



**Harvard
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THE HBR LIST

Breakthrough Ideas for 2010

Breakthrough Ideas for 2010

When the business community supports an idea, change can happen fast. HBR's annual ideas collection, compiled in cooperation with the World Economic Forum, offers 10 fresh solutions we believe would make the world better. Ranging from productivity boosting to nation building, from health care to hacking, any of the ideas presented in the following pages could go far with broad-based buy-in. Which ones will you get behind?

1. LEADERSHIP

What Really Motivates Workers by Teresa M. Amabile and Steven J. Kramer

Understanding the power of progress.

The Problem. Ask leaders what they think makes employees enthusiastic about work, and they'll tell you in no uncertain terms. In a recent survey we invited more than 600 managers from dozens of companies to rank the impact on employee motivation and emotions of five workplace factors commonly considered significant: recognition, incentives, interpersonal support, support for making

progress, and clear goals. "Recognition for good work (either public or private)" came out number one.

Unfortunately, those managers are wrong.

Having just completed a multiyear study tracking the day-to-day activities, emotions, and motivation levels of hundreds of knowledge workers in a wide variety of settings, we now know what the top motivator of performance is—and, amazingly, it's the factor those survey participants ranked dead last. It's *progress*. On days when workers have the sense they're making headway in their jobs, or when they receive support that helps them overcome obstacles, their emotions are most positive and their drive to succeed is at its peak. On days when they feel they are spinning their wheels or encountering roadblocks to meaningful accomplishment, their moods and motivation are lowest.

This was apparent in vivid detail in the diaries we asked these knowledge workers to e-mail us every day. In one end-of-day entry, an information systems professional rejoiced that

she'd finally figured out why something hadn't been working correctly. "I felt relieved and happy because this was a minor milestone for me," she wrote, adding that her efforts to enhance a specific version of software were now "90% complete." A close analysis of nearly 12,000 diary entries, together with the writers' daily ratings of their motivation and emotions, shows that making progress in one's work—even incremental progress—is more frequently associated with positive emotions and high motivation than any other workday event. For example, it was noted on 76% of people's best days, when their reported moods were most buoyant, and on only 25% of their worst. (The exhibit "What Happens on a Great Workday?" shows how progress compared with the other four most frequently reported positive events.)

The Breakthrough Idea. As a manager of people, you should regard this as very good news: The key to motivation turns out to be largely within your control. What's more, it doesn't depend on elaborate incentive systems. (In fact, the people in our study rarely mentioned incentives in their diaries.) Managers have powerful influence over events that facilitate or undermine progress. They can provide meaningful goals, resources, and encouragement, and they can protect their people from irrelevant demands. Or they can fail to do so.

This brings us to perhaps the strongest advice we offer from this study: Scrupulously avoid impeding progress by changing goals autocratically, being indecisive, or holding up resources. Negative events generally have a greater effect on people's emotions, percep-

tions, and motivation than positive ones, and nothing is more demotivating than a setback—the most prominent type of event on knowledge workers' worst days.

The Promise. You can proactively create both the perception and the reality of progress. If you are a high-ranking manager, take great care to clarify overall goals, ensure that people's efforts are properly supported, and refrain from exerting time pressure so intense that minor glitches are perceived as crises rather than learning opportunities. Cultivate a culture of helpfulness. While you're at it, you can facilitate progress in a more direct way: Roll up your sleeves and pitch in. Of course, all these efforts will not only keep people working with gusto but also get the job done faster.

As for recognition, the diaries revealed that it does indeed motivate workers and lift their moods. So managers should celebrate progress, even the incremental sort. But there will be nothing to recognize if people aren't genuinely moving forward—and as a practical matter, recognition can't happen every day. You can, however, see that progress happens every day.

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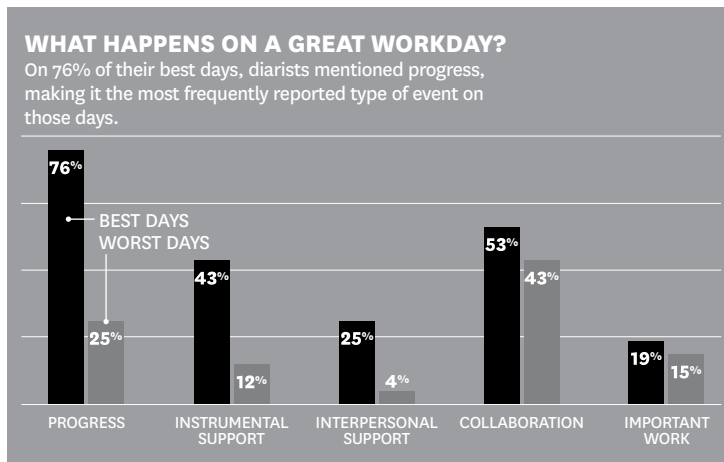
2. MEDICINE

The Technology That Can Revolutionize Health Care by Ronald Dixon

Hint: It's not high cost or high tech.

The Problem. When people talk about technological breakthroughs in medicine, they're usually referring to high-tech (and high-cost) innovations such as next-generation MRI machines or surgical robots. Oddly, they rarely talk about technologies that could improve the most critical factor in the quality of health care: the patient's relationship with the provider.

Having graduated from medical school in 1998, I was well accustomed to the advantages of e-mail. Once I became an attending physician, I thought it would be a valuable way to communicate with patients. I sent messages to people who were suffering from hypertension,



When workers sense they're making headway, their drive to succeed is at its peak.

for example, asking that they give me readings from their home blood-pressure monitoring, and then adjusted their prescriptions accordingly. Quickly, however, a hospital administrator intervened: Because such contact wasn't a form of care that we could charge for, he directed me to stop.

What's more, no information gleaned through such communication could enter a patient's medical record. So, for example, someone reviewing the formal record of a patient of mine named Don, to whom I provided palliative care after chemotherapy failed to keep his cancer from metastasizing, would conclude that Don and I had had no contact in the last four months of his life—although we had closely connected through Skype consultations every two weeks.

The rules about payment and paperwork aren't without justification; they reflect the belief that in-person visits are essential to care. Certainly it's true that physical examinations can't be conducted by videoconference. But consider that a large proportion of patients' office visits are for follow-up on lab test results and ongoing management of chronic diseases. For those purposes virtual interaction can support more solicitous care, not less—and lead to better outcomes.

Consider Agnes, a 75-year-old woman who suffers from congestive heart failure. In one period of just four months she was hospitalized six times—two of them within four days of having been discharged. After she left the hospital the sixth time, I tried something different: A few days later I picked up the phone and checked in with her, asking about warning signs and even having her step on the scale. Either a nurse or I called Agnes every four days thereafter. Six months later: still no trip to the hospital. What was the revolutionary technology? The telephone.

The Breakthrough Idea. Now imagine that instead of simply having a phone conversation, we could remotely monitor patients using a kiosk like the one some colleagues and I are currently alpha testing. (We envision such kiosks in assisted-living facilities and other multiuser locations.) If reliable data on blood pressure, pulse rate, and so forth could be captured and beamed to the physician, some fragile individuals would be saved the necessity of making trips to the doctor's office. And physicians would have many more read-

ings, meaning more chances to discern patterns and detect anomalies in time to act.

To determine whether a more virtual practice would be feasible and acceptable to both patients and physicians, we recently conducted two studies, one focused on videoconferencing and the other on templated e-mail "visits" that would enter medical records. Both studies subjected real patients and their accustomed practitioners to these encounters. Both produced high levels of satisfaction, proving that people are ready for innovation—even eager for it. We just need to change the rules and overcome the lingering cultural barriers that currently prevent it.

The Promise. When the day comes that physicians and patients readily engage in all three types of virtual interaction—asynchronous (such as e-mail), synchronous but remote (videoconferencing), and device-intermediated (kiosk collection of vital signs)—up to three-fifths of today's office visits can be eliminated. Much of the time saved can be used to provide quality health care for additional patients—a crucial efficiency in light of the current shortage of primary-care physicians.

There is no question that we must improve how we deliver health care in the United States. Technology will never substitute for the relationship between physicians and patients, but its thoughtful and practical use will make that relationship richer and more collaborative. If we build increasingly interactive platforms to enrich feedback at each stage of diagnosis and care, patients and physicians can make better health decisions together.

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3. FINANCE

What the Financial Sector Should Borrow

by Lawrence M. Candell

A military approach to keeping the economy safe.

The Problem. What can you do in a democracy when you rely on the private sector for solutions in an area of critical national importance?

In the case of U.S. national defense, the government funds nonprofit research centers like

Let's fund a national lab to design, analyze, and troubleshoot financial innovations.

the one I work for—MIT Lincoln Laboratory, in Lexington, Massachusetts. These centers are stocked with technology experts and innovation capabilities as good as those to be found in industry, but they answer only to the public, not to profit-seeking shareholders. Seated across the table from large defense contractors, federally funded R&D centers function as independent honest brokers: They allow innovative defense contractors to thrive, as the system needs them to do, but they also check the contractors' occasional temptation to do what is most profitable rather than what is really needed. These centers clearly perform a valuable function, and the cost of funding their expertise is less than 1% of the Defense Department's budget.

As the financial crisis erupted in late 2008, some of my colleagues and I couldn't help wondering why there was no similar setup in the financial industry. Here was another area of extreme national importance. Why didn't the wizards who were devising new financial instruments in the private sector have a mirror image operating in behalf of the public?

Of course, there are many public-spirited experts developing and studying next-generation financial solutions at our universities—just as there are many professors working on military technology. But that academic contingent can't be expected to protect the public interest. With an annual budget of \$650 billion, the Department of Defense engages with industry on a scale far beyond what a collection of scholars could ever address. To decide how best to invest its resources, the department needs understanding and guidance at the systems level. The same would seem to be true for a financial industry that annually moves trillions of dollars.

The Breakthrough Idea. Let's federally fund an R&D center that, borrowing the best practices of defense research centers, could design, analyze, prototype, and troubleshoot financial innovations, making sure they promoted our economic security and prosperity. That would mean hiring top talent from a wide range of disciplines in both academia and industry in order to provide a high-level systems perspective on problems. It would mean having the resources to build rapid prototypes and surrogate test beds—not anywhere near industrial production capacity but sufficient to inform a full-scale approach. And it would mean trans-

ferring lessons learned to the industrial base, in part by establishing requirements for novel financial instruments and providing guidance to financial regulators.

The sheer complexity of the financial system may lead some to believe that such a center could never attain what our national-security-focused labs strive for: a deep understanding of the threats we face, and the know-how to design systems that respond to them. Unlike defense procurement, this problem area may have too many degrees of freedom and too few immutable laws and principles to guide us to some useful solutions.

The Promise. There is little risk in trying. The center would have the greatest possible impact if its efforts were focused at the right level. They should complement rather than duplicate what researchers in academia are already doing, and should therefore target large-scale problems and aim to provide insights that would shape national policy.

If the center provided any answers that helped prevent another financial crisis of the magnitude of 2008's, the expense would be more than justified.

Lawrence M. Candell is the assistant head of the aerospace division at MIT Lincoln Laboratory in Lexington, Massachusetts.

4. PHARMACEUTICALS

Getting the Drugs We Need

by Eric Bonabeau, Alpheus Bingham, and Aaron Schacht

Simple standards would spur innovation.

The Problem. In an era of imploding business models, big pharma's may be the next to go. But society's need for new drug therapies, and companies' interest in seeing a return on their investments, can still be served if we rally support for a simple change.

That we need a new model of some kind is beyond doubt. Major pharmaceutical and biotechnology companies know that with each passing year it takes more money and time to develop a new drug, and the number of costly Phase III and postlaunch failures is increasing. Meanwhile, generics are coming to market earlier and more aggressively. The blockbuster model, the salvation of big pharma in years past, is further threatened by continuing ad-

A common standard for sharing drug asset data would unleash tremendous innovation.

vances in genomics and the discovery of drug response markers. This is leading to a rise in tailored drugs aimed at smaller markets. The combined effect of these forces will make the economics of being a large, fully integrated pharmaceutical company increasingly untenable. Already, innovative drugs are routinely coming from smaller players.

How, then, should a traditional drug company change its business model? In the short term, it can focus on becoming the scaling partner of choice—using its infrastructure to support smaller innovators in conducting clinical trials, manufacturing efficiently, and marketing and selling globally. That will remain a viable model as long as one-size-fits-all blockbuster drugs continue to offer value, however limited, to payers and patients. In time, however, even that oasis will dry up, and a reinvention will be necessary. The survivors will be companies that have moved beyond their fully integrated past and established orchestrated drug-development networks.

Such networks have already been seeded; large companies have been acquiring or licensing pipeline innovations for years. But their imperatives to grow through innovation require them to form many more external partnerships, and faster. The problem is that despite advances in information and communications technologies, the coordination and transaction costs of operating a network model remain high.

The Breakthrough Idea. One change would make a substantial difference: the creation of agreed-upon standards for digitally representing drug assets. The challenge is that every company has its own idiosyncratic (and therefore redundant) means of collecting, storing, and exploiting information from development trials, making it difficult to share the hundreds of gigabytes of documents and images among partners. Not only does this throw up barriers to collaboration, but it makes market transactions highly inefficient. It is not uncommon for the seller of an asset to have to set up as many data rooms as there are potential acquirers or licensees, since each one requires its own format. If a common standard for drug asset representation existed, it would speed up transactions, reduce coordination costs, and promote better decision making across networks by providing what the military calls a “common operating picture.”

The Promise. Let’s play out the probable consequences of taking this relatively simple step. If we created a standard that was accepted across the industry, the drop in transaction costs would enable the largest players to share risk and monetize their undeveloped assets. Foundations or even patient groups could have drugs developed that targeted markets too small for the big players. Venture capital firms would be able to develop assets that were languishing at failed portfolio companies. Smaller pharmaceutical companies, government labs, and academic institutions would be able to broadcast the availability of their assets to a wide audience and find eager developers and partners. In short, tremendous innovation in drug development would be unleashed.

The emergence of fluid drug development networks would change how the value of intellectual property was captured. As information flowed more freely among partners, we would need clear mechanisms for assigning credit. The regulatory framework would have to adapt to innovative uses of information. It’s easy to imagine the emergence of a new type of business dedicated to orchestrating development activities.

The end of the fully integrated pharmaceutical company needn’t be the death of today’s big pharma and biotech companies. They can continue to play a central role by embracing a network model and, with their depth of expertise, acting as its orchestrators. But whether they choose to or not, their world will move on.

Eric Bonabeau is the founder and chairman of Icosystem and a cofounder of Hive Pharma. Alpheus Bingham is a cofounder of InnoCentive and Hive Pharma. Aaron Schacht is the COO of Global External R&D at Eli Lilly.

5. ENERGY ALTERNATIVES

A Market Solution for Achieving “Green”

by Jack D. Hidary

Financing that encourages building retrofits.

The Problem. It’s easy to get excited about the promise of clean technology—especially new high-efficiency and solar devices that can significantly reduce the energy use of existing

homes and commercial buildings. But the retrofitting challenge we face is immense, and if we hope to see major progress, we must help home and building owners overcome the barrier of up-front costs.

Few of today's owners have the necessary capital on hand, or can tie it up until the break-even point is reached and payback begins. In theory they could tap into lines of credit and home equity to pay for clean tech, but in practice they are reluctant or unable to do so. Institutional investors, meanwhile, have the capital and the appetite for the sure and steady returns of clean-tech installations; but they are set up to write large checks, not to finance disaggregated, small-scale projects. And, as smart investors, they are leery of opportunities where borrowers can default but improvements can't be undone and funds recouped.

Already we are at the point—thanks to falling prices from large-scale production in China and other manufacturing hubs, and thanks to government rebates—where some clean-tech retrofits achieve cash payback in less than three years. But unless we can provide the necessary assurance to investors and tap into private capital markets, the improved economics of clean technology won't make enough difference.

The Breakthrough Idea. Enter PACE (Property Assessed Clean Energy) bonds, which are just being introduced in 15 states across the country. PACE bonds are debt instruments issued by a municipality and backed by property-tax liens on buildings whose owners take PACE loans from the bond pool. Here's an example: Suppose a commercial building in Annapolis, Maryland, has utility costs of \$20,000 a month, which include electricity and natural gas. The building owner, Annapolis Management, has done an energy audit and concluded that a \$300,000 investment in energy efficiency (retrofitting windows, lighting, and HVAC) would bring monthly utilities down to \$13,000.

Annapolis Management takes a \$300,000 loan from the city's PACE program and retrofits the building. The owner repays the loan over 20 years through an increase in the building's annual property taxes equal to one-twentieth of the loan amount plus interest. In this example, assuming an 8% interest rate, that means additional taxes of \$1,350 a month. Because this expense is markedly less than the

utility cost savings of \$7,000, the owner is cash-flow positive from day one after retrofit.

The Promise. Let's examine PACE bonds from the perspective of the city. The municipality issues the bonds, which are bought by institutional investors. Investors are drawn to bonds backed by property taxes, because they have very low default rates. The obligation to pay them survives foreclosure, so even if a property owner defaults on a mortgage, the new owner who buys the building at a bank fire sale must immediately bring the tax payments up to date.

PACE bonds are also very attractive to political leaders. As opt-in solutions, they raise taxes only for the property owners who choose to take loans. Other constituents' pocketbooks are unaffected. Furthermore, retrofitting projects financed by PACE bonds bring employment for more construction and installation workers, potentially amounting to hundreds of thousands if not millions of jobs as this idea spreads across the country. What politician would not want to lay claim to a program that increased property values, lowered monthly utility costs, and created jobs?

Jack D. Hidary, who is based in New York, is the chairman of PrimaryInsight.com and serves on the national steering committee of PACENow.org.

6. INNOVATION

A Faster Path from Lab to Market

by Robert E. Litan and Lesa Mitchell

Removing the technology licensing obstacle.

The Problem. University-based innovators routinely produce breakthrough technologies that, if commercialized by industry, have the power to sustain economic growth. Because their research is largely funded by the U.S. government (much of whose \$150-billion-plus R&D budget is channeled through universities), it is all the more imperative that these innovations find their way to the marketplace and generate benefits for society. But our system today is suboptimal: Many university-developed innovations could reach the marketplace much faster than they do now. The problem, ironically, centers on the very entities designed to facilitate commercialization. Nearly 30 years ago Congress provided a huge incentive for universities to pursue more commercialization of federally

funded innovations. Through the Bayh-Dole Act, it granted them the rights to the intellectual property. That carrot got immediate results: Virtually every U.S. research university created a technology licensing office (TLO) to organize its commercialization activities and increase revenues from them. These centralized offices require that faculty members disclose their inventions to the TLO and pursue licensing opportunities through it.

Yet like the student who could earn A's but consistently takes home B's, TLOs are underperforming. For example, although funding from the National Institutes of Health has mounted over the years (and is now some \$30 billion), the output in terms of new FDA-approved drugs has been falling. As the Department of Energy prepares to spend tens of billions of dollars on R&D to replace dirty fossil fuels with alternative sources of energy, it is critical that the disappointing pattern in drug commercialization not be repeated in clean tech.

Perhaps it was not a bad idea at first for universities to centralize their commercialization capabilities and give TLOs control of the process; they gained immediate organizational benefits and economies of scale. But this monopolistic model has since evolved into a major impediment. Inventive faculty members are hostage to their TLO, regardless of its efficiency or contacts. Moreover, because many

TLOs are short-staffed, professors must queue up to get proper attention for their inventions.

The Breakthrough Idea. So why not free up the market in technology licensing? Let's allow any inventor-professor to choose his or her licensing agent—university-affiliated or not—just as anyone in business can now choose his or her own lawyer. This would be as simple as having the Commerce Department amend the rules of Bayh-Dole. (Maybe the Small Business Administration would have to revise its rules as well.) Specifically, federal research dollars should come with a condition attached: University recipients must allow faculty members to choose their licensing agents.

The Promise. A free and competitive market in technology licensing would disturb neither the legal status of the invention nor the way royalties or license fees are divided between faculty member and university (a subject governed by the standard employment contract). But like other free markets, it would dramatically speed up the commercialization of new technologies, and ultimate consumers—in the U.S. and around the world—would thereby benefit from them much more rapidly. A free market would also most likely lead university TLOs to specialize or turn to outside agents with the appropriate expertise. A university might drop its TLO altogether but continue to earn licensing revenues—less the fees charged by outside TLOs or agents.

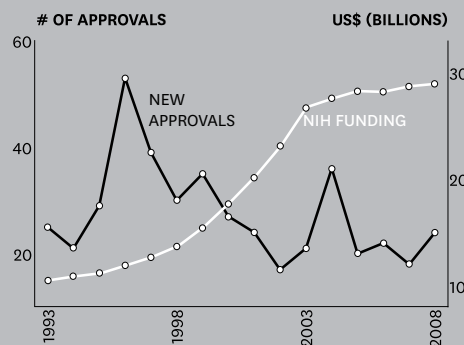
Let's stop penalizing professors who come up with new ideas and the universities they work for. Most important, let's not keep the world waiting for new products and services—some of them lifesaving—while valuable ideas languish on university shelves.

Robert E. Litan is the vice president for research and policy, and **Lesla Mitchell** is the vice president for advancing innovation, at the Kauffman Foundation in Kansas City, Missouri.

MONEY AND DRUGS, 1993–2008

One symptom of the technology transfer bottleneck is drug research. Funding of university research by the U.S. National Institutes of Health has risen steadily, yet the number of new drugs* developed trends downward.

SOURCE NIH; FDA



*Defined as new molecular entities and new biologic license applications

7. PEOPLE MANAGEMENT

Hacking Work

by Bill Jensen and Josh Klein

Learn to love the rule breakers.

The Problem. When a 12-year-old can gather information faster, process it more efficiently, reference more diverse professionals, and get volunteer guidance from better sources than

you can at work, how can you pretend to be competitive? When the personal tools in your mobile phone are more empowering than what your company provides or approves for your projects, how can you be saved from devastating market forces? You can't.

The tools we use in life have leapfrogged over the ones we use at work. Business's lingering love of bureaucracy, process, and legacy technology has fallen completely out of sync with what people need to do their best.

The Breakthrough Idea. So what can you do? Hack work, and embrace the others in your midst who care enough to do so. Hackers work around the prescribed ways of doing things to achieve their goals. The benevolent among them do this rule bending for the good of all. And once frontline performers and middle managers try hacking work—and discover they've increased their output by a factor of 20—they never go back.

Richard Saunders (not his real name) is a benevolent hacker. He works for one of those banks that did its job so well in 2008 that we landed in the worst financial hole we've seen since the Great Depression. As the crisis unfolded, the bank's senior executives cried out, "Reports! Our kingdom for more reports!" The problem was that what they really wanted—useful, insightful analysis—couldn't easily be produced with the software provided by corporate IT.

Poor Richard. What to do? Work 29 hours a day, 10 days a week, to manually create those reports and the much-needed analysis? No way. He hacked the system. He softened up a vendor, got a password, tapped into the database, and began creating never-before-possible reports for the C-suite.

Would the bank's auditors and IT security guys freak out if they knew that Richard had hacked their system? Uh, yes. But since then, Richard has become incredibly productive and is now a go-to guy companywide. He's a hero to all those senior execs who wanted more than data dumps. If only they knew the full story. Says Richard, "As a result of this hack, I keep senior management off our backs, so we're able to continue doing more for our clients with less."

He's not alone in believing that he has to take matters into his own hands in order to get the job done and achieve better results for the organization. Many in the workforce are com-

ing to the same conclusion. The illusion of corporate control is being shattered in the name of increased personal productivity.

The Promise. This kind of work-around isn't new—your company has been hacked from the inside for ages. What is new is that the cheat codes are becoming public, and there's nothing you can do about that. Bloggers are telling your employees how to bypass procedures. Forums give tutorials on how to hack your software security. Entrepreneurs are building apps to help your employees run their own tools and processes instead of yours.

There's only one successful strategy for a hacked world: If you can't beat 'em, join 'em. Change the debate within your company to leverage what your hacker employees know. We're seeing managers in enormous corporations such as Google, Nokia, and Best Buy embrace things that benevolent hackers would pursue with or without them: greater worker control over tools and procedures, increased transparency, and meritocracy. As even senior management begins to feel the pain of outdated tools and structures that refuse to budge, what was once shunned as bad is now the new good.

Bill Jensen is the president and CEO of the Jensen Group, a change-consulting firm in Morristown, New Jersey. Josh Klein is a New York-based hacker and a consultant on security and workplace effectiveness. The two are collaborating on a forthcoming book, Hacking Work (Portfolio).

8. RISK MANAGEMENT

Spotting Bubbles on the Rise by Sendhil Mullainathan

We have the tools to sound the alarm early.

The Problem. Will Rogers had sage advice on investing: "Buy some good stock and hold it till it goes up, then sell it. If it don't go up, don't buy it." The guidance we get today regarding economic bubbles is just about as helpful: If it bursts, it was a bubble. That kind of postmortem analysis is useful to historians, but it does nothing to limit the collateral damage caused by, for example, a sudden collapse in housing prices.

An early warning system would be more valuable. For one thing, it would change the way that regulators go about securing the

safety and soundness of financial institutions. To ensure that a financial institution is sound, regulators must discount the value of its assets for their riskiness. Under the current Basel regulatory framework, the discount is determined by looking at market pricing of risk. This has disastrous consequences during a bubble, when almost by definition, the market is underpricing significant downside risk. A financial institution holding \$50 million worth of mortgage-backed securities in its trading book in January 2007 was facing far more risk—and was less sound—than the market price suggested. If we had a reliable metric for pronouncing an asset class to be in a bubble, regulators could dampen the risk. They could more aggressively discount asset values and analyze an entire balance sheet's exposure to the threatening burst.

The Breakthrough Idea. At ideas42—a behavioral economics R&D lab that I codirect—we have taken on the challenge of creating an early warning system. We are asking, “Could a bubbles committee—like the committee that does recession dating for the National Bureau of Economic Research—use the research in behavioral finance to identify bubbles as they form?” The answer appears to be a guarded yes.

Understand that our goal is not to be able to predict when a bubble will burst. That might never be possible. Luckily, in terms of the public interest it isn't necessary. To regulate risks it would be helpful merely to recognize when we are in one—a far simpler task. That is why a public effort must create such a committee. (The market itself is far more interested in the timing of bubbles. Any smart arbitrageur would rather ride a bubble for some time than lean against it; a fortune can be made by riding the bubble up and selling right before the burst.)

How would the committee make the call on a rising bubble? Behavioral finance gives us the perspective to spot telltale signs. We know that when markets work well, it's because they are incorporating disparate views of asset value and distilling them into a single price. When markets fail, as they do during bubbles, that is no longer true. After prices have risen for a prolonged period, the bears have sold all their shares, so their downward influence on price is lessened. If they believe that shares are overpriced and due for a fall, they must bet against

them in more expensive (and hence less potent) ways, such as short selling.

This suggests an approach to finding warning signs. Looking at short interest, demand for put options, and trading on a variety of derivatives, a bubbles committee could construct technical measures of those opinions that are underrepresented. In taking these factors into consideration, the committee wouldn't strictly be going against consensus opinion; it would be discovering times when narrow asset prices alone did not measure the consensus.

A bubbles committee need not be passive. If it suspected a bubble in an asset market, it could selectively recommend introducing derivatives that explicitly target bubble risk. Consider a long-horizon put option designed to pay out only in the case of a significant drop in prices. The market price of that security would help regulators decide how to view that asset class. Of course, the committee's activities might serve to burst a bubble early, but that need not be its primary goal; we should be satisfied if the committee simply minimized the social costs of the bubble's eventual burst.

The Promise. Translating these raw insights into a concrete methodology will take some work. Careful research is required. Diverse technical measures must be gathered to quantify contrarian investors' bets. These must be integrated with traditional indicators of fundamental value, such as P/E ratios. New consumer-sentiment measures, based on insights from consumer psychology, will also need to be explored. All of this must be tested against historical data. In this we are lucky: There is no shortage of data. Numerous asset classes around the world have gone through what in hindsight were obviously bubbles. The steps outlined above are technically challenging but very manageable if we make a concerted effort.

We can't prevent earthquakes or hurricanes, but construction engineers have learned ways to minimize their damage. Similarly, financial bubbles will surely continue to rise and burst around the world, but with one big R&D push we can put tools that contain their effects in the hands of a public-minded committee.

Sendhil Mullainathan is a professor of economics at Harvard University and a cofounder of ideas42.

9. GLOBAL ECONOMY

Creating More Hong Kongs

by Paul Romer

How charter cities can change the rules for struggling economies.

The Problem. Knowing how hard it is to transform a change-averse organization, managers sometimes create a skunkworks, an autonomous corporate division where pioneers can build something new. A leader who starts a successful skunkworks changes the firm by showing rather than telling. Target is a good example: It began as a discount-retailing skunkworks at Dayton-Hudson and eventually remade the entire firm.

Transforming a nation is even harder, but the dramatic reforms in China show that it can be done. When China's leaders started the reform process in the late 1970s, they could leverage a special asset: Accidents of history had made Hong Kong the skunkworks for Chinese political and institutional reform. The British government had administered rules that made the city livable and allowed a market-based economy to flourish. After World War II, it was a place where millions of Chinese could seek work—sewing shirts, for example, or making toys—and begin accumulating wealth, marketable skills, and the habits and values that sustain the quality of life in a well-run city. Hong Kong's success showed Deng Xiaoping and other Chinese leaders how to bring urbanization, market incentives, and foreign direct investment to the mainland.

Wisely, China's leaders did not compel every citizen to switch to the rules of the market. They started with special economic zones that Chinese workers and foreign firms were free to enter. Encouraged by the dramatic success of these zones (showcased by Deng's famous southern tour in 1992), the Chinese government accelerated the pace of urbanization and economic reform. As a result, the quality of life has dramatically improved for an unprecedented number of people. Hong Kong was the nearby model that demonstrated the power of the market and the potential of special zones. By establishing it, Britain may inadvertently have done more to reduce world poverty than all the intentional aid programs of the past century.

The Breakthrough Idea. Today many countries are stuck with rules that slow down in-

flows of technology, prevent successful urbanization, and stifle personal ambition. They need new rules that will let their citizens take full advantage of mutually beneficial exchange with millions of fellow citizens and with people and firms from around the world. Those rules could be introduced by chartering new cities like Hong Kong.

Creating this kind of city is not unlike launching an autonomous corporate division. It starts with a piece of uninhabited land and a charter listing the rules that will prevail in the city to come. With full knowledge of that charter, people choose whether to live and work there, to invest in its infrastructure, and to build and manage its apartments, factories, call centers, and shops.

A number of countries could benefit from chartering such cities. What if Raúl Castro wanted to follow this path and do for Cuba what Deng Xiaoping did for China? Even if he established attractive rules, no one could be sure that his successors would abide by them. The political risk would be too large for Cuba to attract meaningful levels of immigration and investment.

To make his commitment to new rules credible, Castro could enter into a joint venture with another nation. Canada could be party to a new treaty in which the United States handed over its rights to Guantánamo Bay. It could take over local administration for a defined period of time and establish a charter city there. The Canadian government would reduce political risk and attract foreign investors and citizens, just as the British government did in Hong Kong.

People would come because they knew that even if Cuba suffered from periods of political instability, the new city could use its port to trade with the rest of the world—just as Hong Kong did when China was going through the Cultural Revolution. Cubans who were eager to adopt the market model could move to the new city, while their more cautious fellow citizens could wait to see how things played out. The flow of goods and people between the charter city and the rest of Cuba would increase, and wages would begin to catch up with those in developed nations. The charter negotiated with Canada could structure the venture as an enormous build-operate-transfer project. As the final step in the nation's political and economic transformation, people on

More than 3 billion additional people will be living in urban areas by 2050.

both sides could eventually vote to integrate the city into the Cuban political system.

The Promise. Many nations need to change their rules. North Korea's, for example, are too strong and harmful; Somalia's are too weak, lacking even a basic legal system that provides personal security. Many countries at intermediate levels of development still need rules to prevent cronyism, preserve competition, limit congestion and pollution, support modern utilities and infrastructure, and provide real educational opportunity for all.

Groups of people always find it hard to change the rules, even when other rules would clearly be better. Charter cities—dozens of them, perhaps even hundreds—could be the skunkworks that bring systemic change to entire nations. Ultimately, they could give the billions of people who will soon move to cities the chance to experiment with, and opt into, rules that let them achieve their full potential.

Paul Romer is a senior fellow at the Stanford Institute for Economic Policy Research and the president of Charter Cities, a nonprofit research organization.

10. NEGOTIATION

Independent Diplomacy

by Carne Ross

Why pretend that only nation-states shape international affairs?

The Problem. As globalization puts all of us at the whim of forces without borders, the power of states is in decline, and that of other actors is rising. The UN Security Council was constituted in 1945 to deal with conflict between states. Today more than three-quarters of its agenda involves so-called nonstate actors—

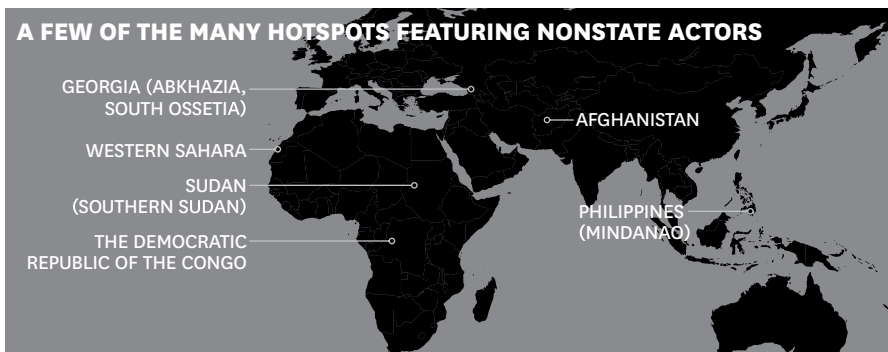
guerrilla groups, separatists, the remnants of decaying states, and the kernels of new ones.

Yet established nation-states, for the most part, still have a virtual monopoly on the practice of international diplomacy. That hardly seems sensible in a world that's growing more complex and is increasingly shaped by a diverse cast of players, be they new or emerging states, global corporations, criminal networks, or armed groups. The diplomatic system evolves slowly. Those cut out of the current system—small states, nonstate entities—need help getting their legitimate needs addressed. But we all face the challenge of how to engage.

The Breakthrough Idea. To many, "independent diplomacy" will sound oxymoronic. It is, if you believe that diplomats by definition represent states and thus are anything but independent. When I was a traditional diplomat for Britain, that was my belief. Now I see it differently.

My views shifted because I saw up close the limits of the traditional model. In 2004 I gave evidence to an inquiry examining the intelligence on Iraq's reported development of weapons of mass destruction. As the UK's Iraq "expert" at the UN Security Council, I had detailed knowledge of that intelligence. I testified that the British government had manipulated the case for war and had ignored available alternatives. I had no choice but to resign, but no plan for what to do next.

It was Kosovo, where I was working at the time, that gave me inspiration. Kosovo's future was then the subject of intense and secretive diplomatic negotiations. But, perversely, its democratic government was prohibited from having diplomats, and the country had no representation in those discussions. This exclusion was not only unfair; it invited instability. Diplomacy was a trade I knew, so I created a nonprofit organization to give advice on diplo-



macy. Kosovo became Independent Diplomat's first client.

The Promise. The organization Independent Diplomat was born out of a particular crisis, but the idea of independent diplomacy responds more generally to the seismic global changes that are rendering the traditional model obsolete. Particularly when smaller players are at risk of being marginalized in international negotiations, an independent diplomat can help them ensure that their interests are represented. My group is working now, for example, with small island states on the highly complex climate change talks. We're also helping the Burmese opposition advance a transition to democracy, and advising representatives of the dispossessed inhabitants of Moroccan-occupied Western Sahara.

When I share the idea behind Independent Diplomat, I never claim that it is a perfect solution for our elaborate international system; it

is only a necessary part. Power is shifting, and marginalized players need help. Excluding them increases the risk of conflict. Most important to me is helping (and urging) others to move beyond a naive reliance on governments to control the forces and events that affect our lives. My experience has taught me this: Outcomes are determined by those who join in, who act. When all is connected and every action has international consequences, everyone can be an independent diplomat. Indeed, everyone may need to be one.

Carne Ross is the founder and executive director of *Independent Diplomat*, a nonprofit advisory group based in New York.

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