



## Smarter Than You

You say you can't trust anyone to help you run the company? Wrong. Trust everyone.

**From:** [Inc. Magazine, September 2005](#) | Page **By:** Michael S. Hopkins **Photographs by:** Stephan Jacobs **Illustrations by:** John Hersey

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Last March a guy I know, named Jim, decided just like an estimated 28 million other Americans to enter his local office pool picking winners in the annual NCAA men's basketball tournament, known to anyone with a television as March Madness. Entertainment purposes only, of course. At stake was just pride. In Jim's case, 25 portions of it (his entry ante). Not to mention the four figures' worth of pride going to the pool's winner, and more for the runners-up. "A lot of pride," Jim notes. "Possibly very entertaining."

To compete, Jim would have to fill out the single-elimination brackets that would whittle 65 teams down to one champion. For every correct pick Jim would get points--one for each first-round game winner, two for second-round winners, and so on until the correctly named winner of the final game would yield 32 points. Total the most points in your pool and, well, you get to be the proudest.

Jim knew he faced long odds. For one thing, given his place of employ at a highfalutin consulting firm, his particular pool would be contested among people who are unusually competitive and hard-working and better educated than is strictly necessary. For another, he didn't really know anything about college basketball.

But he had a solution. Inspired by having recently read James Surowiecki's *The Wisdom of Crowds*, he decided to make no attempt at forecasting whether 10th-seeded St. Mary's of California could upset seventh-seeded Southern Illinois--or at trying to pick the outcome of any other game, for that matter. Instead he sought the most aggregated public bracket he could find (he used ESPN.com's cumulative bracket, which resulted from the tallied picks of more than a million average joe forecasters who sent in their individual guesses) and followed it slavishly in filling out a bracket of his own. Would his crowd-built bracket outperform those of his more knowledgeable pool competitors? Jim would see. At least, he would see right up until the final game, which is the only one for which he personally picked against the crowd because he just "knew instantly in my gut" that the crowd's pick was wrong. Which means that he banked everything on the wisdom of the crowd until the last pick, when, you could say, he blinked.

But that's another book--*Blink* by Malcolm Gladwell of *Tipping Point* fame--for another time. Jim's experiment (we'll see how it fared in a minute) provides the perfect setup for calling attention to a book vastly less celebrated than Gladwell's (which are not undeserving) and vastly more instructive for entrepreneurs. None of the better-read business books of the past year has nearly as much to say to company builders as *Crowds* does, and now that it's just been released in paperback, it's time to make sure it gets read.

Surowiecki's insight is this: The collective wisdom of a crowd (even a crowd of average, inexpert laypeople) will under the right conditions be smarter and more accurate than the individual decision of even the most

exalted expert. Collective decision-making trumps individual expertise, giving the lie to what Surowiecki calls "our excessive faith in the single individual decision maker." The deduction of markets trumps the deduction of experts.

Surowiecki supports his claim with frequently astonishing (and hugely persuasive) evidence offered by dozens of experiments, as well as examples of collective wisdom in action. He shows collective thinking at work on problems both simple and complex. Simple: At an English country fair in 1906, almost 800 people guessed the weight ("slaughtered and dressed") of a 1,198-pound ox. The average of the crowd's guesses was off by only a pound. Complex: After a U.S. Navy sub disappeared in the North Atlantic in 1968, leaving only the merest scraps of information that might help locate it, a number of people with varied backgrounds (mathematicians, submarine specialists, salvage men) were asked to independently posit what had happened to the sub and where. None of the individual guesses accurately located the sunken sub. But when the individual guesses were combined, making a kind of collective guess, that location was a spot just 220 yards from the sub, enabling the Navy to find it.

Elsewhere in *Crowds*, Surowiecki shows how collective wisdom underpins the effectiveness of Google, and how, on the TV game show *Who Wants to Be a Millionaire?*, "asking the audience" always yielded better advice than "phoning a friend" (even though the friend was chosen explicitly for being smart and the audience was just a bunch of folk who stumbled into a television studio that afternoon). He also describes many examples of businesses using internal "decision markets"--a stock-market-like process for capturing the wisdom of crowds by enabling a collection of people to, essentially, bet on the answer to a question. (In a business, the question might be, Which potential new product would sell the most? Or, Which of our competitors will pose the biggest threat a year from now?) *Crowds* includes the story of Hewlett-Packard setting up an internal decision market to forecast printer sales. Twenty or 30 employees, drawn from different parts of the company to ensure diversity of knowledge and opinion, bought and sold shares according to what they thought future sales would be. The market for predicting each period was open only a week, and employees participated in their spare time--and yet the market's forecasts were more accurate than those of the company's expert forecasters 75% of the time.

The mechanics of why all this works are complicated, but what's essential to take away is that crowds possess almost unfathomable stores of inchoate information--they know more than they think they do. And experts, even the genius ones, know less than they think they do. What's "mystifying," as Surowiecki says, is how little interest businesses have shown in decision markets that tap the collective wisdom of their employees. "Strategy is all about collecting information from many different sources, evaluating the probabilities of potential outcomes, and making decisions in the face of an uncertain future. These are tasks for which decision markets are tailor-made."

*Crowds* lays siege to the cult of the expert. Also the cult of the CEO, which may or may not be the same thing.

If Surowiecki's right, entrepreneurs especially should care. *Crowds* lays siege to the cult of the expert (also the cult of the CEO, which may or may not be the same thing); it points out the shortcoming of any team or organization that overrelies on hierarchical decision-making. It also underscores the peculiar weaknesses of very small groups: Small groups are typically too insular to contain broad information, are overinfluenced by strong individuals, and are underexposed to diverse outside points of view. The upshot is that small companies are handicapped by collecting and considering too little raw, surprising data, as well as by naturally operating in founder-as-hero, individual-decision-maker mode. Surowiecki quotes the author of a study of corporate failure who identified a recurring theme: "The remarkable tendency for CEOs and executives of new ventures to believe they are absolutely right."

*Crowds* may do a better job than any other book I've read at helping explain why so many entrepreneurial

companies become stagnant (or worse) after capitalizing on an initial business idea--why they have such trouble with second products and getting to that proverbial next level. More exciting, though, *Crowds* also offers solutions that smart CEOs can apply to that challenge.

Which are?

- Recognize what makes a crowd insightful and try to create as many of those conditions as you can among your information and advice sources. For a group to be smart it must be diverse (in terms of knowledge and point of view, not necessarily sociology), its members must offer views independently (uninfluenced by other group members), and it must be decentralized (its members draw on unique local experience and information). That means that if you run a 12-person company, be sure to cultivate as many unusual outside advisers and raw data providers as possible.
- Invent internal decision markets, even if crudely informal. It's especially useful to invent processes that provide anonymity--since honest information flow inside any business is quickly and inevitably obstructed by politics, sycophancy, and confusion of status with knowledge.
- Respect your own limitations as an individual decision maker, even if you're an expert when it comes to the decisions at hand.

All of that, in essence, is what our NCAA tourney forecaster Jim attempted to do. He found a diverse, independent, and decentralized crowd to address his problem; he seized a decision market (the aggregated bracket) that would reduce the crowd's incalculable private information to a set of concrete choices; and he acknowledged his own limitations by almost entirely ceding his decisions to the group. (Until he correctly picked North Carolina over Illinois, the crowd's choice, in the final game.)

How'd Jim do in his pool? Second place, out of a couple hundred entrants. Highly entertaining, he reports. Just how entertaining, he forgets.

And, he says, he will never again make a strategic decision without input from some kind of crowd.

[Michael S. Hopkins](#), an *Inc.* editor-at-large, has written for the magazine since 1987.

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**ABSTRACT**

Leaders are generally expected to have greater knowledge than their staff. Assuming that you are smarter than your employees individually or collectively, you are either an unbridled egomaniac or you simply do not understand the power of collective intelligence. As James Surowiecki explains in **The Wisdom of Crowds**, groups -- under proper conditions -- have proven extraordinarily adept at finding solutions and even predicting future outcomes. Unfortunately, understanding the conditions required of collective intelligence and knowing how to exploit them within the constraints of corporate structures are two different things. Many managers believe that a good corporate culture can encourage employees to share their opinions and solve the diversity requirement, but with few exceptions corporate cultures work against the sharing of dissimilar ideas. Managers who understand both the power and the limitations of group decision-making need not be threatened by its effectiveness.

**FULL-TEXT**

Are you smarter than your employees? Since leaders are generally expected to have greater knowledge than their staff, let's assume that you are. Extrapolating from that, does being smarter than your employees individually mean you are also smarter than them collectively? If your answer is "yes," you are either an unbridled egomaniac or you simply do not understand the power of collective intelligence.

As James Surowiecki explains in **The Wisdom of Crowds**, groups under the proper conditions have proven extraordinarily adept at finding solutions and even predicting future outcomes. Consider the performance of the Iowa Electronic Markets. In presidential elections between 1988 and 2000, the IEM's election-eve predictions were off by an average of only 1.37 percent, consistently more accurate than professionally run polls and surveys. The IEM predictions were made by an open, unorganized collection of roughly seven hundred participants without a leader, pollster, pundit, or political strategist determining the final result.

Most people find the idea of a decision market handling key corporate decisions absurd, but it isn't all that far-fetched. In the late 1990s, Caltech economist Charles R. Plott and Kay-Yut Chen of HP set up an internal trading market within Hewlett-Packard to predict printer sales. The result? In the first trial, the trading market

was off by 6 percent versus HP's official forecast, which missed the mark by 13 percent. Over the next three years, the experimental prediction market outperformed the company's projections 75 percent of the time. Based on these results, HP expanded the experiment to different units and even incorporated the trading-market results into at least one division's regular forecast.

Not surprisingly, HP's results are not unique in showing that prediction markets often outperform management analysis. Siemens saw similar results when the company set up an internal market to predict its ability to meet a key project deadline. Management predicted success; the decision market predicted failure. Siemens missed the deadline.

At Intel, an experimental trading market set up to allocate manufacturing capacity resulted in almost 100 percent efficiency. Even the online, for-amusement-only Hollywood Stock Exchange game has proven a better box-office predictor than any industry source. So it's clear that trading markets can unlock groups' collective knowledge for predicting future results and creating optimization. But can we use collective intelligence to fuel innovation? Consider the case of former junkbond genius and Wall Street criminal Michael Milken.

Milken's Prostate Cancer Foundation is the world's largest private sponsor of prostate-cancer research, but it isn't the dollars Milken has raised that has transformed cancer research-it's the way he has induced collaboration. By forcing scientists to share, Milken changed the entire culture of prostate research. Where cancer researchers once spent months and even years applying for grant money, Milken's foundation quickly approved funds-with one important stipulation: At an annual meeting organized by the PCF, grant recipients would have to present their findings to the assembled scientific community.

Many researchers were hesitant to share their work, and in the first year, 1993, the foundation received only eighty-five applications. Eventually, more researchers accepted Milken's terms, and when PCF-funded projects began to show results, the scientific community embraced the new paradigm. By 2004, with only \$230 million of total funding since its inception-a tiny fraction of the research budgets of the large pharma-tech firms-the PCF had funded more than a thousand projects, including the treatments branded Velcade, Zometa, GVAX, and Omnitarg. The foundation had effectively pooled the collective intelligence of the cancer-research community to produce results.

What factors allowed the trading VV markets and the PCF to tap into its members' collective knowledge? Size wasn't a factor. The original HP experiment had fewer than forty participants. Was it the individual intelligence of the members? The Iowa Electronic Markets put no conditions on its players' intelligence or knowledge, so that appears unlikely. What the PCF and prediction markets both did successfully was draw on a diverse and independent set of opinions and impartially aggregate those opinions. These are the keys to harnessing the power of group knowledge while avoiding the pitfalls of groupthink.

Unfortunately, understanding the conditions required of collective intelligence and knowing how to exploit them within the constraints of corporate structures are two different things. Even in an age of information technology, actually accessing (extracting?) honest and complete information from employees is nearly impossible. Almost everything about the corporate environment is an enemy of free information flow; despite the rise of collaboration tools, intranets, and open-source products, even flat organizations with open-door policies have difficulty aggregating information without coloring it with bias. Whether your organization is centralized or distributed, or your culture is cooperative or competitive, every configuration poses a natural set of challenges to the harnessing of collective intelligence.

The first prerequisite of collective wisdom, diverse thinking, is grossly underappreciated. Management teams are founded on the commonsense idea that a group of intelligent people should generally outperform a group of people with random levels of intelligence. Unfortunately, common sense is wrong. Scott Page's experiments at the University of Michigan found that, when challenged with a difficult problem, groups composed of highly

adept members performed worse than groups whose members had varying levels of skill. The simple presence of diversity caused people to consider possibilities that might have otherwise been ignored. Based on his results, Page theorized that the groups made up entirely of smart members failed to outperform the diverse groups because their members resembled each other in their skills and knowledge.

In other words, group members who think alike-or who were trained in similar disciplines with similar bases of knowledge-become insular in their ideas as a confirmation bias takes over. Instead of exploring alternatives, the members serve to reinforce one another's predisposition. In this environment, even the smartest groups can easily fall victim to groupthink.

The faulty premise that a core group of intelligent people is naturally able to make good decisions is precisely why leaders of centrally controlled companies often seem blind. Sadly, despite the frequently sounded death knell for centralized organizations, many managers still find the perceived benefits of consolidation irresistible. Even HP, which found enormous success with its old decentralized structure that encouraged independent solutions-and offered my initial example of decision-market experimentation-was recently reorganized from eightythree product divisions into four units. The reasoning? Then-CEO Carly Fiorina believed that the consolidation would reduce redundancies and create economies of scale. While the reorganization efforts surely eliminated inefficiencies, the move away from more autonomous units seriously damaged the diversity of opinion that the earlier configuration fostered. Despite Fiorina's slogan that HP's charge was to "Invent," many longtime employees felt that the company's innovation-oriented culture had dissipated.

In theory, a centralized organization, with all of its decision-makers in one place, should be able to better aggregate knowledge than a company with a widespread management structure. In reality, it trades frontline feedback and diversity of knowledge for centralized control, and management is essentially left with no real information to aggregate.

Many managers believe that a good corporate culture can encourage employees to share their opinions and solve the diversity requirement, but with few exceptions corporate cultures work against the sharing of dissimilar ideas. In the competing schools of thought on culture-team versus competitiveboth models embody elements that undermine collective intelligence. The team concept, based on fostering familiarity and friendly cooperation between employees, often results in congeniality taking precedence over the introduction of ideas that might prove unpopular. In an environment that values teamwork as the top priority, employees hesitate to do anything that might cause tension or question the status quo. Harmony and established procedures prevail over legitimate open discussion. When this happens, action takes a back seat to talk, and meetings become less about solving problems than about finding agreement. By putting the team above all else, this type of culture undermines the diversity of thought necessary for effective group decision-making.

On the other end of the spectrum is the culture of competition. The reasoning here is to treat the entire company as a microcosm of the freemarket economy. After all, if the forces of the free market have increased productivity and fostered innovation in the economy as a whole, why not put these forces to work within the firm? But intra-corporate competition can easily backfire: Individual units of a company are interdependent and must share internal information, while companies competing against each other in the broad market do not. When performance is measured as a competition with winners and losers, individual achievement takes precedence over company goals, and withholding knowledge becomes unavoidable. Inevitably-as with Enron, the most prominent example-a competitive culture results in units, and even individuals, working to undermine one another instead of working together for the good of the company. In direct contrast to the team culture, the competitive culture succeeds in creating independent and diverse thinking-but makes it impossible to aggregate that knowledge because people are unwilling to share.

Instead of indoctrinating employees into a team culture or a competitive culture, employees should be encouraged to achieve the overall objectives of the company without following a mandated pattern for

achieving those objectives. By focusing employees on a company goal, a culture can be built based on unity of purpose rather than unity for its own sake. Properly developed, a goalbased culture that takes precedence over both team harmony and individual competition can encourage both the diverse thinking and knowledgesharing that is the prerequisite of tapping collective intelligence.

Once an organization decentralizes, localized decision-making restores diversity of opinion and offers the opportunity to tap into a wide body of knowledge. But there's a problem: How do you aggregate that knowledge? Similar to the issues created by a competitive internal culture, the transfer of power away from the center toward the frontline employees often results in local knowledge not being shared throughout the organization. While the decentralized model has been extremely effective for developing local tactics, it has performed less well in the development of overall strategy.

Many firms try to rectify this problem by creating a company intranet or information repository or, less productively, by ordering a series of company meetings. Of course, meetings rarely result in open discourse, and I suspect that few employees regularly utilize their company's intranet. Even if employees did use these tools, such data repositories do not transfer tacit knowledge nor do they process their inputs to form a collective result.

Despite these challenges, the distributed organization at least fulfills the diversity prerequisite, so it is a more promising platform from which to harness collective intelligence.

Given the optimum diversity situation of a decentralized management structure and an open goal-oriented culture, a company still faces the dual tasks of how to aggregate the knowledge without bias, and how to most effectively put it to use. Both the trading-market format and the Prostate Cancer Foundation's open forum are environments in which input can be made without penalty or prejudice. The participants in the PCF meetings not only provide information but collectively act as a processor of that information. Michael Milken had the luxury of only setting the goalshared research knowledge-and not sitting in judgment of the information that was returning to his system.

But managers don't have this luxury. Unlike these blind systems, they are saddled with personal biases, political realities, and expectations of specific results. These factors often cause leaders to have a confirmation bias in their efforts to gather information. They naturally, and often unconsciously, seek out information that supports their preconceived ideas and desired outcomes. Worse, managers often draw quick conclusions based on limited knowledge and rely on past experience instead of considering all the available information fairly. Their effort to find supporting data-combined with the tendency of employees to withhold negative information and seek their own social confirmation-undermines collective wisdom in favor of groupthink. As much as overcoming the structural barriers that subvert collective intelligence, leaders who seek to harness group wisdom must be diligent in avoiding these biases.

So how can we best harness the power of collective intelligence for our benefit? A decision market's lack of an agenda makes it nearly perfect for gathering information and providing an impartial answer, but it also reveals its biggest weakness. Someone still needs to ask the questions. For the Iowa Electronic Markets, the question was, "Who will win the election?" For the original HP experiment, the question was, "How many printers will we sell next quarter?" For Siemens, the question was, "Will we meet our project deadline?" And while not technically a decision market, the group question for the PCF was, "How can we better treat prostate cancer?"

Managers who understand both the power and the limitations of group decision-making need not be threatened by its effectiveness. The aggregation and processing of tacit and tactical knowledge generated at the local level must still be brought together and formed into a strategic plan; the knowledge must be given an objective. For the manager seeking to exploit collective intelligence, this is his challenge.

The corporate environment works against us, and the obstacles are abundant: lack of diversity, lack of knowledge sharing, bias in aggregation, desire for social confirmation, even fear of relinquishing control. But a company willing to take on these enemies of collective intelligence can unlock the extraordinary knowledge of the many.

Managers often draw quick conclusions based on limited knowledge.

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At Google, the Workers Are Placing Their Bets

By [IAN AUSTEN](#)

Like all search engines, [Google](#) helps people sort through information from the past. But a new service, being used inside the company, tries to forecast the future.

Google has created a predictive market system, basically a way for its employees to bet on the likelihood of possible events. Such markets have long been used to predict world events, like election results. Intrade, part of the Trade Exchange Network, allows people to bet on elections, stock market indexes and even the weather, for example.

In Google's system, employees can bet on how the company will perform in the future, forecasting things like product introduction dates and new office openings. It was devised under a program that allows engineers to spend one day a week on a project of their choice.

To help develop the system, Google consulted Hal R. Varian, an economist at the University of California, Berkeley. Professor Varian (who also writes the Economic Scene column for The New York Times) said that the final product was not entirely what he anticipated.

"I was a little surprised," Professor Varian said. "I expected this to be accurate because there's a lot of literature and experience with these systems. But this has been even better than I expected."

Google has not offered precise data on the system's accuracy, but a chart posted on the company's blog last week showed that, in the words of its accompanying entry, prices set for events through employees' wagering were a "pretty close" indication of the probability of events.

The market is based on the idea that a price established for an event will reflect bettors' consensus of the likelihood that it will happen. Thus, something priced at 20 cents should happen 20 percent of the time. The system accepts bets in 10-cent increments up to a dollar (no actual money is involved).

On its blog, Google compares the market to its search engine software. "Our search engine works well because it aggregates information dispersed across the Web, and our internal predictive markets are based on the same principle: Googlers from across the company contribute knowledge and opinions which are aggregated into a forecast by the market," the blog said.

Professor Varian, who has consulted with Google on other projects, attributes the higher-than-expected levels of accuracy to the large number of employees participating. In general, the higher the number of bettors in such systems, the better the predictions.

There is one issue, however, for which Google's market offers no prediction. "It's a fun thing," said Professor Varian. "Now one of the things we're thinking about is what to do with it."



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**HEADLINE:** PROTRADE Unveils Innovative Athlete Stock Market Where Sports Fans Compete for Cash and Prizes

**DATELINE:** SAN MATEO, Calif. Sept. 19, 2005

**BODY:**

PROTRADE:

-- New Sports Entertainment Company is Co-Founded by Mike Kerns and Jeff Ma and Backed by Arizona Diamondbacks General Partner Jeff Moorad and San Jose Sharks Owner Kevin Compton

-- PROTRADE Advisory Board Includes Sports Luminaries Brent Jones, Bill Walsh, and Jerry West

PROTRADE (<http://www.protrade.com>), a sports entertainment company committed to reshaping the way people think about sports, today unveiled its innovative athlete stock market. Under extensive development for more than two years by a "dream team" of MIT statisticians, leading sports figures, and economists, PROTRADE has created a **predictive market** for athletes where sports fans can buy and sell shares in players around the clock, competing for cash and prizes.

PROTRADE's athlete market is centered around a proprietary, real-time patent-pending system of algorithms that maps on-field performance to "earnings," for the first time truly quantifying how much game play helps or hurts a team's chances to win. In contrast with traditional fantasy sports offerings, PROTRADE's athlete "prices" move up or down based on actual trading by an active community of sports enthusiasts, engaged in competitions to test their sports acumen.

The company was co-founded by Mike Kerns and Jeff Ma. Kerns previously worked in sports management with former leading agent Jeff Moorad. Ma rose to fame several years ago when his outsmarting of Las Vegas casinos was made public as the M.I.T.-educated protagonist of the best seller *Bringing Down the House*.

Investors and advisors for the new company form an impressive roster of who's who in the sports and technology worlds: Kleiner Perkins partner and principal owner of the NHL San Jose Sharks Kevin Compton is the primary investor, along with Jeff Moorad, General Partner of the Arizona Diamondbacks. Company advisors include Brent Jones, former all-pro San Francisco 49ers tight end, co-founder of the Northgate Capital venture fund as well as a radio and TV sports and leading fantasy sports commentator; Bill Walsh, former head coach of the San Francisco 49ers and a member of the NFL Hall of Fame; and Jerry West, president and general manager of the Memphis Grizzlies, former general manager and architect of the world champion Los Angeles

Lakers, and a member of the NBA Hall of Fame.

"As sports fans, we founded PROTRADE to provide fans with a better, more interactive way to follow their favorite athletes, and help change the way people think about sports," said Kerns. "Every day, millions of sports fans argue about the relative value of one athlete versus another. With the PROTRADE market there is finally a place for the collective wisdom of sports fans to be captured and shared."

"We always hear commentators talk about how a player is paying 'dividends' for his team on the field, or how a strongly performing player has been a great 'return on investment,'" said Ma. "PROTRADE's unique system of valuing athlete performance makes it possible to assess whether that is really true. We can now know exactly how much an individual player contributes to his team's winning."

The basis of the company's offering, inspired by Michael Lewis' New York Times bestseller Moneyball, lies in its market for professional athletes, which was developed through an extensive analysis incorporating three years of data from all major sports, including every play of every game.

Initially, the service will launch with athletes from the National Football League. PROTRADE will introduce baseball and basketball markets in early 2006, with plans to cover additional sports to be announced at a later date. In preparation for the initial launch this month, PROTRADE secured a licensing arrangement with the National Football League Players Association, and is in talks with other major sports associations.

"PROTRADE enables an unparalleled degree of real-time interactivity for the sports fan to have a voice in how much he or she thinks an athlete impacts a team's win," said Jeff Moorad, a member of the board at PROTRADE and an investor in the company. "When I first heard about the PROTRADE concept, I knew immediately that it would be a great resource for both the industry and sports fans, and I knew I wanted to be a part of it."

The actual stock market and associated games are unique in that transactions can be made at any time, 24 hours a day, 7 days a week, including during the off-season, and while games are ongoing. Such real-time trading is at the heart of the PROTRADE system and differentiates itself from fantasy sport offerings.

"When I first met with the PROTRADE founders, I saw the vision immediately," said Kevin Compton, an investor and member of the company's Board of Directors. "This market will enhance the passion and interest of sports fans. There needs to be a global 24x7 athlete market and PROTRADE has built it."

PROTRADE will offer a constant stream of challenges throughout the year to keep sports fans engaged. Unlike traditional fantasy sports products, fans can select the length of the competition, ranging from as short as one week to as long as the entire season. Stock "portfolios" of athletes can also encompass a number of different athletes and positions from multiple sports, or a portfolio composed of one position, or a single sport within one portfolio, and any number of competitors within the same competition can purchase stock in the same athlete.

## About PROTRADE

PROTRADE is an innovative sports entertainment company committed to reshaping the way sports fans think about their favorite athletes by giving them a new and objective way to evaluate athlete performance. PROTRADE uses live market buy/sell activity to establish a **predictive market** of athletes and has assembled a dream team of MIT statisticians, economists and leading sports figures to develop a patent-pending valuation engine to map on-field performance to earnings. Driven by a deep love of the game and an obsession with athlete performance, PROTRADE was founded and backed by visionaries in the sports, statistics and technology arenas. PROTRADE has a staff of 31 based in San Mateo, CA.

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## How to profit from the noise of the rabble

(Filed: 18/09/2005)

### **A new website hopes to prove that crowds of random individuals are better stock-market forecasters than the experts. Guy Dennis puts it to the test**

Francis Galton, a British scientist who thought that people in general were stupid, went to the West of England Fat Stock and Poultry Exhibition in 1906 and came away with an interesting observation - one that, to a degree, challenged his views.

Visitors could pay to enter a competition to guess the weight of an ox at the show after it had been slaughtered and dressed. There was a prize for the best estimate. After the winners had been announced, Galton collected all the betting slips and analysed them.

At the time, he could never have imagined that his findings would be applied to financial markets in 2005, but Galton plotted the guesses of the ox's weight on a chart. Two things came to light.

One was the shape of the curve. Some guesses were very high and some were very low, but the majority were clustered around the average guessed weight, giving a "bell" curve, named after its appearance. What was more striking, however, was that the average guess was, at 1,197lbs, just 1lb less than the actual weight of the dressed ox.

Galton pondered his findings and the surprising accuracy of the average guess. Some had doubtless been made by visitors who knew nothing about oxen and who were stupid. Yet even a brilliant vet or scientist, or a team of them, would have struggled to guess as well as the crowd did.

As Galton wrote later: "The result seems to be more creditable to the trustworthiness of a democratic judgment than might have been expected."

A second, albeit metaphorical, visitor to the livestock exhibition was James Surowiecki, a bright US business journalist who writes for the New Yorker magazine. Last year he published a book called *The Wisdom of Crowds - Why the Many are Smarter than the Few*.

Its central premise, which was based on Galton's finding and could be viewed as counter-intuitive, was: "If you want to make a correct decision or solve a problem, large groups of people are smarter than a few experts."

The story of Galton and the livestock show is not the only anecdote quoted by the book. Another comes from the television show *Who Wants to be a Millionaire*.

When contestants call a friend for advice, the guidance they receive is correct 65 per cent of the time. But when they ask the audience for potential answers, their advice tends to be right 91 per cent of the time.

This is despite contestants choosing to ask friends whom they consider particularly knowledgeable, while the audience consensus includes votes from people who are ill-informed, some of whom are simply guessing. Presumably, when the crowd votes, poorly judged bets in each direction cancel each other out, leaving the collective wisdom of the crowd to shine through.

Surowiecki's work became a business best-seller and has inspired three Oxford University graduates to apply its premise to financial markets.

Stephan Bisse, 40, a former City trader at Goldman Sachs who completed an MBA at the university's Said Business School last year, has set up *ConsensusView.com*, helped by two young computer science graduates from Worcester College, Ed Smith and Sam Brightman.

Each day members of the public are invited to vote on whether they think any one of a series of share prices, indexes, currencies and financial futures contracts will rise or fall that day. Voters do not specify an actual forecast; they simply predict a rise or fall, and have to do so between 4.30am in the UK and the opening of the market they are voting on. There is the lure of a \$1,000 (£550) prize for the best forecaster each month.

The Oxford three hope to test the theory that crowds have wisdom, and if it holds water, create a business out of it. Bisse already runs a business importing and selling trading-system software, but believes that the website will also offer commercial opportunities if it gains momentum.

One idea is to put links on the website allowing voters to click through to online services offered by stockbrokers, who would pay a commission for business introductions. The three graduates also plan to offer subscriptions to services that scrutinise voting data to help find deeper predictive trends.

The key to all these efforts, however, will be the site's ability to attract voters and, ultimately, to forecast accurately the direction of markets. At the moment, two weeks after its launch, just 52 people are voting on it, but with a larger number the theory that a consensus view will tend to be right will be tested more comprehensively.

If the theory proves correct, the website's forecasting would become valuable and draw more visitors, some of whom would then presumably vote, further boosting the service.

"With a website like this, it is chicken and egg," says Bisse. At the moment, voters on the site include staff at ABN Amro and Goldman Sachs, the investment banks. Hedge fund traders are also among voters, although he will not disclose which funds they work for.

So how are the voters doing? Bisse and his colleagues measure performance by looking at the percentage of times the voters call the market direction correctly. If they get it right only half the time, this is no better than randomly guessing the market's direction. But anything more than 50 per cent over a sufficiently long period suggests that the voters do have predictive ability.

"We are encouraged so far," says Bisse in his Germanic accent, sitting in a small business park office.

Performances since the start of September, when the site started taking votes, vary between markets. But voters have called the daily direction of the FTSE100 index correctly 57 per cent of the time so far. For the gilts market the figure is 54 per cent, and for US 10-year bond futures the figure is 55 per cent, for example.

"At the moment it's not that significant, but when the number of participants reaches around the 1,000 mark, it could become very, very interesting," Bisse says.

Ultimately he hopes to draw tens of thousands of voters to the site from across the world.

Speaking on Wednesday morning, Bisse says his voters expected the FTSE100 to go down, although at the time we speak, just before noon, it is up by 0.1 per cent. Unfortunately for him and his venture, the market ends the day up by 0.18 per cent.

Perhaps the site simply does not have enough voters yet, although this may soon change. As any financial journalist knows, there are far more people who believe - rightly or wrongly - that they can call markets than guess the weight of a dressed ox.

Lots of new voters, while good for Bisse, might not be universally welcomed by existing voters on the site. The smaller the number of voters, the higher the chances of winning the \$1,000 each month.

The wisdom of crowds may be the last thing these voters want.

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**SECTION:** U.S. EDITION; AFTER KATRINA/VALUE DRIVEN; Pg. 69

**LENGTH:** 1426 words

**HEADLINE:** AN EXECUTIVE RISK HANDBOOK;  
Five ways managers can use scenario planning to prepare for disasters.

**BYLINE:** GEOFFREY COLVIN

**BODY:**

The tallest building in New Orleans, 51 evacuated floors of very expensive office space, is known as 1 Shell Square, because Shell Oil has so many of its operations headquartered there. Shell is famous for popularizing the corporate use of a technique called scenario planning to anticipate dangerous occurrences--and now it has been forced out of its own building by just such an event.

Ironic? Not really. Like most big companies, Shell has a contingency plan for physical disasters, which it implemented when Katrina hit, and no fancy scenarios were required to figure it all out. Far from being the kind of out-there event that scenario planning is designed to reveal, a major hurricane making landfall at New Orleans was the most predictable and predicted disaster in recent memory. You can't stop such an event, you can only deal with it, which Shell (like most major companies affected) is managing to do.

The larger point is that while Katrina was a monster among storms, it was a pipsqueak in the realm of risk analysis. The most important thing for managers to realize about Katrina is this: If it gets you thinking more intensively about risk, that's great--but it is exactly the wrong kind of risk for you to focus on.

Understanding corporate risk has become a legitimate discipline in the past decade, with thousands of companies adopting "risk management" programs and hundreds appointing chief risk officers. To the CEOs who've done those things: Bravo--you realize that risk is one of the most powerful factors driving your stock price, and you were probably stunned when you confronted the total amount of risk your company faces. What amazes me is how many companies still don't take full advantage of what risk management has taught us--specifically, five lessons that every company could apply to better understand and control its risks.

1. Turbocharge your imagination. The events that do the worst damage are the ones no one even conceived of. Exhibit A is 9/11. The idea that a passenger jet might crash into the World Trade Center had been thought of; it was a fairly obvious possibility, especially since a plane had once crashed into the Empire State Building. What no one imagined was the combination of large planes with nearly full fuel tanks plus the impact of the crashes jarring fireproofing from the girders, and how this could bring the towers down. In retrospect, it obviously could have been imagined. It just wasn't.

2. Build scenarios. Cold War military strategists originated scenario planning, so by now the technique is well developed. Properly guided, it can help managers see important possible events they wouldn't otherwise have thought of--in Shell's case, famously, the Arab oil embargo of the 1970s. It's important to emphasize that no scenario told Shell's managers the embargo would happen; this is a strategic-planning technique, not

Nostradamus. But one of the scenarios the strategy group did cook up envisioned an accident in Saudi Arabia that raised the price of oil, causing Arab producers to rethink why they set prices as they did. Shell managers carried the analysis further and realized that Arab producers, angry with the U.S. for its support of Israel in the Six-Day War, might believe they could serve many purposes at once by launching an embargo or restricting supply.

To repeat, nothing in the exercise told Shell managers to expect an embargo. But because they had done the exercise, they could see how events might lead to one, and when it happened, they were much better prepared than their competitors to respond. They had seen this movie already, so they slowed refinery expansion and adapted their refineries to handle many types of crude, while competitors vacillated. The common view in the industry is that Shell came through the oil shock far better than any other major producer.

To get into the scenario mindset, check the scenarios others have built. Shell publishes the outline of its annual exercise ([www.shell.com/scenarios](http://www.shell.com/scenarios)), and while it's intended to help a global energy company, it's widely applicable. The latest version foresees a world shaped by three large forces: a demand for efficiency and corporate performance as capitalism spreads and capital markets become global, a demand for community as developing nations seek a more peaceful future, and a demand for security as the world seemingly becomes more dangerous. Those forces will inevitably conflict. What might happen when they do? How might it affect your company?

Another recent set of deeply developed scenarios that will stimulate your mind comes from the National Intelligence Council ([www.cia.gov/nic](http://www.cia.gov/nic)), picturing possible futures for 2020. Will globalization advance peacefully and prosperously--with China and India becoming economic superpowers? Or will the U.S. continue to dominate the new global order? Or will spreading nuclear weapons lead to a world so secure it's Orwellian? Your company's future is no more than two steps removed from the answers to those questions.

3. Think in probabilities. If you can imagine an event, you can try to assign a probability to it, if not in absolute terms--0.1%, 3%, 50%--then at least relative to other events. Sounds obvious. The problem is that it's excruciatingly difficult in real life because our brains aren't wired that way. Nassim Nicholas Taleb, in his book *Fooled by Randomness*, cites an example: Ask a sample of travelers at an airport how much they'd pay for an insurance policy that would give their beneficiary \$ 1 million if they die from any cause on their trip. Then ask another sample how much they'd pay for a policy that would pay \$ 1 million if they're killed by terrorists on their trip. People will pay more for the second policy, though that clearly makes no sense. We just do not think rationally about probabilities, a tendency every manager must fight.

4. Use the power of markets. You've heard of the remarkable success of **predictive markets**, where real people bet real money on the likelihood of specific events. Around for years, these markets attracted lots of acclaim after calling the squeaker 2004 presidential election. You can check them--InTrade.com is the best known--to see if they're offering contracts on events that might affect your business. For example, InTrade recently showed chances of private Social Security accounts being enacted by December 2006 at about 17%.

But you can also create such markets, focused on exactly the questions you want answered, among your own employees (generally with small amounts of money furnished by the company). Hewlett-Packard has used internal markets to forecast sales more accurately than the marketing manager could; Eli Lilly has used them to predict the success of drug research with uncanny accuracy. Well-designed **predictive markets** can give managers new insight into specific risks and how they might affect the company.

5. Create a culture that insists on facing reality. A tall order, admittedly. But much of the recent thinking on corporate risk assumes that in a volatile and fast-changing world, a great many events simply cannot be prepared for. Try though you may to imagine possible futures, you can never entirely succeed. The key then becomes responding quickly and effectively to the bolt from the blue, and the No. 1 impediment--incredible yet

obvious--is failing to accept that the trouble has happened. Even in New Orleans, immediately after Katrina passed by, we saw TV images of people dancing in Bourbon Street; they thought everything would be okay.

A tendency to avoid reality, to minimize bad news, is embedded deep in corporate culture. But while most cultural change must start at the top, I believe this change can start anywhere. The penalty for not changing seems to be getting stiffer.

Take all these steps, and you'll be vastly better prepared for tomorrow than 95% of your competitors. But even if you take none of them right away, sit down in the next seven days, preferably with a few colleagues, and catalog as many risks for your business as you can think of--strategic, financial, operational, reputational, regulatory. You will never again think about your company's risks in the same way, and I guarantee that you'll feel forced to act. Make that response part of Katrina's legacy.

FEEDBACK [gcolvin@fortunemail.com](mailto:gcolvin@fortunemail.com)

Some companies create **predictive markets** by getting employees to bet on events.

**GRAPHIC:** PHOTO: SCOTT THODE, THE COLLAPSE of the Twin Towers, unlike Katrina, was an event no one had imagined.; PHOTO: DOUGLAS R. CLIFFORD--ST. PETERSBURG TIMES/WPN, [See caption above.]; PHOTO: BETTMANN/CORBIS, PLANNING FOR THE WORST helped Shell endure the 1970s oil shock better than its rivals.

**LOAD-DATE:** September 19, 2005

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## Forget Targeted Samples and Ask the Crowd

Sep  
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In his award-winning ESOMAR paper, John Kearon, CEO & Chief Juicer of BrainJuicer, explains his attempt to apply academic thinking on 'research markets' and the 'wisdom of crowds' to concept testing. The results are still inconclusive, threaten conventional MR techniques - suggesting that a diverse, non-target group can be as successful as a target sample.

Kearon's paper 'A Fresh Approach to Concept Testing: How to Get More Research for Less Time and Money' was inspired by the theories of James Surowiecki's best-selling US book 'The Wisdom of Crowds'. The paper challenges modern corporate decision-making models, arguing that we should 'stop hunting for the expert and ask the crowd instead', stating that under certain circumstances, crowds make better decisions than even individual experts. For a crowd to be wise, he states, it must be diverse, independent and faithfully aggregated.

Surowiecki raises the possibility of using 'decision markets' or what Kearon calls 'research markets' to predict market outcomes. One successful example is the Iowa Electronic Market (IEM), where betting on the outcomes of elections has proved significantly more accurate than conventional political polling. The IEM's election-event predictions in presidential elections between 1988 and 2000 were, on average, off by just 1.37%. Similarly, the Hollywood Exchange web site - again based on betting - managed to predict 40 out of 40 Oscar winners better than any newspaper pundit.

Kearon says that applying such 'wisdom of crowds' thinking to MR would 'reinforce the wisdom of using large quantitative samples for decision-making' - but would of course also throw a huge question mark over the necessity of using targeted samples to predict in-market performance.

His first experiment, carried out in January for Unilever, consisted of comparing the results of two pieces of research:

- An online 'research market', using a diverse, non-representative panel of 500 people. Each was asked to state which of the 10 new product ideas they believed would be most and least successful in the marketplace. The final results aggregated 'favourite' and 'least favourite' choices to mimic the actions of buyers and sellers in a market.
- vs
- An online standard concept test for each one of the same 10 new product ideas, using matched, representative samples of 100 respondents in the target audience.

Both tests rated the same five ideas as above average - with more extreme, polarised results for the 'research market' - in line with what one would expect from a standard forced choice test. The company then removed the betting mechanism, which it suspected was encouraging participants to second-guess other people's answers and distort the market. This time, the results were less extreme, and produced an even stronger match with standard product test results. That the 'research market' and a diverse crowd of people got it almost perfectly right surprised Kearon as much as everyone else: 'This should not have happened - remember, this is a crowd of people rather than a representative sample of the target market and a forced choice test which is known to produce more extreme results'.

Kearon is now keen to complete ten similar experiments to test the theories further, testing the minimum number of respondents needed, the optimum number of ideas for respondents to choose from, and the minimum level of knowledge required by the 'crowd'.

If validated, he points out that the 'research markets' method would be not only cheaper and easier to run would 'produce an accurate but even clearer result, as the slightly more extreme ratings give more clarity best ideas and are more punishing on the weak ones'.

The full paper is available at: [www.mrweb.com/drno/brainjuicerpres.pdf](http://www.mrweb.com/drno/brainjuicerpres.pdf)