Breakthrough Ideas for 2008

The List in Brief

Here Comes the P2P Economy
Stan Stalnaker
Peer-to-peer information networks portend a broader economic model in which consumers become consumer-producers, buying and selling on a small scale in a growing number of industries. The result: a truly distributed economy that generates micro-income streams for individuals. **WEF | HBR**

Task, Not Time: Profile of a Gen Y Job
Tamara J. Erickson
Compensating employees for what they actually do rather than the hours they log is not a new idea. Managers will need to re-embrace this preindustrial concept as the practical realities of work change along with the expectations of the new generation of workers.

A Doctor's Rx for CEO Decision Makers
Jerome Groopman, MD
In medicine, misdiagnosis can bring great harm to a patient. Lessons in how to prevent errors in medical thinking have clear applications for business decision making—and for the well-being of a company, its employees, and its CEO.

Understanding Opposition
Michael Sheehan
Corporate leaders are great at competition but baffled when they face opposition. They can learn from politics the strategies of co-opting an antagonist's goal and redefining an issue so that it favors their stance. They can also deflect the blows to a different target.

The Board Meeting of the Future
John J. Medina
Imagine a brain-friendly workplace where board meetings are conducted on treadmills, desks are equipped with stationary bicycles, and people wear gym clothes, not suits. Sound like a futuristic fantasy? The reality is that current work environments inhibit brain performance, and that's not good for business.

How Honest People Cheat
Dan Ariely
Understanding the conditions that constrain or worsen cheating behavior is essential to the conduct of business. Our consciences impose limits, but we are highly adept at rationalizing dishonesty, and doing so becomes much easier when cheating is one step removed from cash.

Lies, Damn Lies, and Lie Detectors
Paul Root Wolpe and Daniel D. Langleben

Accurate, reliable lie detection using functional MRI technology may well be within our grasp. The potential applications in business and elsewhere are many, but peeking inside people's brains is a delicate matter that interested firms will want to handle with the utmost care. **WEF | HBR**

The Cybercrime Service Economy

Scott Berinato

If you assume that a product claiming to help you hack must be an expectorant, think again. There are now criminal hacking enterprises that provide services to help others steal. Tech-savvy thugs are becoming cybercrime service professionals, and their growing client base is a new threat to your company's security. **WEF | HBR**

Sick Transit Gloria

Mark Kuznicki, Eli Singer, and Jay Goldman

Social networking technologies can help in achieving large-scale change. A primer comes from Toronto, where these tools brought together an array of stakeholders in the city's transportation system and served as a medium for dialogue during a highly effective in-person collaboration.

The Gamer Disposition

John Seely Brown and Douglas Thomas

The attributes your workforce needs in the twenty-first century are those that online games foster. Players become oriented toward change and the bottom line; they appreciate the power of diversity and the fun in learning; and they seek better ways to solve problems.

Making Alternate Reality the New Business Reality

Jane McGonigal

Acting as the puppet masters of custom-designed alternate reality games, leaders can tap broad collaboration to solve specific problems, forecast opportunities, and innovate dynamically. The enterprise counterpart of what is now niche entertainment could become the new operating system for real-world business.

The Metaverse: TV of the Future?

Miklos Sarvary

The next dominant internet interface is likely to be the *metaverse*, where people interact and do business through avatars that actually inhabit the virtual space. Lessons for how companies should prepare to compete and survive in that environment come from historical parallels in the early days of broadcasting.

Giving Avatars Emote Control

Judith Donath

As virtual worlds become hubs of social and business activity, people will need to decide how much of themselves to reveal in their avatars. Where on the veracity continuum will you want to place your surrogate, and how far will representational technology allow you to go?

Happy Metadata Trails
Jan Chipchase
The explosion in user-generated content will enable organizations to gain previously unparalleled views of the buying public. In this brave new world of aggregated data, you'll be able to chart paths to customers with pinpoint accuracy. But trails that are richly plotted may be as dangerous as poorly mapped ones.

My BlackBerry Ate My Accountability
Lew McCreary
Personal devices have grown so prosaic as to become all-purpose, dog-ate-my-homework dodges for busy businesspeople. If you and your employees are tempted to let technological inventions encourage excuse invention, put yourselves on notice: That dog won't hunt anymore.

On the Back of a Turtle, I See a City
Jaime Lerner
Like a turtle shell, the city of the future bespeaks purposeful design. No accident of mindless sprawl, no cancer on the landscape, it is a sustainable place that integrates work, leisure, and the natural environment. It is where businesses will need to operate and what they must first help to create.

Socially Responsible Lobbying
David Vogel
When lobbying the government is part of your CSR strategy, you gain competitive advantage over less socially responsible rivals. The corporate and public benefits can prove to be substantial, both domestically and internationally.

China's Untapped Second Cities
George Pohle
The next horizon in the Chinese market are the 300 second-tier cities that together represent more than half of China's urban population and nearly two-thirds of its GDP. While competition saturates the top tier, the next level down is ready for foreign attention.

Islamic Finance: The New Global Player
Aamir A. Rehman and S. Nazim Ali
Financial institutions worldwide are increasingly complying with the values articulated in Islamic law, or sharia. The market for sharia-compliant finance is booming, and the rules that govern it hold important lessons for any financial firm that takes corporate social responsibility seriously.

What Good Are Experts?
Michael J. Mauboussin

Throwing experts at every problem your firm encounters won't get you the best solutions. Computers and the wisdom of crowds are often better. Experts are best when it comes to challenges that have rules-based solutions and that allow the solver a high degree of freedom.

Sustainable and Unsustainable Trends

Garrett Gruener

Stein's law tells us that things that can't go on forever don't. Curiosity and practicality prompt us to figure out which trends are ready to end and which will last a while longer. HBR's list of ten sustainable and ten unsustainable trends lets you peek into the future. **WEF | HBR**

WEF | HBR indicates articles codeveloped with the World Economic Forum.• • •

Breakthrough Ideas for 2008

Changes that appear to be sudden have usually been taking shape for years. The HBR List captures 20 transformations at single points in their development. Some are nascent and a little blurry, others sharper-edged and approaching maturity. Quite a few are surprising, while others elaborate on familiar forms.

As a whole, this year's roster signals a gathering upheaval in the way businesses function and how leaders guide them. Among the change agents are young "natives" of social-networking websites, multiplayer online games, virtual worlds, and related domains. The outgrowths include novel operational models, alternate realities for accomplishing work and interacting with customers, the exaltation of collaborative technologies, and updated metrics for evaluating performance. Abrupt as these transformations may seem, we have watched them all sprout from uncertain seedlings. We will continue to look on with curiosity as they grow and multiply.

To assemble our list, our editorial team canvassed its cadres of expert authors; sought ideas from editors at HBR's international editions and from visitors to our website; and held a brainstorming meeting in partnership with the World Economic Forum in Napa, California, last June. In January 2008, we cohosted a workshop on sustainable and unsustainable trends with the WEF at its meeting in Davos. (**WEF | HBR** identifies the pieces we developed with the WEF.)

Please enjoy the 2008 HBR List, and share your reactions at thelist.hbr.org.

Here Comes the P2P Economy

by Stan Stalnaker

Peer-to-peer, or P2P, networks have thrown the media industry into turmoil, changing the flow of information from a one-to-many model (with newspaper publishers, Hollywood studios, and big music companies as the sources) to a many-to-many model (with blogs, YouTube, and file-sharing forums as the venues). The ability of individuals to both consume and *create* content—news, movies, and music—greatly threatens traditional players. Witness the struggles of established U.S. newspaper publishers—the share prices of the four largest have fallen between 10% and 50% during the generally rising market of the past three years—because of challenges from new media and advertising models, including P2P schemes.

A shock like the one that jolted the media is poised to strike other industries, perhaps more disruptively. It is already being felt in financial services. Start with the phenomenon of microcredit: the lending of small sums to, and then within, social groups at the village level in poor economies, with members collectively guaranteeing the bank's loan. Combine that with the power of a global digital network, and a new model for banking begins to take shape.

Indeed, P2P financial systems are set to reprise in the banking industry what has happened in media. Already, websites like Kiva.org, Prosper.com, and LendingClub.com have extended microbanking to consumers in developed economies. In such systems, everyone is a tiny bank, making it easier to raise small amounts of capital among people who know—or at least, because of their social network, trust—one another.

It is only a matter of time before these digital systems close the arbitrage enjoyed by large banks, which lend at up to 15% interest but pay only about 5% on capital. Why do business with a bank when your network's lending and savings interest rates are both 7%? To grasp the power of such a system, imagine your local credit union with the membership and social networking capabilities of MySpace.

Furthermore, people will soon use *personal* currencies to make payments for "knowledge services" provided by other individuals, such as social introductions and shopping tips. These currencies will be traded on exchanges at floating rates determined by the market in real time. Like national currencies, personal currencies derive their value from the reputation and size of the network—status as an expert and number of friends, in this case, rather than market expectations and size of the economy.

An even greater shock could hit the energy industry, transforming it into a network that would make the current electricity grid seem rudimentary. Again, the consumer-producer would be the driving force. Some people are already installing home-based solar or other energy sources that allow them to sell electricity to the grid. Companies are using the roofs of their buildings for installations that turn the facilities into net power producers. Energy

production and distribution could ultimately shift from a few key players to many participants.

The real breakthrough will come when cars generate more electricity than they consume—not as outlandish as it sounds. Hybrid vehicles currently take the kinetic electricity generated by braking and use it to help fuel motion and prolong battery life. Kinetic and battery technologies could improve to the point where cars generate excess kinetic power from their motion to be stored and sold back to the grid for micropayments.

These successive and ever more disruptive P2P shock waves foreshadow a distributed economy in which consumption is transformed into production that provides micro-income streams for individuals. The greater efficiency of such a system would help us all to live closer to sustainable economic equilibrium—which would be, on the whole, quite a pleasant shock. **WEF | HBR**

Stan Stalnaker *is the founder of Hub Culture, an international online and off-line social network. He is the author of* Hub Culture: The Next Wave of Urban Consumers *(John Wiley & Sons, 2002).*

Task, Not Time: Profile of a Gen Y Job

by Tamara J. Erickson

Jobs have long been structured primarily around units of time—a 40-hour workweek, an eight-hour day. The time you spend—or are supposed to spend—determines whether you are working full or part time, with implications for compensation and other benefits. Face time can serve as a proxy for commitment and ambition. But that comes as a bit of a surprise to many of today's newest employees. Generation Y workers (born since 1980) clearly prefer jobs defined by task, not time. They want to be compensated for what they produce.

That's not a new concept. Workers in agricultural and craft-based economies were rewarded for output—bushels of wheat, the number of cups or bowls. Even in the early days of the Industrial Revolution, workers were paid by the piece. With the advent of the industrial economy, however, piecemeal pay preserved too many irregularities in an increasingly scientific and mechanized approach to management. Production shifted from the discrete output of individual workers to a complex, integrated process in which it was difficult to isolate tasks. Logging time made more sense. Post-Depression regulations and the rise of unionization soon led to standardized hours.

The economy has shifted again, though, and the drumbeat for another change is intensifying, sounded largely by Generation Y—a vital resource for talent-hungry corporations. Many younger employees find they can complete tasks faster than older workers, perhaps partly because of technological proficiency but even more, in my view, because they work differently. They spend less time scheduling and are comfortable coordinating electronically. They resent being asked to log hours and stay in the office after their tasks are done, and the idea of face time really annoys them. Ys love to work asynchronously—anytime, anywhere. One said during our research, "What is it with you people and 8:30 am?"

Practical realities are also moving us toward a task-based definition of jobs. Who can say how long it takes to write a piece of software? Many salaried knowledge workers are already effectively paid for tasks rather than time. Allowing telecommuting and flexible hours is essentially trusting that the task will be accomplished, even when people working from home are expected to put in a specified number of hours. And institutionalizing task-based job definitions is arguably fairer than arbitrarily approving flex work and telecommuting—an approach as ripe for favoritism as the piecemeal systems of the preindustrial age. As virtual work continues to spread (already 40% of IBM employees have no official offices, for instance), it's time to match the stated expectation to the operational reality.

What would that look like? At Best Buy's headquarters, more than 60% of the 4,000 employees are now judged only on tasks or results. Salaried people put in as much time as it takes to do their work. Hourly employees in the program work a set number of hours to comply with federal labor regulations, but they get to choose when. Those employees report better relationships with family and friends, more company loyalty, and more focus and energy. Productivity has increased by 35%, and voluntary turnover is 320 basis points lower

than in teams that have not made the change. Employees say they don't know whether they work fewer hours—they've stopped counting. Perhaps more important, they're finding new ways to become efficient: "Do we really need this meeting?"

Going forward, we can devise a better model of how to define work. Think task, not time:

- Articulate the results you expect—and tie accountability to getting the job done.
- Make physical attendance in the office, including at meetings, optional.
- Gauge performance on the quality of the work performed.
- Help managers and employees learn to measure dedication in ways other than face time.
- Use today's networking capabilities to allow employees to work from anywhere.
- Support the changes by creating drop-in centers, team spaces, and open work areas.

Shift your definition of work from a place your employees go for a specified period to something they do—anytime, anywhere. Task, not time—a model that dominated employment until a century ago—is a powerful way to draw in the newest crop of workers.

Tamara J. Erickson *is the president of the Concours Institute, the research and education arm of BSG Alliance. She is based in Boston.*

A Doctor's Rx for CEO Decision Makers

by Jerome Groopman, MD

Doctors, like business leaders, make mistakes. Some errors are purely operational. A pint of blood is mistakenly transfused into Joan Smith rather than Jane Smith, and Joan goes into shock. A young doctor writes an incorrect dose of chemotherapy on an order sheet, and a woman with breast cancer dies from the toxic effects of overtreatment. A neurosurgeon operates on the wrong side of the brain because an X-ray was mislabeled as "right" rather than "left." These kinds of errors make headlines, trigger lawsuits, and terrify patients and their families; in the academic world, such mistakes prompted the Institute of Medicine to publish the landmark article "To Err Is Human" in 1999. Leaders in health care took the IOM recommendations to the business world for solutions. Lessons learned in high-risk industries such as air travel and nuclear energy were applied to hospitals. Anyone who has recently had a medical procedure or treatment has benefited from the checks and double checks that have become routine. To ensure that the right patient receives the intended care, health care professionals, like airline pilots, now follow strict protocols.

However, operational mistakes account for only a small percentage of medical errors. The overwhelming majority reflect poor thinking. In fact, 15% to 20% of all medical conditions are misdiagnosed. A middle-aged man's indigestion, treated with antacids, turns out to be a heart attack; a child's chronic headache is due not to "family stress" but to a brain tumor; a grandmother's fading memory is not early Alzheimer's disease but vitamin B_{12} deficiency. Such diagnostic errors reflect shortcomings in physicians' thinking rather than technical mistakes. In 2007, a national conversation began in the medical field about how best to address these errors of judgment. Business practices were not the solution this time; in fact, CEOs and other senior managers would do well to adopt the strategies that physicians are pursuing.

Senior doctors, like CEOs, traditionally have cast themselves as confident, autonomous decision makers; they take pride in their rapid analyses and sure-footed recommendations. Their judgments filter through the hierarchy in much the same way that decisions in a company are disseminated from the corner office. However, in sharp contrast with most businesses, hospitals convene regular meetings where all faculty and trainees—from the chief to the beginning medical student—revisit cases that had poor outcomes. At these forums, participants are beginning to dissect doctors' misguided thought processes, not just discuss bodily organs. This shift has required that even the most esteemed physicians acknowledge their fallibility in an effort to teach others and to improve themselves.

Medicine is drawing on the work of cognitive scientists—particularly Amos Tversky and Daniel Kahneman, who three decades ago explored the benefits and risks of heuristics, or shortcuts in thinking. Heuristics help to explain the 15% to 20% of cases where we get it wrong. My extensive research on misdiagnoses shows that even the most seasoned physicians are highly susceptible to anchoring error, or seizing on the first bit of clinical information that makes an impression. Similarly, all doctors recall dramatic past cases of

theirs and mistakenly apply them to the case at hand, a so-called availability error. Another cognitive trap is attribution error, whereby a physician relies on a stereotype to which he attributes all of his patient's complaints. Menopause, old age, and stress are common categories that physicians glibly invoke as explanations for vague symptoms without digging more deeply for other causes. Contrary to the image of the doctor as authoritarian, dismissive of criticism, and resistant to self-analysis, physician leaders are starting to welcome the insights of cognitive science to help them avoid errors of judgment, in part because they have recently seen the benefits of rectifying operational errors. By making themselves vulnerable, physician leaders have now begun to encourage those lower down in the hierarchy to question decisions more freely and think more broadly.

I recently asked business leaders in manufacturing, real estate, and banking how misdiagnoses in their industries are handled. I learned that formal decision-making reviews are rare. CEOs are seldom challenged by employees. Moreover, executives are still lauded for being rapid decision makers who rely on their own minds; they know little about innate susceptibility to cognitive biases. The format of clinical conferences, where the tools of cognitive science are used to air and dissect errors in physicians' judgment, can become a part of every business enterprise. All managers, including the CEO, should be open to the kind of self-analysis that doctors now employ. Thinking errors in medicine can mean the death of a patient. Similar cognitive errors in a company can have profound implications for the future of the organization, its employees, and the CEO.

Jerome Groopman, MD*, is the Dina and Raphael Recanati Professor of Medicine at Harvard Medical School and the chief of experimental medicine at Beth Israel Deaconess Medical Center in Boston. He is also a staff writer for the* New Yorker*. His most recent book is* How Doctors Think *(Houghton Mifflin, 2007).*

Understanding Opposition

by Michael Sheehan

Top executives are good at competing, but when they come up against opposition rather than competition, they flounder. The problem is getting worse because, for a variety of reasons, businesses face better organized and more vocal opponents than ever before.

What distinguishes opposition from competition? Consider soft-drink vending machines in schools. What we saw a few years ago was a standard face-off between the world's two most competitive companies, each trying to present the better deal to local school boards. But the people who really needed to be persuaded were parents and public interest groups concerned with childhood obesity. They didn't care whether Coke was better than Pepsi. They didn't want soft drinks in the schools, period.

When companies mistake oppositional situations for competitive ones, they adopt approaches that don't match the terms of engagement. Worse, their missteps can lead to serious setbacks. When a waste disposal business met opposition to a new plant, management made what it considered a reasonable attempt to sweeten the deal: It offered to build a new community recreation center. Instead of being hailed for its generosity, it was accused of making a callous bribe. By falling back on negotiation reflexes developed in competitive situations, the company only dug itself into a deeper hole.

Better approaches are found in politics, where leaders tend to face opposition more routinely. Their experience underscores the importance of stepping back from the fray to assess its dynamics. Who is on the other side of the table, and why? What is that side's ultimate goal? How can it be met with your help?

One way is by co-opting your antagonist's issue. If, for example, you disagree with Michael Moore's demand for single-payer universal health care, clashing with him head-on is probably not the best approach. Instead, understand why he's getting traction with middle-class America and small business owners: because he holds out the prospect of lower health care costs. Adopt that as your goal and propose an alternative road for getting there. Rather than be negative, give Moore's campaign a nod and treat it with a trace of indulgence—his heart is in the right place.

In other situations, the key is to redefine the issue. In California, voters have been asked to decide whether parental notification should be required for minors seeking abortions. Research I've been involved in there shows that voters who see this as a challenge to parental rights are inclined to say yes; those who see it as a threat to girls' safety say no. This kind of situation is always a tug-of-war. To prevail, you have to get people to view the issue on your terms.

Somewhere between co-option and tug-of-war lies what I call a deflection strategy. The most famous example comes from the tobacco industry. When, in the 1980s, indoor smoking bans

came on the scene, the industry embraced the campaign for clean air in buildings. But it fingered a non-tobacco culprit: It claimed that overzealous property managers, in pursuit of energy efficiency, had made buildings airtight. Cigarette smoke was a minor annoyance compared with the chemical discharges from copy machines, carpet adhesives, and other contributors to "sick building syndrome." The solution was to engineer efficient ways of bringing more fresh air into facilities. Although the strategy wasn't ultimately successful, it stymied the inevitable bans for several years.

Once management learns to distinguish opposition from competition, it can use its newfound skills proactively. A community hospital in the Midwest did this when threatened by a potential new entrant in its market. The competitor, a large national chain, proposed to build a state-of-the-art orthopedic hospital. Next to the aging incumbent, its value proposition came through loud and clear: "Why shouldn't this community have as good as they have in Boston?" The competitor required only a "certificate of need" to begin building its new facility. The community hospital mustered opposition using the kind of run-at-their-strengths strategy Karl Rove made famous in politics. Noting the $88 million price tag for the chain's 84-bed facility, it raised this question: "So, we've got a project that is proposing million-dollar beds?" With that reframing, the battle was over before it began. Certificate of need denied.

Michael Sheehan *is the founder and president of Sheehan Associates, a communications consultancy in Washington, DC. He was a media coach for President Bill Clinton.*

The Board Meeting of the Future

by John J. Medina

If you wanted to create a work environment in direct conflict with what the brain is equipped to do, you'd design the standard cubicle. Instead, imagine a brain-friendly workplace where board meetings are conducted on treadmills, desks are equipped with stationary bicycles, and people wear gym clothes, not suits.

The Brain's Active History

If our ancestors sat still in the savanna for eight hours straight—heck, for eight minutes—they became somebody's lunch. Our brains developed while we walked about 12 miles a day, seven days a week, for several million years.

How Exercise Jogs the Brain

- Exercise improves the blood's access to specific brain regions and stimulates learning cells to make brain-derived neurotrophic factor, or BDNF, which acts like cerebral Miracle-Gro for neurons. If you want more of this natural fertilizer, you can't be a desk potato.
- The brain's executive functions—higher-order capacities valued by businesses everywhere—respond to exercise. They help an engineer both design a satellite and resist hitting his boss during a performance review.
- Just as roads improve access to goods and services, exercise makes it easier for oxygen to get to overworked tissues, via the blood, and absorb toxins. Thanks to exercise, the body's natural hazmat teams reach more tissues and do a better cleanup job.

Clinical Proof: Food for Thought

- You learn 20% faster immediately after exercise than after sitting still.
- An active lifestyle reduces the risks for Alzheimer's disease, dementia, anxiety, and depression—and for hospital visits. It doesn't take a brain scientist to see the inverse relationship between exercise and health care costs.

- Study participants who jog for 30 minutes two or three times a week for 12 weeks improve their cognitive performance. When they stop the exercise regimen, the cognitive benefits evaporate.
- The cognitive benefits of exercise have been demonstrated in older people, the middle-aged, and even overweight Japanese fourth graders.

The Brain-Friendly Workplace

- Treadmills are installed in the office. Morning and afternoon exercise breaks are encouraged.
- Workstations include stationary bicycles that fit under the desks. Employees keep their legs moving while answering e-mail.
- At board meetings, people wear gym clothes and walk on treadmills at about 1.8 miles per hour—to cool down right after a period of intense physical activity.
- In a competitive climate, exercise is as close to a magic productivity bullet as you'll get.

John J. Medina *is a molecular biologist who works as a private consultant and teaches at the University of Washington in Seattle and at Seattle Pacific University. He is the author of* Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School *(Pear Press, 2008).*

How Honest People Cheat

by Dan Ariely

There are two basic conceptions of cheating. One holds that people are fundamentally dishonest and look actively for opportunities to cheat. A person walks by, say, a gas station, considers how much money is in the till, who might be around to stop the theft, and what punishment awaits him if caught (including potential time off for good behavior). On the basis of a cost-benefit calculation, the would-be thief decides whether to rob the place. The second notion is that people are basically honest. They are not out there scoping for chances to cheat, but circumstances tempt them. They "borrow" a pen from a conference, take an extra splash of soda from the soft drink dispenser, exaggerate the value of a television on a property loss statement, or falsely report a meal with Aunt Nava as a business expense (well, she *did* ask how work was going). How prevalent is this kind of dishonesty, and what drives it?

My fellow researchers and I tempted a few thousand "honest" people to cheat in a set of scientifically controlled experiments at Harvard Business School, MIT, Princeton, UCLA, and Yale. Participants were paid about 50 cents for each correct response to a set of 20 simple math problems that they had five minutes to complete. In control groups, the answer sheets were graded—on average, the participants correctly answered four problems. But in experimental groups, answer sheets were blindly shredded so that respondents knew that it was impossible for us to tell whether they had answered the questions correctly. In effect, participants could simply lie and receive more money than they had legitimately earned. On average, they claimed to have correctly solved two problems more than they knew they had (six rather than four). That is, given the chance, the majority of people cheated by about 50%. Viewed from a different angle, however, they lied about only two of the 16 problems they did not solve—12.5% of their cheating opportunity.

The results grew more interesting when we tried to understand the circumstances that influence the degree to which people cheat. First, we found that the risk of being caught did not change the level of dishonesty. For example, allowing participants to avoid revealing any sign of possible mischief (for example, by having complete anonymity in how much payment they took) did not affect the average level of cheating among them. Second, we found that getting people to contemplate their own standards of honesty (by recalling the Ten Commandments or signing an honor code) eliminated cheating completely. Finally, and perhaps most disturbing, we found that if payment was given in poker chips, which were exchanged for cash a few seconds later, the average level of cheating more than doubled.

These results point to a few interesting aspects of human nature. One is that most of us, when tempted, are willing to be a little dishonest, regardless of the risks. Another is that even when we have no chance of getting caught, we still don't become wild liars—our conscience imposes some limits. Finally, it's clear that we have an incredible ability to rationalize our dishonesty and that justifying it becomes substantially easier when cheating is one step removed from cash. Nonmonetary exchanges allow people greater psychological latitude to

cheat—leading to crimes that go well beyond pilfered pens to backdated stock options, falsified financial reports, and crony deals. Such latitude is the force behind the Enrons of the world.

Dan Ariely *is the Alfred P. Sloan Professor of Behavioral Economics at the Massachusetts Institute of Technology in Cambridge and a visiting professor at Duke University in Durham, North Carolina. He is the author of* Predictably Irrational *(HarperCollins, 2008).*

Lies, Damn Lies, and Lie Detectors

by Paul Root Wolpe and Daniel D. Langleben

Deceit is ubiquitous yet difficult to detect. It's no surprise, then, that throughout recorded history people have tried to devise techniques for detecting lies.

Until recently, we had not improved very much on the methods of the ancient Greeks, who took the pulse of a suspect under questioning—a rudimentary polygraph in concept. But recent research using functional magnetic resonance imaging, or fMRI, has begun to identify the areas of the brain involved in deception. These laboratory experiments (many done by coauthor Daniel D. Langleben) suggest that accurate, reliable lie detection is finally within reach. They have also sparked interest from the law enforcement, defense, and business communities. Two start-ups (No Lie MRI and Cephos) have already been launched to offer commercial fMRI lie-detection services.

THESE IMAGES depict functional MRI maps of brain activity when someone is lying (top) versus telling the truth. (bottom) Provided courtesy of Daniel D. Langleben, MD

Lying Versus the Truth These images depict functional MRI maps of brain activity when someone is lying versus telling the truth. Provided courtesy of Daniel D. Langleben, MD.

To be sure, more research in real-world situations is needed to prove the effectiveness of the technology. And if other MRI usage is any indication, fMRI lie detection will be expensive to employ routinely and could require subjects to travel to specialized centers for testing. Nonetheless, investigators of various stripes certainly want a reliable tool for getting at the truth, sometimes in life-or-death situations.

Less obvious, perhaps, is what businesses will want from fMRI-based lie detection. Although polygraph use in the private sector has been banned for most purposes since 1988, companies do have investigational needs, whether routine (for pre-employment screenings) or exceptional (to address fraud and embezzlement, IP theft, industrial espionage, claims of infringement, and leaks of confidential information). At the highest levels of organizations that have contentious cultures, loyalty itself—to the CEO and to the policies and principles of the enterprise—may become a target of inquiry. Board members could one day serve with the understanding that they will be subject to an fMRI examination if suspected of misconduct. Disputes between employees over credit for ideas and innovations, among other things, could be adjudicated using fMRI lie detection.

Because fMRI is a powerful, sophisticated medical technology, its use for lie detection raises numerous questions. Who, for example, should be licensed, and based on what criteria and training, to design and administer the testing and interpret its results? Who will be responsible for dealing with incidental medical findings (such as brain tumors) that may turn up on fMRI scans? Who should have access to the technology and the results? What are the ethical limits to its application? Is use on suspected terrorists and criminal defendants appropriate? Are employees also fair game, and, if so, should they be subjected to any inquiry an employer wants to pursue?

Critics and proponents alike have raised concerns about the rush to commercialize fMRI lie detection before it undergoes the kind of scientific scrutiny that would be standard for a drug or a medical device. Indeed, some have argued that MRI should be regulated for use in lie detection just as it is for medical diagnosis.

Although fMRI holds significant potential for cracking the problem of lie detection, businesses may reasonably decide to tread carefully before adopting it. Like other tools used to scrutinize employee behavior (surveillance cameras, software for monitoring e-mail and internet use), fMRI has the potential to influence corporate culture and the level of trust between workers and employers. Courts and legislatures will inevitably become involved as society tries to define reasonable limits. After all, fMRI literally looks inside people's brains—a sensitive endeavor. And that's no lie. **WEF | HBR**

Paul Root Wolpe, PhD*, is an associate professor of sociology in psychiatry and a senior fellow in the Center for Bioethics—and* Daniel D. Langleben, MD*, is an assistant professor of psychiatry—at the University of Pennsylvania School of Medicine in Philadelphia.*

The Cybercrime Service Economy

by Scott Berinato

Anyone who doubts that internet commerce faces serious threats from online criminals should consider this: Criminal hacking has spawned a full-blown service economy—one that supports growing legions of relatively lower-skilled but fulsomely larcenous hackers.

In the past year, entrepreneurs, many of them based in Russia, have begun to create criminal hacking enterprises aimed not at stealing but at providing services to help others steal. Business has quickly taken off. Per unit of risk—of apprehension, prosecution, and incarceration—enabling online crime pays better than perpetrating it directly. Criminal services entrepreneurs are netting millions of dollars a month. Some experts estimate that, all told, they earned $1.5 billion in 2007.

Last year, two Russians created a subscription-based identity theft service. Rather than steal personal credentials themselves, the two hacked into PCs and then charged clients $1,000 per compromised machine for 30 days of unfettered access. The clients are betting that during the 30-day period (one billing cycle) victims will bank or otherwise submit personal data online.

To offer their subscription service, the hackers contracted with yet another service provider to obtain a sophisticated distribution system for the illicit code, called a bot, that they would use to infect the PCs. That distributor enticed website owners to hide its bot on their sites by promising weekly payments based on the volume of traffic, much the way newspapers are paid by advertisers according to the number of visitors to their websites. Other service businesses aggregate large networks of compromised computers, called botnets, and rent out portions of their networks for whatever task the client has, perhaps to distribute spam, disable a competitor's website, or infiltrate a firm's network in order to steal intellectual property.

As with any service business, customers willing to pay extra can obtain premium offerings. The two hackers behind the subscription service will "clean up" your data—get rid of low-value information and generate helpful reports itemizing what you've stolen. The botnet rental operations offer ancillary consulting to maximize the effectiveness of your attack; some guarantee specified service levels or your money back.

The biggest factor driving the emergence of this new service economy is the obvious one: an explosion of online banking and shopping, coupled with consumers' increasing willingness to disclose personal information over the internet. For those with the technical skills, opportunities for exploitation are richer than ever before.

But something else is happening, too. Those gifted hackers are now enabling the far larger market of wannabes whose deficient skills would otherwise shut them out of the cybercriminal enterprise system. By creating services for those people, hackers can generate

huge profits without actually committing fraud. Gold prospectors may or may not strike it rich, but folks selling pans and pickaxes make a heck of a living either way.

What surprises some experts about this new service economy is just how innovative and vibrant it has become. The hackers code at a PhD level. Their solutions to problems are creative and efficient. They respond to market conditions with agility. Their focus on customer service is intense. If this loose collective of criminal hackers were a company, it would be a celebrated case study of success.

Cybercrime services are so sophisticated and powerful that they make one pine for the days of simple website defacements and e-mail viruses with cute embedded messages. The new breed don't just disrupt business; they threaten it by frightening customers and undermining commercial confidence. As the victims of online crime pile up, more and more of them will look for someone to hold responsible. And it won't be the hackers; it will be the brands that customers trusted to protect them. **WEF | HBR**

Scott Berinato *is the executive editor of* CSO *magazine (www.CSOonline.com) in Framingham, Massachusetts. He covers information security and cybercrime.*

Sick Transit Gloria

by Mark Kuznicki, Eli Singer, and Jay Goldman

The Toronto Transit Commission runs the third-largest public transit system in North America. Its buses, streetcars, and subways serve 2.4 million riders daily. The TTC was once hailed as a model of enlightened, well-run urban transportation, but in the mid-1990s underfunding and rapid population growth started to take a heavy toll. The system began to creak, and rider discontent became rampant.

A public entity, the TTC is obligated to consult regularly with its customers, a process that became increasingly contentious as rider frustration grew. In public meetings, cash-strapped TTC officials cowered as angry riders protested the system's aging infrastructure, from the rolling stock to the stations to the commission's once highly praised website. It was clear that communication was among the most badly broken parts of the system—an impediment to constructive action.

The stalemate might have persisted if not for the serendipitous convergence of social networking technologies, a growing army of technology and transit geeks, and an open-minded new TTC chairman named Adam Giambrone. He accepted a pitch from local bloggers on how to revitalize the TTC website: Use the geeks' lively networks as conduits for ideas.

On February 4, 2007, Giambrone and a number of other TTC officials participated in a unique live event dubbed TransitCamp. Created by members of the Toronto blogging community, the grassroots meeting melded citizen activism with crowd-sourcing. About 120 attendees used real-time Web 2.0 collaboration tools to engage one another live and in person. The happening emulated an innovative open-source problem-solving framework known as BarCamp. A BarCamp event is self-organizing; participants gather to think creatively, across disciplines, about areas of shared concern. Some BarCamp-style meetings last several days, and many attendees bring sleeping bags and extra clothes to "camp out."

In the case of the one-day TransitCamp, participants set out to collaboratively debug the transit system as if it were a complex piece of software and, ultimately, to reform riders' experience. The organizers (we were among them) set ground rules intended primarily to keep the tone constructive: TransitCamp was styled as a creative "solutions playground" rather than a gripe session. Among the participants were transit activists, ordinary riders, technology geeks, visual artists and designers, and web developers. Some of the TTC representatives in attendance came out of simple curiosity about the new community Giambrone was seeking to engage. Won over by the participants' passion, most of the officials canceled their other plans and stayed for the entire day.

TransitCamp was promising in both its process and its results. The on-site use of social networking tools allowed many ideas to be put forward quickly and iteratively as the day unfolded. The event moved the TTC to entirely rethink its website redesign plans. In impromptu closing remarks, Giambrone called the participants an inspiring voice for change.

The icy relations between the TTC and the riding public have since begun to thaw. A previously issued RFP for the new website was canceled and a new one was developed from the principles that were articulated at TransitCamp. The commission is still short of funds and facing possible service cuts and fare increases, but it has begun a frank, constructive online conversation with riders about which trade-offs make the most sense. A similar dialogue will soon take place in San Francisco, where the creators of BarCamp have organized TransitCampBayArea for late February 2008.

The TransitCamp experience demonstrates the power of a new, technology-supported model for social and community change. This model empowers citizens to engage cooperatively with public officials in an otherwise unlikely civic—and civil—dialogue.

TransitCamp reformed a transportation system by reinventing the way stakeholders collaborate with decision makers. To learn more, visit hbr.transitcamp.org.

Mark Kuznicki *is the principal at Remarkk Consulting.* Eli Singer *is the director of social media for Segal Communications, a Draftfcb agency.* Jay Goldman *is the president and cofounder of*

Radiant Core. All three authors are based in Toronto.

The Gamer Disposition

by John Seely Brown and Douglas Thomas

Today's multiplayer online games are large, complex, constantly evolving social systems. Their perpetual newness is what makes them enticing to players. Each generation of games begets a new generation of participants who develop what we call the *gamer disposition*. It's exactly the disposition you should want in your workforce.

The gamer disposition has five key attributes. More than attitudes or beliefs, these attributes are character traits that players bring into game worlds and that those worlds reinforce. We believe that gamers who embody this disposition are better able than their nongamer counterparts to thrive in the twenty-first-century workplace. Why?

They are bottom-line oriented.

Today's online games have embedded systems of measurement or assessment. Gamers like to be evaluated, even compared with one another, through systems of points, rankings, titles, and external measures. Their goal is not to be rewarded but to improve. Game worlds are meritocracies where assessment is symmetrical (leaders are assessed just as players are), and after-action reviews are meaningful only as ways of enhancing individual and group performance.

They understand the power of diversity.

Diversity is essential in the world of the online game. One person can't do it all; each player is by definition incomplete. The key to achievement is teamwork, and the strongest teams are a rich mix of diverse talents and abilities. The criterion for advancement is not "How good am I?"; it's "How much have I helped the group?" Entire categories of game characters (such as healers) have little or no advantage in individual play, but they are indispensable members of every team.

They thrive on change.

Nothing is constant in a game; it changes in myriad ways, mainly through the actions of the participants themselves. As players, groups, and guilds progress through game content, they literally transform the world they inhabit. Part of the gamer disposition is grounded in an expectation of flux. Gamers do not simply manage change; they create it, thrive on it, seek it out.

They see learning as fun.

For most players, the fun of the game lies in learning how to overcome obstacles. The game world provides all the tools to do this. For gamers, play amounts to assembling and combining tools and resources that will help them learn. The reward is converting new

knowledge into action and recognizing that current successes are resources for solving future problems.

They marinate on the "edge."

Finally, gamers often explore radical alternatives and innovative strategies for completing tasks, quests, and challenges. Even when common solutions are known, the gamer disposition demands a better way, a more original response to the problem. Players often reconstruct their characters in outrageous ways simply to try something new. Part of the gamer disposition, then, is a desire to seek and explore the edges in order to discover some new insight or useful information that deepens one's understanding of the game.• • •

Together, these five attributes make for employees who are flexible, resourceful, improvisational, eager for a quest, believers in meritocracy, and foes of bureaucracy. If your organization is receptive to these traits (and it should be), look for gamers and the disposition they will bring you.

John Seely Brown *is a visiting scholar at the University of Southern California and an independent cochairman of a new Deloitte research center.* Douglas Thomas *is an associate professor at USC's Annenberg School for Communication.*

Making Alternate Reality the New Business Reality

by Jane McGonigal

In the coming decade, many businesses will achieve their greatest breakthroughs by playing games—specifically, alternate reality games, or ARGs. Custom-designed ARGs will enable companies to build powerful collaboration networks, discover solutions to specific business problems, forecast opportunities, and innovate more reliably and quickly.

ARGs are immersive, massively multiplayer experiences that unfold in the course of people's real lives for days, weeks, or months. ARG designers, known as "puppet masters," distribute thousands of story pieces, puzzles, and missions via websites, e-mail, mobile messaging, online video, and podcasts. The players who receive these building blocks use wikis, social networking sites, chat rooms, and blogs to analyze clues, debate interpretations, devise mission strategies, predict game events, and ultimately build a common narrative.

Although commercial ARGs are, in relative terms, a niche entertainment genre involving several million players worldwide, their enterprise counterpart could eventually become a significant platform for real-world business—in essence, the new operating system.

Why? ARGs train people in hard-to-master skills that make collaboration more productive and satisfying. Playing an ARG teaches 10 collective-intelligence competencies. These include *cooperation radar*, a knack for identifying the very best collaborators for a given task, and *protovation*, the ability to rapidly prototype and test experimental solutions. Using these skills, players amplify and augment one another's knowledge, talents, and capabilities. Because ARGs draw on the same collective-intelligence infrastructure that employees use for "official" business, games will map directly to a familiar reality—no translation required.

Ten Collective-Intelligence Competencies

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As these competencies mature within a business, ARGs will provide a truly stimulating framework for doing everyday work. Few meetings are as engaging as an ARG, whose emerging narrative evokes players' shared sense of urgency and whose puzzles and clues deepen their curiosity. The structure for collaboration is clear, with players rallying around explicit goals and continually sharing theories, tactics, and results. Playing also generates compelling momentum: The puppet master monitors and rewards participants' efforts, and times the release of new challenges so that players experience multiple cycles of success.

Imagine using an ARG as a more vivid alternative to traditional scenario planning and business-simulation exercises. Recently, 1,700 players from 12 countries set out to manage a simulated global oil shortage in an ARG called World Without Oil, which I helped develop (visit http://worldwithoutoil.org). Players joined the game as individuals but coalesced over time into a powerful online collaborative network as they investigated the mysterious oil crisis, sharing what they'd learned. They leveraged their collective intellect to forecast fictional shifts in gasoline, diesel, and jet fuel prices and availability. They debated how shortages would transform many industries and disciplines. Finally, they devised interventions to mitigate these effects, producing plausible strategies for managing a realistic future dilemma.

The ARG framework allows players to grapple with risky potential realities yet remain safe from real-world consequences. It's easy to see, then, why businesses would want to bring custom ARGs to bear on particular competitive problems—including innovation. Eventually, games will become the go-to tools for launching internal initiatives, or they will rally global teams of outside "expert players" to engage in business forecasting. Ultimately, ARGs will involve customers in inventing new products and services or in testing companies' market assumptions.

In all these cases, business leaders will become the vital puppet masters, guiding collaboration, introducing complicating variables, and helping focus players' attention in promising new directions—not so very different from their job descriptions today. But their skills will be augmented by an ARG-based operating system that amps up collaboration in the service of strategy.

Jane McGonigal *is a speaker, writer, and consultant based in Palo Alto, California, where she designs alternate reality games and is an affiliate researcher at the Institute for the Future.*

The Metaverse: TV of the Future?

by Miklos Sarvary

Here's a familiar story: A new communications technology that allows one to broadcast live to millions of people appears on the scene. At first it's clunky, and the content is largely trivial and of poor quality. But serious players soon latch on, the content improves, and before long everyone tunes in, businesses flock to buy advertising time, and shares in related companies skyrocket.

That was the early history of radio. The parallels with the dot-com frenzy are eerie. (In fact, the broadcaster RCA used WWW, for World Wide Wireless, as its logo.) And the party was just as short: Broadcasting companies struggled to turn a profit, stock prices plummeted, and only a few players survived. Then came the Great Depression and World War II. By the time these traumas had passed, a new technology was on the block: television, which has been the dominant broadcasting medium ever since. Radio is very much the poor cousin.

All the signs are that the life cycle of the internet will continue to parallel that of broadcasting. The technology that produces websites as we know them is limited in its ability to exploit the mass interactivity that the internet can potentially deliver. Sure, people can communicate with one another instantly online and even form communities—but they do it blind, through a keyboard. Once again, there's a new technology that gets around the limitation.

Within five years, the dominant internet interface is likely to be the *metaverse*, a term used to describe interactive multiplayer games such as Second Life. In these new cyberworlds, companies will have not websites but, rather, virtual stores where their customers' avatars can browse and chat with assistants before trying on and eventually buying that dress, T-shirt, or tie. Why bother with a MySpace page when you can have your own room in a virtual clubhouse? Some companies already have these worlds in their sights: IBM, for example, is developing ways for people to move their avatars from one metaverse to another.

If the metaverse is the future of the internet, what should companies do to prepare for it? History once again provides clues. For starters, there's the network effect. Just as early television networks got a leg up by approaching advertisers and building a base audience in the 1960s and 1970s, companies that get their metaverses up and running early will poach a lot of customers from rivals that leave metaverses for another day.

Also remember that it took decades for TV networks to learn how to efficiently address audiences with appropriate content and advertising, which was essential for the broadcasting business model. That suggests that companies had better start to experiment with the technology while it is still a sideshow. How, for example, might a company like L'Oréal use the metaverse community to build a brand? We've asked ourselves just that kind of question at Insead. We know that the metaverse will be an important channel for our educational services, but we still have lots of questions about how best to attract students to

it and present material on it. So we've opened a virtual campus on Second Life to find the answers.

Finally, as was the case for broadcasting, metaverses will present a real challenge for governments and regulators. We already see important issues emerging around security, network reliability, property legislation, and taxation. Down the road, questions of infrastructure, software standards, and compatibility between potentially competing metaverses may also dog regulators, who will have the additional difficulty of coping with these matters on a global scale.

Miklos Sarvary *is a professor of marketing at Insead in Fontainebleau, France.*

Giving Avatars Emote Control

by Judith Donath

Millions of people have joined virtual worlds such as Second Life and There.com, creating avatars through which to socialize, explore, and conduct business. What makes virtual worlds so compelling, even in their current primitive form, is the presence of other people. We are inherently social creatures, deeply attuned to the nuanced actions and expressions of others, even other avatars.

However, the expressiveness of current avatars is limited. They can be moved next to each other to talk but often stare blankly into space, inert and unengaged. With virtual worlds poised to become major hubs of social and business activity, an important focus of research is how to make avatars more smoothly expressive—able to make appropriate eye contact, smile, show their interest or boredom, and so on.

Giving avatars this kind of expressiveness raises complex questions about how we present ourselves in virtual worlds. We will soon be able to choose avatars who span a spectrum of veracity in their expressiveness. Options will range from avatars with gracious but inauthentic scripted performances to avatars that convey extraordinarily candid, intimate, and potentially invasive views of their operators' interior lives.

In face-to-face interactions, our expressions signal our thoughts and feelings. A gaze indicates attention; narrowed lips reveal anger. Our expressions are reliable means of communication, but we can also edit and control them: We feign attentiveness when bored and maintain a poker face during intense negotiations. Expressions that do not match our underlying feelings are essential not only for deception but also for privacy and social graciousness.

In the not-too-distant future, we will choose the veracity of our avatars depending on our needs in each interaction, much as we now choose our communication media—video conference, phone, e-mail, IM—according to our desire for immediacy, accuracy, and control of the message. The choices for avatars' expressiveness will probably take one of three broad forms that fall on what I call the *veracity continuum*.

In the idealized form, personality programs will give avatars gestures and expressions that, though consistent, detailed, and convincing, are generated by the avatar not the user. You will be able to outfit your avatar with a preferred affective style to keep it in character—for instance, "brisk and businesslike," "elegantly European," or "rude and rebellious." This form will be suited for performative situations, such as online parties, sales demos, social games, and professional conventions.

In the representative form, which describes most current avatars, expressiveness is based on user commands, entered via keyboard or selected from a menu. Also in this category are experimental systems that use machine vision or gesture-sensing to match avatars' virtual expressions and movements with users' real-world behavior. When users laugh, or look

puzzled or bored, so do their avatars. The representative form, well suited for more personal communication, allows users the same revelatory and inhibitory control over their avatars' expressiveness that they have over their own.

At the most advanced end of the continuum is the interior form, which could enable your avatar to represent your thoughts, through its movements and expressions, with even greater veracity than you do in the real world. Technologies for such control range from simple methods such as galvanic skin response, which gauges your emotional state by essentially measuring how sweaty your palms are, to early-stage technologies that read brain activity to deduce your thoughts and feelings. Interior-form avatars might be desirable for tasks that require a high level of cooperation. Teams could use them to quickly assess when members have doubts or are excited about a new idea. The intensity of such communication might make working together virtually seem more intimate than being together physically. These technologies might also be used in competitive situations. During a business negotiation, one party might demand a move to the more revealing, interior-form avatar. If the other party resisted, would it be perceived as untrustworthy and evasive?

Although such mind reading is far from being commercially available, it is not too soon to be thinking deeply about the choices for expressiveness we may soon have in virtual worlds. When will you want to be in a solipsistic wonderland where everyone is beautiful and poised, where you learn little about your fellow humans yet still enjoy their company? When will you want interactions in which once-private responses become nakedly public? And when will you choose the extraordinarily delicate balance between revelation and control that characterizes your everyday face-to-face interactions?

Judith Donath *is the director of the Sociable Media Group at the Massachusetts Institute of Technology's Media Laboratory and a faculty fellow at Harvard Law School's Berkman Center for Internet & Society, both in Cambridge, Massachusetts.*

Happy Metadata Trails

by Jan Chipchase

The explosion in user-generated content will enable organizations to gain previously unparalleled views of customers. This has important implications for user privacy—and presents excellent opportunities for marketers.

To explain: Both user-generated digital content (an appointment made on a BlackBerry, photos taken on a cell phone) and passively generated data (your Skype profile, your GPS coordinates as revealed by your mobile phone, your Google search history) leave real-time trails or logs. As more and more activities "go digital," these data trails together chart patterns of user behavior. In some cases, a trail is apparent and part of the user experience; in others, people have a vague awareness of such a trail but don't understand how it is used. Some data trails—say, the recording of your car's license plate as you drive through the city—may be completely hidden from view.

In an increasingly connected future, the data trails from all these sources will create a massive universe of metadata. A new generation of devices will provide filters or lenses through which to view this universe. This technology will send constant signals that can be used in the aggregate. Even now in New York City, for example, taxis equipped with global positioning systems allow officials to study the migratory patterns of yellow cabs and come up with better ideas for traffic engineering. Alternatively, increasing amounts of data recorded from people wearing monitors for heart problems or diabetes can quickly reveal patterns of behavior among these populations in a way that long-term studies cannot, yielding a possible boon for the health care industry and insurance companies.

This is just the beginning. Soon it will be possible to view, sort, and mine these aggregations in new ways. For example, tools such as Google Earth, in combination with a cell phone that logs personal health parameters in real time, could allow an organization to, say, map levels of emotion in the population of certain city areas. If the Red Sox won a baseball game, data sent from a variety of tools could be accumulated to register tremendous excitement in the Fenway Park area of Boston. If you're a marketer who can read the emotions of large numbers of people in a geographical area, you will know not only where to put your next electronic billboard, but also what it should display at the moment. Cheers restaurant, for example, might post an ad saying "Come celebrate!" or "Drown your sorrows."

The ability to tap vast amounts of aggregated "people data" will have serious implications for behavior, ranging from the way individuals control their personal interactions and information to possible manipulation—for good or ill—by corporations and governments. All this raises fundamental questions about whom to trust with our data: Are you more comfortable backing up your digital life with your online provider or doing it off-line in your home? Which data set is more likely to be compromised?

Large organizations that have the ability to monitor aggregated data will have to resist the temptation to abuse it. Individuals and companies will need to find and walk a new line between serving customers and exploiting them, either way with pinpoint accuracy. In the brave new world of aggregated data, companies will need to monitor themselves as well.

Jan Chipchase *is a human behavior researcher on the design team at Nokia. He is based in Tokyo.*

My BlackBerry Ate My Accountability

by Lew McCreary

No sooner is a new tool invented than someone cooks up an off-label use. Sometimes an off-label application improves on the initially conceived one. For example, Thomas Edison originally intended the phonograph to be a dictation machine, not a source of entertainment. Soon enough wiser heads, and market forces, prevailed. Edison abandoned his folly and went into the recording business. Frequently, however, altering the intended use of an invention corrupts rather than elevates it—and its user.

Let's consider personal technologies, which have become means of shifting responsibility, tacitly or explicitly, to a device and away from oneself. Cell phones, for instance, have long been used self-importantly to showcase their users' raw power while the technology takes the heat for the offense. I recently overheard these swaggering words in an airport departure lounge: "You tell him I'm coming in there this afternoon to *fire* his ass!" Then there's mortifying exhibitionism—intimate, embarrassing lovers' quarrels or, worse, smarmy public displays of affection (which, by the way, is what PDA once stood for). Mobile phones have been used slothfully by people pretending to be too busy with a business call to be confronted about some dereliction of theirs. Camera-equipped models have been put to especially heinous misuse as tiny digital Peeping Toms wielded surreptitiously on escalators and beneath conference-room tables.

But my favorite example of off-label use of a PDA—call it "excuse technology"—is one involving Lurita Doan, head of the U.S. General Services Administration. Doan testified at a 2007 congressional subcommittee hearing into the alleged untoward politicization of her agency—namely, brown-bag lunches during which political appointees to the GSA were urged to use their positions to help elect Republicans. When asked under oath what transpired at these lunches, Doan said she had not been paying attention because she was doing e-mail on her BlackBerry.

I cast no aspersions on Doan's memory or motives. She spoke for many when she offered this perfectly plausible excuse for modern inattention. Technology has grown so prosaic as to become the all-purpose, dog-ate-my-homework dodge for busy grown-ups. Anticipate, therefore, epidemic levels of BlackBerry- and Treo-constrained recollection of important decisions made in your presence or of orders you've issued to your teams.

Forewarned is forearmed. You may be tempted to ban the use of these devices during important meetings and discussions. You will, of course, make sure that someone's on hand to take careful notes to then circulate among attendees, so that those present know they're accountable. And if employees are correct in believing that multitasking during boring meetings allows them to accomplish work of a higher value, ban those meetings.

Lew McCreary *is a senior editor at HBR.*

On the Back of a Turtle, I See a City

by Jaime Lerner

The city of today is too often a campground, an unchecked metastasis. It is either an ever-spreading Atlanta or Los Angeles—an endless suburb unable to contain and sustain itself—or a frightening Gotham of skyscrapers huddled over dark concrete valleys. It is a place without priority, logic, or true consideration of its residents' needs.

By contrast, consider a turtle's shell: a house upon the back of its self-sufficient occupant. Have you ever noticed that the meticulously organized outer surface resembles an aerial view of a city? The shell's pattern evokes the cells that constitute urban tissue—blocks, streets, and functional centers. A turtle-shell city is a place to live, to work, to relax and play. In all, it is a circumscribed, homey shelter.

This schematic drawing of a turtle can help you imagine some of the important features of the ideal urban environment, built upon principles of mobility, sustainability, and cultural identity. In the denser area of the turtle-shell city, identified by the taller edifices, you can find apartments, office buildings, mixed-use structures (with residential, commercial, and service functions), as well as street-level attractions—a bakery for morning bread, a fancy bistro for business lunches, a newsstand with reading material for bus rides, a town square, a church, an art gallery. Supporting the high-density area is an ecologically sustainable mass transportation system that, whether it operates on the surface or underground, is fast, safe, comfortable, and accessible to all. It's also part of a public transit network that extends throughout the community.

THE TURTLE was drawn by architects Fernando Canalli, Felipe Guerra, and Magali Pahl, who adapted it from a sketch by the artist Claudius.

The Turtle The turtle was drawn by architects Fernando Canalli, Felipe Guerra, and Magali Pahl, who adapted it from a sketch by the artist Claudius.

The turtle-shell city's housing accommodates the needs and preferences of a broad spectrum of people. It has high- and low-rise buildings along with stand-alone homes. There are no ghettos, because neighborhoods comprise a mixture of income and age groups performing a variety of functions. The more you mix, the more livable the city becomes.

Near the residences are schools, hospitals, and workplaces. All areas are permeated by parks and gardens—keys to a healthier urban environment. Such green spaces are even part of the city's drainage system, protecting the waterways and creating natural flood basins. Just as no part of the turtle's shell can be changed or removed without harming the whole creature, none of these elements of the city can be altered without affecting its overall sustainability.

The city of the future will not be an accident of mindless growth. Instead, it will be a home as exquisitely and holistically designed as the turtle's. It is where businesses will need to operate and what they must first help to create.

Jaime Lerner*, architect and urban planner, is the founder of the Instituto Jaime Lerner in Curitiba, Brazil. He has formerly served as president of the International Union of Architects, governor of the Brazilian state of Paraná, and mayor of Curitiba.*

Socially Responsible Lobbying

by David Vogel

When companies lobby the government, it's often to avoid regulation. They may spend considerable time and money establishing themselves as good corporate citizens, but rarely do they cross the line to promote good social policy. That leaves their voluntary social commitments vulnerable to competitive pressures from rivals that do not burden themselves with corporate social responsibility (CSR). If companies could make their commercial and social interests become legislative priorities, they might bolster their efforts to help society.

Fortunately, this type of change is not a pipe dream. We can already see it happening with regard to global warming, an area where much of the business community now views regulation as inevitable. Some environmentally conscious firms are actually pushing for strong rules, in some cases to gain competitive advantage over their emissions-heavy rivals or increase demand for their cleaner technologies, and in other cases to support their long-term investment goals. They've learned that they benefit strategically when they promote the public good. The lesson applies to other areas of CSR as well.

Consider the recent furor over hazardous toys imported from China. Industry leader Mattel recalled most of its affected toys after discovering the problem and has promised to improve its own inspection and testing procedures. However, the issue of unsafe consumer products is much broader. As congressional hearings have made clear, the U.S. government has a woefully inadequate testing and inspection infrastructure. The staff of the Consumer Product Safety Commission has shrunk by half since 1980.

To their credit, Mattel and the Toy Industry Association have supported a U.S. federal requirement for toys to be tested by independent laboratories before being sold. But why not also support legislation that would provide the safety commission with the financial and legal resources to do its job thoroughly? Stronger oversight would benefit socially responsible firms like Mattel by making it harder for competitors to undercut their efforts with products made from cheaper, unsafe materials. It would also help reassure consumers about the safety of imported products.

Proactive lobbying of this kind can have an even bigger payoff internationally. Many of the world's poorest citizens live in resource-rich but corrupt and violent states. Even the most economically sophisticated, well-intentioned CSR programs have had little impact in such places. The elites who govern these nations have self-interest goals that undercut the efforts of companies to behave responsibly. Firms that refuse to pay bribes or do business with government-connected companies, for example, risk getting shut out of the country.

To make a real difference, firms should encourage the governments of Western nations to enact policies, possibly including trade sanctions, that pressure the elites of developing countries to behave responsibly. A case in point is the Kimberley Accord, which has helped to reduce international trade in diamonds sold by warring groups to fund their activities. The

effectiveness of this global regulatory program has been enhanced by trade sanctions actively enforced by developed countries.

Lobbying needs to become a critical component of a CSR strategy. It is not enough for companies to engage in sophisticated private initiatives, however strategic. They must also be willing to support public policies that make it easier for them and other firms to do the right thing. Without government support, many socially beneficial corporate programs will have limited impact.

David Vogel *is the Solomon P. Lee Distinguished Professor of Business Ethics at the University of California at Berkeley's Haas School of Business. He is the editor of* California Management Review *and the author of* The Market for Virtue: The Potential and Limits of Corporate Social Responsibility *(Brookings Institution, 2005).*

China's Untapped Second Cities

by George Pohle

Most companies serving the Chinese market have focused on the top-tier cities in China, where much of the country's economic progress has been concentrated. With annual growth rates of about 10%, cities such as Shanghai, Beijing, Guangzhou, and Tianjin are home to just over 6% of the Chinese urban population but account for 13% of GDP. No surprise, then, that they have been receiving the bulk of attention and investment. However, these first-tier cities are also experiencing intense competition from foreign multinationals, and their markets are showing signs of saturation.

The next horizon is the second tier, a category of cities that my IBM colleagues and I defined as having fewer than six million people and an annual per capita GDP of less than 34,000 yuan. Collectively, the 300 or so cities in this group, such as Fuzhou and Hefei, represent nearly 53% of China's urban population and 64% of its GDP, but they have yet to be tapped by most foreign multinationals. The second tier also houses a rapidly growing consumer mass-market segment, with annual household incomes of US$3,000 to US$6,000. As a group, these cities are growing at a staggering 15% a year. What's more, nearly 60% of them are conveniently located in the eastern coastal provinces.

The opportunity is easier to envision than to realize. To succeed in the second tier, companies have to price their products lower than in other world markets. This means, at the very least, taking a hard look at their cost structures and seeking out local parts and manufacturing suppliers to provide components. Savvy companies are going a step further. Motorola and Peugeot, for example, are trying to create strategic advantage by localizing their R&D. This approach allows them to invent low-cost, low-price alternatives to the products they sell elsewhere, tailored to the specific needs of the Chinese market. It also permits them to collaborate with local suppliers from the beginning, so that product development reflects local skills and costs.

The next hurdle is distribution. According to some studies, up to 42% of foreign companies' sales in China are still going through three or more layers of distributors, and only 10% have point-of-sale visibility. These realities impose costs, create excess inventory, and limit foreigners' understanding of customer buying behaviors—a far cry from the hyperefficient supply chain of the American and European markets. Improving distribution will require building alternative or supplemental channels, which some companies are indeed doing—for example, Anheuser-Busch via the Web and Amway with its direct sales model.

Notwithstanding these challenges, multinational companies that my colleagues and I have spoken with are currently sourcing 9% of their global revenues from China and plan to raise this significantly to 14% within three years—a 56% relative increase. Clearly, these firms are willing to do what they must in order to establish themselves and their brands early in second-tier Chinese cities. Other companies will surely follow.

George Pohle *is a vice president at IBM and the global leader of the firm's business strategy consulting practice and its Institute for Business Value. He is based in New York.*

Islamic Finance: The New Global Player

by Aamir A. Rehman and S. Nazim Ali

Islamic finance is booming. To be precise, more and more financial services are being provided in accordance with Islamic law, or sharia. Sharia-compliant banking is becoming increasingly prevalent in Muslim markets, accounting for more than half of total banking assets in Saudi Arabia as of 2005 and, soon, about 40% in the surrounding Gulf region. Malaysia has even set a target of 20% sharia compliance by 2010. Standard & Poor's

estimates that $750 billion in assets—more than the GDP of Australia—are under sharia-compliant management. The World Bank reports that more than 300 institutions are providing sharia-compliant financial services. About one in four people in the world are Muslims, and some estimate that half of all savings held by Muslims will be sharia-compliant

within a decade.

Sharia-compliant finance is not limited to Muslim markets. When Ford sold Aston Martin to an LBO consortium for $848 million, the deal used sharia-compliant structures to meet the needs of Kuwaiti investors. Caribou Coffee, America's second-largest coffee chain, is controlled by a private equity firm that is fully sharia-compliant.

Not surprisingly, global players are joining the trend. Citigroup, HSBC, Deutsche Bank, Standard Chartered, ABN AMRO, and countless others have built Islamic finance units—several of which, including Citi Islamic and HSBC Amanah, are separately branded—and invest in expanding their sharia-compliant capabilities in the Muslim world. These financial institutions engage independent sharia scholars, typically in the form of a "sharia supervisory board," to set guidelines for compliance, approve products and transactions, and conduct regular audits. (For an overview of how the industry is incorporating such guidelines, see the May 2007 document "Islamic Financial Services Industry Development," available from the Islamic Financial Services Board at www.ifsb.org.)

Innovative and rapid product development has been a key enabler of the sector's growth. The product set has expanded to include a wide range of commercial and individual finance products (leases, home financing, personal loans, and so on), hundreds of sharia-compliant equity and real estate investment funds, and other savings products (such as term deposits) with low-risk returns. *Sukuk*—the sharia-compliant equivalents of bonds—are one of the fastest-growing areas of Islamic finance: Japan's central bank has expressed an interest in issuing notes in this market. The German state of Saxony has already done so, as has a Texas oil company.

Islamic finance may even have a thing or two to teach regulators and conventional financial institutions. The sharia requirement that all parties to a contract must disclose both risks and rewards could have prevented companies from engaging in the kind of financial engineering that led to the subprime lending crisis. Similarly, the currency speculation that has historically destabilized some emerging markets would be prevented by sharia rules that effectively outlaw the practice of short selling. Opaque financial contracts laden with penalties and complex clauses would be more difficult to use because sharia requires that the risks of any product or service be clear to both buyer and seller. Perhaps most interesting is the explicit link that Islamic law makes between financial decisions and values—the powerful notion that people should not profit from activities they consider immoral. Given the growing importance placed on values in the corporate world today, formal mechanisms whereby firms ensure compliance with sharia may serve as a model for all companies that take corporate social responsibility seriously.

Aamir A. Rehman*, former global head of strategy for HSBC Amanah, is the author of* Dubai & Co.: Global Strategies for Doing Business in the Gulf States *(McGraw-Hill, 2007).* S. Nazim Ali *is the Director of the Islamic Finance Project at Harvard Law School in Cambridge, Massachusetts.*

What Good Are Experts?

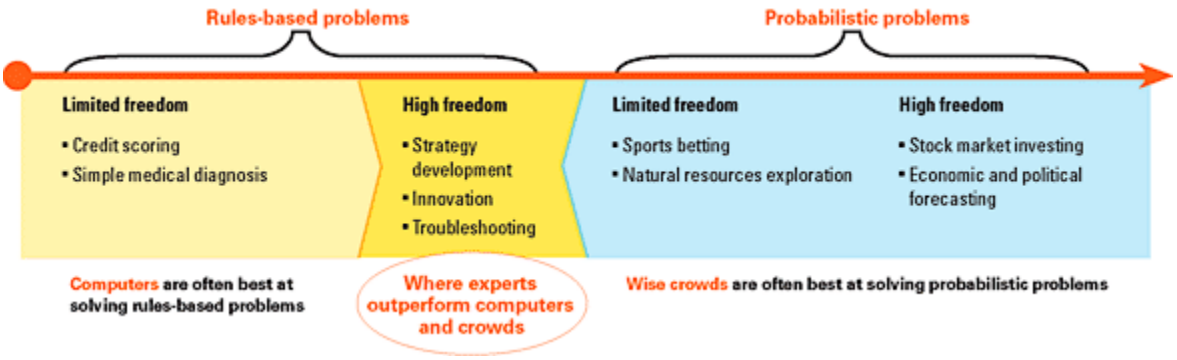
by Michael J. Mauboussin

As computing power grows and networks unleash the wisdom of crowds, the unique value of experts in making predictions and solving problems is steadily narrowing. This trend, which I call "the expert squeeze," doesn't necessarily mean that expertise will become dispensable, only that organizations must change how they use experts.

Not long ago, recommendations from experts, even if imperfect, were the best ones available. So people relied on them to address challenges across the entire spectrum of complexity. At one end of that spectrum are the problems with immutable causes and effects that can be confidently solved using rules-based processes. Today, computers increasingly solve such problems—credit scoring, for instance—more cheaply and reliably than experts can. At the other end of the spectrum are probabilistic problems, such as predicting stock market behavior, whose causes and effects are not clear and whose outcomes are significantly governed by chance. The collective wisdom of ordinary people often proves to be better than experts at addressing such problems.

Nonetheless, research across many fields, from complex systems to psychology, suggests there is a sweet spot where experts still have a unique edge (see the exhibit "The Expert Squeeze"). They're well equipped to solve problems that have rules-based solutions but that allow a high degree of freedom in arriving at them. When avenues for solutions are relatively few, such as in tic-tac-toe, the degree of freedom is limited. When the potential avenues are many, such as in the board game Go, the degree of freedom is high. The greater the degree of freedom in solving a problem, whether rules-based or probabilistic, the more complex the challenge is.

The Expert Squeeze



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Computers are exceedingly adept at rules-based problems with a limited degree of freedom, like tic-tac-toe. However, they're often clumsy at high-freedom problems like Go because, unlike people, computers cannot quickly eliminate unproductive avenues of inquiry and make creative connections among bits of information. Experts are likely to continue to

outperform computers in rules-based areas that require deep, domain-specific knowledge, such as innovation and design. Success in these domains requires the efficient, creative recombination of a vast array of building blocks in novel, productive ways.

Crowds have proved to be skilled at solving certain probabilistic problems, but they often fare poorly if they lack sufficient domain-specific knowledge. Prediction markets, for example, were famously wrong in forecasting that weapons of mass destruction would be found in Iraq, because the individuals in the crowd lacked accurate information. Just as an expert coach will probably create a better game plan than a crowd because he can draw on unique knowledge of his team and the competition, experts within a company can be expected to outperform a nonexpert collective in shaping the company's strategy.

For now, individual experts or small expert teams within companies still have an edge in the realm of rules-based, high-freedom problems such as innovation, strategy development, and troubleshooting. To make the best use of this advantage, managers must carefully categorize the business problems they face. They should explore, for example, whether computers might do a better job than experts at solving the company's rules-based problems. Harrah's, for instance, has crunched data from its casino business to identify better—and counterintuitive—ways to manage customers. Marketing experts had presumed that Harrah's most profitable patrons were high rollers, but computer-based analytics revealed that loyal low rollers actually were.

For probabilistic problems, such as sales forecasting, companies should consider replacing (or, at least, augmenting) expertise with internal prediction markets where employees can buy and sell opinions on business outcomes. Many firms, including Best Buy, Microsoft, Google, and Eli Lilly, have found that a diverse group of employees with appropriate knowledge more accurately forecast crucial business metrics, like product sales and profits, than budgeting experts do.

For problems where experts still prevail, psychologist Philip Tetlock offers an insight about how to nurture desired expertise. Using a metaphor borrowed from the Greek poet Archilochus (via Isaiah Berlin), Tetlock segregated experts into hedgehogs and foxes. Hedgehogs, who deeply know one big thing, extend its explanatory reach to everything they encounter. Foxes, in contrast, tend to know a little about many aspects of their field and are not wedded to a single approach in solving complex problems. Work by Tetlock and others suggests that organizations should find and nurture foxes, who have a "crowdlike" cognitive diversity. Compared with hedgehogs, foxes have a broader set of tools in their cognitive toolboxes, allowing them to effectively match solutions to problems.

Going forward, the most competitive organizations will be those that effectively categorize the problems they face and identify the best ways to solve them. Throwing experts at problems that your competitors are solving more effectively with computers and crowd wisdom will not serve you or your shareholders well.

Michael J. Mauboussin *is the chief investment strategist at Legg Mason Capital Management in Baltimore. He is also an adjunct professor at Columbia Business School in New York and the*

author of More than You Know: Finding Financial Wisdom in Unconventional Places *(Columbia University Press, 2006).*

Sustainable and Unsustainable Trends

by Garrett Gruener

Sustainable Trends

A modest level of terrorism is something we can and must endure for a long time. It is best combated with the tools of public health: isolating the origins, disrupting the vectors of transmission, and protecting potential victims.

Computing power is still increasing, despite predictions that Moore's law couldn't possibly hold any longer. Advances in technology are plumbing ever smaller units of storage; as Richard Feynman said, "There's plenty of room at the bottom."

Human enhancements to ameliorate disabilities and the effects of aging will keep coming. Stay tuned for many more drugs and devices, some based on nanotechnology, that help average people perform better.

Agricultural productivity can increase indefinitely. Even the most sophisticated farmers have yet to see the full effect of the biotech revolution.

Urbanization is surprisingly sustainable. More than half the people on the planet now live in cities, with huge implications for birth rates (down), poverty (down), and economic growth (up).

World GDP will continue to rise, owing to increasing productivity (driven mostly by IT), globalization, and the spread of markets.

Robots are here to stay. They will drive manufacturing employment down and productivity up—and vastly increase mass customization.

Labor mobility persists. Despite the current furor over illegal immigration, people will still move to seek economic advantage.

The cost of nearly everything will continue to decline, as it has for hundreds of years.

Mean IQ scores will continue to rise, as they have since 1920, perhaps because an increasingly complex world helps to train our minds. On the horizon are drugs that improve memory and devices that enhance cognition.

Unsustainable Trends

Carbon emissions cannot continue to increase. They must decline in absolute terms, not just per dollar of GDP. Regulations are paving the way by forcing emitters to cover more of the carbon-remediation costs.

Health care spending cannot continue its upward trend. It's currently 16% of GDP in the United States; that figure will decline as drugs with greater efficacy start to account for more of our medical spending.

The decline in the mean retirement age has come to an end. The average is increasing because of financial needs, boredom, and better health care.

Ecological diversity must not be allowed to decline unchallenged. Toward that end, the Nature Conservancy has purchased 117 million ecologically important acres and 5,000 miles of rivers.

The decline in union membership in the United States has probably run its course. Middle-class Americans are even likely to become advocates for unions overseas.

World poverty rates cannot rise any longer. They will begin to decline as urbanization continues and world markets expand.

The world's dependence on fishing will change dramatically. As major fisheries decline or collapse, offshore marine agriculture will replace them. Already, inshore aquaculture supplies 50% of all our seafood.

Nuclear weapons are now trending out. They will continue to be dismantled and to fall into disuse. Many have no real mission, other than to increase the threat of terrorism.

Oil production is near its peak. In the future, the costs of biofuels, carbon remediation, and mining tar sands—not increased production—will determine oil prices.

The U.S. trade deficit can't rise much beyond the current level, and a continuing decline in the reserve currency will reverse it.

Garrett Gruener *is a cofounder and the managing director of Alta Partners and the founder of Ask.com. He is based in San Francisco.*

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