commentators offer expert advice.

David Weinberger is the author of Small Pieces Loosely Joined: A Unified Theory of the Web (Perseus, 2002) and coauthor of The Cluetrain Manifesto: The End of Business As Usual (Perseus, 1999). He is a strategic-marketing consultant.

Lancaster-Webb doesn't have a blogging problem; it has a labeling problem. The solution that first occurs to CEO Will Somerset—fire Glove Girl—would restore order at the company, but at too great a cost. Outside the company, Glove Girl has turned into Lancaster-Webb's most cost-effective marketer. In much less time, and with fewer resources, she does what the marketing department has spent big chunks of the corporate budget to do not nearly as well: She gets customers to listen and believe. Marketing is ineffective at this precisely because it's on a mission: Get leads! Convert prospects! Lock in customers! In short, marketing is engaged in a war of wills with customers.

By contrast, Glove Girl isn't trying to do anything except talk to customers about the things she and they care about. Glove Girl sounds like a human being, not a jingle or a slogan. Her writing embodies her passions. She thus avoids the pitfalls that marketing departments repeatedly walk into. Her willingness to admit fallibility—the pace of daily on-line publishing pretty well ensures that Web blogs have the slapdash quality of first drafts—is ironically the very thing that leads her readers to overlook her mistakes and trust her.

No wonder the communications department is afraid of her. After all, from their point of view, Glove Girl is "off message." She acknowledges that not everything is perfect at Lancaster-Webb. In alleging excessive cesarean rates at the Houston Clinic, she did the unthinkable: She suggested that some dollars are not worth having. Of course, that boldness and candor are among the reasons she's such a good marketer.

Still, for all the good she's doing, she does indeed pose a problem. But it's not a problem unique to blogs. Suppose Glove Girl didn't have a blog. Suppose she were saying exactly the same things to her neighbors over the backyard fence. Lancaster-Webb might not like what she says, but so long as she's not violating her contract or the law, the company doesn't have a right to stop her. The difference is that Glove Girl's blog identifies her as a Lancaster-Webb employee.

That's where the importance of clear labeling comes in. We almost always understand—if only implicitly—the status of the comments someone is making. For instance, we know when the customer-support person on the phone is giving the official line, and we can tell when her voice drops that she's departing from it. Likewise, we understand that a press release is one-sided faux journalism because it says "press release" right at the top. We know that marketing brochures aren't to be taken too literally. And we know that when Will gets up to give a keynote, he is going to be relentlessly positive—and is probably reading someone else's words. But because Web logs are so new, the public might have trouble figuring out the status of Glove Girl's site. Is it official? Does Lancaster-Webb stand behind what she says?

There's an easy way to fix it so that Glove Girl can continue being the best marketer at Lancaster-Webb: Ask her to explain clearly on her blog exactly whom she speaks for. It's a reasonable request, and it's in everyone's interest.

But there's an even better way to make the nature of her commentary clear: Publish Web logs on the Lancaster-Webb site. (If more of Lancaster-Webb's employees were blogging, they'd have caught Glove Girl's error regarding the cesarean births within minutes.) Link the company's blogs to related ones—Glove Girl's, for instance—or to blogs at customers' sites. Blogging should be a group activity anyway, with lots of cross talk. The variety of viewpoints will make it clear that no one is just toeing the party line. In fact, I'll bet Glove Girl would be delighted to set Will up with a Web log and help him sound like a human being in public again.

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There are those who say the Internet changes everything, and there are those who think that phrase is a discredited sentiment of a bygone era. Perhaps both are exaggerations. One of the challenges posed by the Internet is assessing which of its features are so novel that they require new concepts to explain them and new rules to govern them, and which features need neither because they are essentially like ones we've encountered before. Glove Girl's blog nicely illustrates this distinction.

If Glove Girl's remarks about the Houston Clinic, for example, are disparaging or even defamatory, they become no less so for being posted on the Internet instead of published in a newspaper or broadcast over the radio. While some have argued that Internet postings have so little credibility that defamation standards should be lower for the Web, the courts haven't accepted this notion.

Blogging does, however, represent a new genre of communication. Glove Girl's blog is typical in its interweaving of work-related commentary with purely personal material. Powerful search engines make such postings accessible to a worldwide audience. Because readers may not be able to tell that Glove Girl is merely expressing her personal views about Lancaster-Webb on her blog, and because the company has failed to make it clear that she is doing so without its authorization, Lancaster-Webb can be held "vicariously" responsible for statements of hers that are harmful to others. Glove Girl is certainly not the first talented commentator to become a virtual celebrity on the strength of her Internet postings. (Think of Matt Drudge.) By reaching so many people, her statements compound the injury they do and the damages Lancaster-Webb may be obliged to pay.

Blogs like Glove Girl's also blur the line between commercial speech and noncommercial commentary. The former generally enjoys a lower level of protection than the latter. Companies don't have a First Amendment right, for example, to engage in false advertising. An important case that was brought before the U.S. Supreme Court this year involved a private citizen, an activist named Marc Kasky, who sued Nike under California law for false advertising on the basis of public statements the company issued in defense of its labor practices. Nike argued that because the statements didn't promote a product, they deserved greater constitutional protection than conventional commercial speech. Under Kasky's definition, commercial speech would encompass a far wider array of public statements, including those intended to maintain a positive image of the company.

Defending against such lawsuits is costly, and court actions tend to generate bad publicity. Yet Lancaster-Webb may be at greater risk than Nike. At least the statements that Nike originates can be evaluated and, if necessary, modified before publication. The statements being posted on Glove Girl's site are more difficult to control. Glove Girl has been promoting products on-line, making her blog and Lancaster-Webb potential targets of a false advertising lawsuit.

Before the advent of blogging, it was far less possible for employees to create these kinds of risks for their employers. Word might leak about trade secrets or product releases but usually only to a handful of people. And before the rumors spread too far, the company could put the genie back in the bottle.

The chances are slim that Glove Girl or Lancaster-Webb would be sued as a result of what she said on the Internet, particularly since she went to the trouble of correcting her error. Although Glove Girl may be an unconventional employee, Will Somerset would be wise to regard her as far more of an asset than a liability. Rather than impose a set of rules, Will should start a conversation within the firm about the risks and opportunities that blogging poses. Lancaster-Webb should establish norms, tailored to its own market and culture, that respond to the challenges posed by blogging and other Web phenomena.

Ray Ozzie is chairman and CEO of Groove Networks, a software company based in Beverly, Massachusetts. As president of Iris Associates, he led the development of Lotus Notes.

At this point in the information age, every employee can interact directly with a company's customers, partners, and even with the public. Bloggers naturally want to speak about their professional lives as well as

their personal lives. Companies can't change that. If they try, they risk suffocating the culture they mean to protect. Although employee Web logs present risks, more often than not they are good for a company. Will Somerset shouldn't officially endorse employee blogs, but he shouldn't discourage them either.

In the fall of 2001, I learned that an employee at one of Groove Networks' close business partners—a consulting and systems integration company—had posted on his blog an eloquent and highly personal essay on the subject of addiction. In subsequent postings, he stated that his employer had asked him to stop writing such things because of what current and potential clients might think. Eventually, he wrote, he was terminated for refusing to do so. Whatever the facts may have been, the incident made me realize that a managerial problem of this kind would be affecting lots of companies before too long, including my own. A year later, responding to a suggestion by a blogging employee, we developed and posted a written policy on personal Web logs and Web sites. (See the policy at www.groove.net/weblogpolicy).

The policy was designed to address four areas of concern: that the public would consider an employee's postings to be official company communications, rather than expressions of personal opinion; that confidential information—our own or a third party's—would be inadvertently or intentionally disclosed; that the company, its employees, partners, or customers would be disparaged; and that quiet periods imposed by securities laws or other regulations would be violated.

We're a software company, so it should not be surprising that many of our employees play the same way they work—expressing their creativity through technology. Employees who blog often develop reputations for subject mastery and expertise that will outlast their stay at the company. I believe that, without exception, such employees have Groove Networks' best interests at heart. Our goal is to help them understand how to express themselves in ways that protect the company and reflect positively on it. This should be Lancaster-Webb's goal as well.

The company should issue a policy statement on employee Web logs and Web sites—but only after Lancaster-Webb's corporate communications and legal staff fully educate senior management about what blogs are and how they might affect the business. Glove Girl may write with rhetorical flair, but what seems like a harmless flourish to one person may seem like an insult to another. Frustrated employees sometimes become vindictive, and a vindictive blogger can lash out publicly against her employer in an instant. There are laws that provide individuals and organizations a measure of protection against libel, misappropriation, and other injuries suffered as a result of posts on any of the many gossip sites on the Web. The laws also provide some protection from bloggers, even if they don't provide complete redress.

Glove Girl is a natural communicator who obviously cares about Lancaster-Webb, its products, and its customers. Will should think about putting her in a role within the company that gives her greater visibility and makes her feel more genuinely invested in its success. Will or members of his staff should even consider authoring their own blogs, as I have done (www.ozzie.net), if they want to communicate convincingly with employees, markets, and shareholders.

Erin Motameni is a vice president of human resources at EMC, a storage software company in Hopkinton, Massachusetts.

Glove Girl is certainly passionate about her company. But in her enthusiasm, she has abused her knowledge of proprietary, confidential information. At a minimum, she has probably violated any legal agreement she signed when she joined Lancaster-Webb. More damaging, she has violated the trust of her coworkers, her company's customers, and, if this is a publicly traded company, its investors.

By identifying herself as a Lancaster-Webb employee, she has probably caused others to believe mistakenly that she represents the company's official positions. The wide readership attracted to her chatty and personal Web log compounds the damage inflicted by the inaccurate information it spreads. Will Somerset needs to have a blunt discussion with Glove Girl, make her aware of the harm she's doing, and insist that she stop sharing confidential information. Since this won't be Glove Girl's first warning, she'll need to be told that continued misuse of confidential information could end with her dismissal.

No matter her intentions, Glove Girl's behavior is symptomatic of larger management and internal

communications problems at Lancaster-Webb. To begin with, Will needs to establish what his core values are. How could anyone who was Lancaster-Webb's CEO be even momentarily "enthralled" by what he reads on Glove Girl's blog? Such a reaction suggests that he has let short-term sales gains cloud his judgment and, by extension, stifle the message he should be sending his employees about their responsibilities to the Lancaster-Webb community.

Will must also address a few glaring failures of his management team. Something is definitely wrong with the way it shares and acts on information. For example, why did it take so long for Will to find out about an activity that is significantly affecting the company's sales, marketing, and image? He should seriously consider replacing his marketing chief—who views blogging as one of the best ways to get close to customers—with someone who, while open-minded toward new techniques, is also deeply experienced in the time-tested ways of learning what's on customers' minds. And for Lancaster-Webb, with its comparatively narrow customer base, focusing on what its customers truly value ought to be a straightforward endeavor.

EMC conducts intensive, three-day group sessions with customers' senior-level executives several times a year. We give them unfettered access to our senior management team and our engineering organization. We ask them about our current and forthcoming products as well as how satisfied they are with their relationship with us. More often than not, these sessions result in new product ideas and new customer-engagement practices. We supplement these face-to-face sessions with an extranet designed specifically for EMC customers.

None of the foregoing is to suggest that blogging has no legitimate marketing role. To the contrary, Will and his management team should integrate blogging into a new, carefully monitored, interactive-marketing initiative, for which they set clear standards. Once that has been accomplished, Glove Girl's enthusiasm is less likely to be dangerous to Lancaster-Webb's customers, employees, and investors.

Finally, Will needs to institute formal and informal mechanisms for soliciting employees' ideas. It is easy to fire employees who cross boundaries. It is more productive to fashion a culture that encourages the more innovative among them to share their ideas, while reminding them that they are citizens of a larger community and therefore need to think through the ramifications of their actions.

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In Defense of the CEO Chair

William T Allen; William R Berkley
New York University Center for Law and Business; W.R. Berkley Corp.
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Investors, researchers, and government officials seem gradually to be accepting the view that corporate governance best practices require the separation of the roles of board chairman and CEO. The January 2003 report of the Conference Board's Commission on Public Trust and Private Enterprise recommended this structure, and the practice has become common in England. But is it really a good idea?

We doubt that such a separation would improve investors' risk-adjusted returns. On the contrary, there is good reason to believe that the wide adoption of this "improvement" would risk imposing costs and delays on well-functioning businesses. More important, it would foster a risk-averse corporate bias that would injure the economic interests of diversified shareholders.

Those who invest in the large and liquid U.S. securities markets take advantage of the system's ability to provide risk diversification at very low cost. The combination of liquid markets and cheap diversification is a great source of efficiency, but it also gives rise to an important problem. Investors with diversified holdings have little incentive to spend resources on monitoring management; it is easier simply to sell. In the absence of monitoring owners, managers may be inclined to advance their own interests. The risk that managers will do that is described by economists as an "agency cost." The reduction of such costs, like the reduction of many types of costs, is generally a good thing. To some investors, scholars, and other commentators, corporate governance is chiefly a matter of structures and practices that will reduce the agency costs of management. Separating the chair and the CEO position appears, in the current environment, an effective way to do this.

But those who focus exclusively on steps designed to more effectively monitor and control management lose sight of a fundamental fact. Reducing the agency costs of management will not necessarily improve investors' risk-adjusted returns. Of course, those of us interested in improved governance do well to keep in mind the undesirable side effects of powerful managers and passive owners and the importance of prudently reducing agency costs. But the central driver of a corporation's efficiency is its management team. It is good management's superior ability to identify and evaluate opportunities, place investments at risk, and manage the business that creates above-market returns.

The idea that separation of the CEO and chair positions will provide an advantage to investors is based on the mistaken belief that well-designed corporate governance is simply a system to reduce agency costs. But both the benefits and the costs of the separation must be considered.

What is the source of the gains that proponents expect? Gains must come from reducing the CEO's power in situations when the chief executive faces a conflict of some sort. CEO compensation is the paradigm. But reforms now being implemented already offer reasonable steps to manage this conflict. A nonexecutive chair adds little or nothing to the gains to be realized from a fully independent compensation committee of the board.

A more intractable source of conflict arises when there is a long-term, gradual failure of the firm's business plan. A board's ability to act in such a circumstance may be one of its greatest potential sources of contribution. Often, those who have originated a strategy may become psychologically committed to it and may be biased. Of course, overcoming impediments and riding out a brief series of disappointments may be

the key to long-term value creation. But a brief series of disappointments may be the beginning of a longer series of bigger disappointments. Distinguishing between the two situations involves judgment. Since management will be much better informed, it is natural that the board will initially defer to it. But at some point a board may be required to act. We suppose that a board with an independent chair would on average be quicker to act in this context. This, we think, is the most likely source of an efficiency gain from the proposal.

What, then, are the proposal's costs? We identify three principal problems. First, the separation would reduce the authority of the CEO. Effective organizations lodge ultimate leadership and accountability in a single place. The CEO should always be constrained and accountable. But effective boards can create structures that enhance CEO accountability without diminishing the chief executive's leadership role. Under the split system, the CEO's power would be shared with a person who is less informed and whose principal concern would tend to be risk avoidance.

Second, splitting the roles of CEO and chair would inevitably introduce a complex new relationship into the center of the firm's governance and even into its operations. Two centers of authority in a business would create the potential for organizational tension and instability. In times of even moderate stress, such a system would tend to default into dueling centers of authority. Even the threat of such conflict would produce a costly diversion of attention from more productive areas.

Third, adopting the nonexecutive chair would inevitably subvert the corporation's commitment to the unitary board. With a nonexecutive chair, the principal governing powers of the organization would inevitably be shared by two directors. Others would be reduced to specialized roles. Such a step would reduce the status and perhaps the sense of responsibility of the remaining outside board members.

We understand why there is substantial support for the idea that a logical next step in governance reform is to separate these important roles. Putting an "outsider" at the head of the governing board is a plausible answer to a particular problem that we have painfully seen: the greedy or fraudulent CEO. But while this problem was closely related to all of the recent big-ticket failures, we do not think it is typical or even sufficiently widespread to justify the systemwide costs of the remedy being called for. The costs of this reform would be invisible, and they would be borne by all firms, were it universally adopted. Finally, other reforms that are in process will reduce the risk, going forward, that those inclined to deceive will be able to do so easily.

Institutional investors and those who purport to speak for investor interests should exercise caution in championing further changes in governance that may hinder management's effectiveness in creating value. They should think carefully about the hidden costs as well as the benefits they imagine their reform may bring.

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What's Your Project's Real Price Tag?

Quentin W Fleming; Joel M Koppelman
Primavera Systems
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There are many ways executives can cook the books, some legal, some not. The illegal ways are becoming less attractive, thanks to recent attention from Congress, the SEC, and other regulatory bodies. But there is a way some executives put a spin on company performance that is no less dangerous for being legal: They endorse, even encourage, optimistic forecasts on major long-term capital projects. We're talking about big projects like building new factories, implementing IT outsourcing, or decommissioning nuclear reactors—projects that can depress the bottom line for years if they run late or seriously over budget.

The problem is that most corporate financial executives track the cost of a project using only two dimensions: planned costs and actual costs. According to this accounting method, if managers spend all the money allotted to a project, they are right on target. If they spend less than allotted, they have a cost underrun. If they spend more, it's an overrun. But this method ignores a key third dimension—the value of the work performed.

Consider an example: On a five-year aircraft-development project costing $1 billion, the budget you've projected for the first two and a half years is $500 million, a number that reflects the expected value, in labor and materials, of the project at the halfway mark. Let's say that when you reach this point, you have spent only $450 million. Some project managers would call this "coming in under budget." But what if you're behind schedule, so that the value of the work completed is only $400 million? This isn't coming in under budget at all. We think you should call it what it is: a $50 million overrun.

So how can you measure the true cost performance of long-term capital projects? We advise companies on the use of a project-tracking method called earned-value management (EVM). Industrial engineers in American factories first applied EVM principles more than a century ago. Today, while EVM has found a few champions in the private sector, government contractors are still the major practitioners. Since 1977, the Department of Defense (DOD) has used the technique to track the performance of more than 800 projects. A recent study by David Christensen and David Rees at Southern Utah University of 52 DOD contracts validates EVM's precision in tracking cost performance as projects proceed. Perhaps more important, the work also confirms that EVM can be used to accurately predict the final cost of projects—years before completion.

Nuts, Bolts, and Dollars

The most important tracking metric in EVM is the cost performance index, or CPI. The CPI shows the relationship between the value of work accomplished (the "earned value"), as established by a meticulously prepared budget, and the actual costs incurred to accomplish that work. So, for example, if a project is budgeted to have a final value of $1 billion, but the CPI is running at 0.8 when the project is, say, one-fifth complete, the actual cost at completion can be expected to be around $1.25 billion ($1 billion/0.8). You're earning only 80 cents of value for every dollar you're spending. Management can take advantage of this early warning by reducing costs while there's still time.

The CPI is remarkably stable over the course of most projects. That's what makes it such a good predictive tool. The DOD study shows that the CPI at the 20% completion point rarely varies by more than 10% from the CPI at the end of the project. To continue with the aircraft-development example, the potential variance

in the CPI means your final cost will likely fall between roughly $1.1 billion and $1.4 billion. In any case, by the end of the first year, you've identified a likely cost overrun for the completed project. In fact, the DOD experience shows that the CPI typically gets worse over a project's course. Final costs calculated early in a project are usually underestimates.

A Matter of Scale

If EVM is so powerful, why doesn't every company use it? The fact is, when it's used in its full-fledged form for major acquisitions, it can be a demanding exercise, particularly as practiced by government agencies. The DOD requires the companies it contracts with to meet dozens of complex EVM criteria covering everything from detailed planning to progress measurement to the valuation of incomplete work. For monitoring multibillion-dollar reimbursable projects, like the development of a new fighter aircraft, the complex accounting is worth the considerable investment.

But we believe there's an untapped value for EVM in private industry. There, a simplified version of EVM can help control the growth of project costs. And with the increasing scrutiny of companies' financial statements, EVM can help ensure that the balance sheets signed by company executives are accurate.

Private-sector companies such as Edison International and Computer Sciences Corporation have applied a simplified EVM approach to IT projects with great success. At Boeing, Michael Sears, now CFO, embraced EVM practices as a program manager on the development of the company's F/A-18E/F fighter aircraft in the 1990s. Sears championed the adoption of weekly EVM measurement throughout the company, even migrating it to the commercial side of the business, where it was tailored for use in developing the 717 passenger jet. Sears later summarized the practical case for EVM: "We flew the F/A-18E/F on cost, a month early, and under weight...No adjustments. No asterisks. No footnotes. No kidding."

Using EVM to cut the "kidding" from project cost accounting isn't just good management; with companies' financial statements scrutinized as never before, it's a smart move for those who must ultimately stand behind the numbers.

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Plumbing Web Connections

Bob Sutor; Gardiner Morse
IBM; HBR
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Bob Sutor predicts that in three years, your business will depend on Web services—software that helps companies connect their systems across networks. As IBM's WebSphere Infrastructure Software director—the person who drives the company's key Web services product line—Sutor might be expected to unleash a hard sell. But given the opportunity, he allows that Web services are a lot like plumbing: a largely invisible technology that's at its best when it's out of sight and out of mind. Sutor refers to Web services as a "stealth technology," a description that belies the overt impact it will have on business. In this edited interview with HBR's Gardiner Morse, Sutor discusses how and when Web services will change the ways companies do their work.

Just the thought of Web services seems to make a lot of managers anxious. Why is that?

There's a lot of hype and confusion about Web services. Many businesspeople don't really understand what they are, but they sense there's an IT revolution going on, and they're worried they'll get left behind. Actually, we're in an evolution, not a revolution.

If you think about the ways that businesses have connected their distinct software in the past—say, for placing orders at one end and invoicing and shipping at the other—the problem has been that there have been so many different ways of doing it. If I have one software solution for connecting with you, and another solution for connecting with another partner, and so on with many partners, you can see that my IT department is spending a lot of time and money just keeping an increasingly complex system up and running. A Web service application is simply a piece of software that sits between my partners and me and allows all these disparate systems to communicate more easily. So if we can reduce the complexity of connecting systems together, we can either reduce our IT resources or put them to better use to make companies more efficient and competitive.

What's a real-world example of Web services changing how a company does business?

Bekins is a major shipping company. One of its units specializes in delivering high-value consumer goods, like large-screen TVs, from retailers to homes and businesses. To do this, Bekins uses a network of 1,600 agents, who own the trucks. In the past, when Bekins received a shipping order, if the centrally managed fleet couldn't handle it, the company used the phone and fax to place the job with a particular agent. The process wasn't always efficient, and it could be inequitable, since many agents had overlapping territories. The question was, what's a better way to connect orders and agents, and automate the process, given that they all used different systems and software?

Bekins built a Web-services-based system that essentially created a virtual marketplace in which agents could select jobs. When Bekins got a shipping order, the company would tender it via Web services simultaneously to all the agents who'd signed up for the system. Any agent could accept the job, and once accepted by an agent, it would become unavailable to the others. The result has been increased efficiency, faster response time, less idle time for trucks, and more satisfied retailers. And because of the system's efficiency, Bekins is also able to accept lower-margin jobs that it would have passed on before. The system is expected to increase shipment volumes and deliver increased revenue to Bekins by as much as $75 million annually.

Many companies are developing Web services software—Oracle, Microsoft, IBM, and Sun, among others. If I'm a company considering using Web services, shouldn't I wait to see who will become the dominant player?

I don't believe there will be a dominant player in the long run. To be honest, Web services are like plumbing. Houses have standardized pipes; they're all designed to connect, and there are rules about how you connect them. Web services are like these standardized pipes. There isn't one single pipe supplier—there are many, and their pipes are all compatible. The pipes are less interesting than the fixtures at the ends. The fixtures—the software that Web services technology connects—is where the value is going to be, and that's where we think IBM and our customers will come out ahead. At the risk of forcing the analogy: Once the plumbing is installed and it works, you don't think about it. Web services will be the same way. Much of it will become invisible, and managers will focus on what Web services allow them to do—things like searching across multiple suppliers simultaneously for the best price, outsourcing operations, and connecting with an acquired company's systems. I'm not saying you can't do those things somehow, some way, right now. What Web services can do is standardize and simplify these activities.

With so many disparate systems being connected through Web services, shouldn't companies be concerned about security?

Security is a hot topic right now, for very good reasons. It's a major area of Web services development, and it needs to be a lot more sophisticated than the security you use to send credit card data over the Web. For example, imagine I have a business that keeps all employee information in-house in an ERP system. My employees can sit down at our intranet portal, enter their serial numbers and passwords, and get full access to their job and salary histories, 401(k) accounts, and so on. Security is provided in some way so that only the appropriate people can view and update HR data. Now, suppose I want to outsource all these HR functions to a specialized company that can provide greater value and additional features. This company has many clients and its own security system. I am not willing to change my intranet security infrastructure to match the HR company's, since my infrastructure is used elsewhere in my enterprise and, after all, I'm paying for the outsourcing. Can we somehow bridge this divide so that I can outsource securely and my employees can still seamlessly access their data? The IT industry is now working on standards to provide these kinds of security features. There's a good road map showing what needs to be done, and you should see standards-compliant Web services security products from several vendors by the end of this year.

Are we past the point of early adoption?

Web services are about three years old, so we're past the time when the earliest adopters decided to take a risk on an unproven technology. It's not at all a wild frontier out there now. I'd say we're in the early mainstream period. There will be continued standardization of components that make up Web services, and that process should be complete around the end of 2005. For many companies, downstream it's not going to be a very active decision to use Web services because the services will be built in semiautomatically by the software-development tools that are or will shortly be available. So, over time, as companies build applications, Web services will sneak in there. It will be kind of a stealth technology.

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Laughing All the Way to the Bank

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Who hasn't sat with a frozen smile while the boss tried to be funny? At best, a boss's inept delivery is harmless. At worst, it can undermine his leadership. If his humor is seen as sarcastic or mean-spirited, it will certainly alienate the staff. But what about humor that's handled well? More than four decades of study by various researchers confirms some common-sense wisdom: Humor, used skillfully, greases the management wheels. It reduces hostility, deflects criticism, relieves tension, improves morale, and helps communicate difficult messages.

All this suggests that genuinely funny executives perform better. But, to date, no one has connected the dots. I set out to see if I could link objective measures of executive humor with objective performance metrics. My first study involved 20 male executives from a large food and beverage corporation; half had been characterized by senior executives as "outstanding" performers and half as "average." All the executives took part in a two- to three-hour interview that probed for qualities associated with high job performance. Two raters then independently evaluated the interviews, counting the number of "humor utterances" and coding the humor as negative, positive, or neutral. Humor was coded as negative if it was used to put down a peer, subordinate, or boss; positive if used to politely disagree or criticize; and neutral if used simply to point out funny or absurd things.

The executives who had been ranked as outstanding used humor more than twice as often as average executives, a mean of 17.8 times per hour compared with 7.5 times per hour. Most of the outstanding executives' humor was positive or neutral, but they also used more negative humor than their average counterparts. When I looked at the executives' compensation for the year, I found that the size of their bonuses correlated positively with their use of humor during the interviews. In other words, the funnier the executives were, the bigger the bonuses.

Another study I conducted involved 20 men and 20 women who were being hired as executives by the same corporation. As in the first study, I measured how they used humor during two- to three-hour interviews. This time, the interviews were conducted during the hiring process, and performance was measured a year later. Executives who were subsequently judged outstanding used humor of all types more often than average executives. And, as in the first study, bonuses were positively correlated with the use of humor—in this case, humor expressed a year in advance of the bonuses.

Humorous Intelligence

How could simply being "funny" translate into such an objective measure of success? The answer is that it's not a simple correlation, a matter of direct cause and effect. Rather, a natural facility with humor is intertwined with, and appears to be a marker for, a much broader managerial trait: high emotional intelligence.

In 1998, research by the Hay Group and Daniel Goleman found that superior leaders share a set of emotional-intelligence characteristics, chief among them high self-awareness and an exceptional ability to empathize. These qualities are critical to managers' effective use of humor. They can make the difference between the pitch-perfect zinger and the barb that just stings.

Consider this hypothetical example: A new product from an ace software-development team is aggressively fast-tracked and brought to market by a confident manager, but the software is found to contain a bug. Embarrassing reports about the gaffe are showing up in the national news, and the team is feeling exposed, defensive, and perhaps a little defiant. The team members gather in a conference room, and in walks the boss's boss. A low-EI leader, unaware of the team's complicated mood and unable to fully appreciate his own discomfort, might snap: "Which one of you clowns forgot the Raid?"—a jokey, disparaging reference to the team's failure to debug the software. That kind of comment is likely to do more harm than good. But imagine the same team, the same mistake, and a more emotionally intelligent boss who grasps not only the team's fragile mood but also his own complicity in the mistake. Sizing up the room, he might quip, "OK, if the media's so smart, let's see them debug the product!" The remark defuses tension and shows that the boss understands the team's formidable challenge.

In my studies, outstanding executives used all types of humor more than average executives did, though they favored positive or neutral humor. But the point is not that more humor is always good or that positive humor is always better than negative, disparaging humor. In business, as in life, the key to the effective use of humor is how it's deployed. Don't try to be funny. But do pay closer attention to how you use humor, how others respond to your humor, and the messages you send. It's all in the telling.

The Put-Down: A Guy Thing

Female executives in this research consistently used more humor than their male counterparts, but men used more put-down humor. Women were more likely than men to use complimentary humor or humor that otherwise expressed caring, warmth, and support; they used significantly less humor that put down subordinates and marginally less that put down superiors. Researchers have shown that in interpersonal relations, men tend to assert rather than downplay status differences, while women do the opposite. Although people of both sexes use humor largely to build bridges, some organizational psychologists believe that for men, put-down humor may also be a way to establish and maintain hierarchical status.

The Put-Down: A Guy Thing; Textbox

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