



The Wisdom of Crowds

Why the Many Are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations

by James Surowiecki

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Focus

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Concepts & Trends

Take-Aways

- Randomly assembled groups of nonexperts consistently demonstrate more astuteness than individual experts.
- Crowds are very good at solving cognition, coordination and cooperation problems.
- To be wise, crowds need to be diverse, independent and decentralized.
- For wisdom, they also must be able to aggregate individual judgments into a whole.
- Information cascades, wherein crowd members follow each other, are usually pernicious since group members imitate each other instead of using individual, independent judgment.
- Too much of the same information leads to herding behavior.
- Organizations tend to stifle diverse, independent views.
- Beating the group judgment of racetrack betters and stock market investors is rare.
- Congressional critics should not have defeated the Policy Analysis Market, which would have let the public bet on policy, opening the process to crowd wisdom.
- Democracy, which brings together diverse, independent, decentralized perspectives, is probably the wisest form of government.

Rating (10 is best)

Overall

9

Applicability

7

Innovation

8

Style

9

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Relevance

What You Will Learn

In this Abstract, you will learn: 1) Why large groups of people seem to be better than experts when it comes to forecasts, valuation and other tasks; 2) How scientists prove that crowds are wise; and 3) Why it matters.

Recommendation

This well-written bestseller explores the apparent anomaly that crowds of nonexperts seem to be collectively smarter than individual experts or even small groups of experts. This basic insight is at the heart of contemporary financial investment theory, with its emphasis on the difficulty of outguessing the market. Beginning with British scientist Francis Galton's remarkable discovery in 1906 that a crowd of nonexperts proved surprisingly competent at guessing the weight of an ox, financial columnist and author James Surowiecki skillfully recounts experiments, discoveries and anecdotes that demonstrate productive group thinking. The concept does not come as news to anyone reasonably well read in modern financial literature, but *getAbstract* recommends this comprehensive, fresh presentation.

Abstract

"Under the right circumstances, groups are remarkably intelligent, and are often smarter than the smartest people in them."

"If you set a crowd of self-interested, independent people to work in a decentralized way on the same problem, instead of trying to direct their efforts from the top down, their collective solution is likely to be better than any other solution you can come up with."

The Weight of an Ox

In 1906, scientist Francis Galton discovered something remarkable in a very nonscientific setting: the West of England Fat Stock and Poultry Exhibition. Galton had spent his career studying human characteristics, work that left him convinced that the only way to ensure social health and stability was to put power in the hands of a few elite people. Yet his experience at the exhibition strongly suggested that such elitism was unwise in the extreme, and it taught him a lesson about crowds. One attraction at the livestock fair was a contest to guess the weight of a live ox – or rather, what a live ox would weigh after it had been butchered. Contestants bought tickets on which they entered their guesses.

Galton aimed to prove that the average fairgoer would be far off the mark. Much to his surprise, after he tallied and averaged the guesses to get a consensus estimate from the crowd, he found that the crowd had estimated the weight of the dressed ox almost exactly. In fact, the crowd's estimate was only a pound off – the ox ultimately weighed 1,198 pounds, and the crowd's average guess had been 1,197 pounds. "The result seems more creditable to the trustworthiness of a democratic judgment than might have been expected," Galton wrote.

He was the first. Subsequent scientific testing in many fields, and on many occasions, has demonstrated the "wisdom of crowds." Crowds seem to excel in three types of decisions:

- "Cognition problems" – Crowds seem to be very good at solving problems with a definite outcome, such as the probable winner of an athletic contest, the number of items people will buy and even the location of a sunken submarine.
- "Coordination problems" – Crowds are quite good at coordinating their members' movements. That is, buyers and sellers find each other at markets, and pedestrians on crowded New York streets manage to walk quickly to their destinations without knocking each other down.

“The simplest way to get reliably good answers is just to ask the group each time.”

“People...can coordinate themselves to achieve complex, mutually beneficial ends even if they're not really sure, at the start, what those ends are or what it will take to accomplish them.”

“Sometimes the messiest approach is the wisest.”

“The striking thing about herding is that it takes place even among people who seem to have every incentive to think independently, like professional money managers.”

- “Cooperation problems” – People who do not even know each other can work together for the common good. For example, even though it is impossible for revenue officials to track down every tax cheat, enough people pay their taxes honestly enough to keep governments going.

Certainly, group answers are not infallible. Three things make groups more effective at dealing with problems, and the absence of these factors makes groups less effective. They are:

1. “Diversity” – Paradoxically, a crowd needs differences of opinion to arrive at a genuinely sound consensus opinion.
2. “Independence” – Members of the crowd must think as separate individuals, and not merely follow each other. The wisdom of the crowd depends on each member thinking and evaluating independently.
3. “Decentralization” – Central direction works against the wisdom of crowds, because it impedes diversity and independence.

The wisdom of crowds, in short, depends on a delicate balance. Groups need rules, but not too many. Members must communicate with each other, but not too much. Groups must be small enough, but not too small, and big enough, but not too big (that is generally true; solutions to some kinds of problems, like guessing the ox's weight, can evolve from very large groups).

When conditions are just right, groups are capable of astonishing feats. In 1968, a U.S. submarine vanished while returning to port. The last information the Navy had was the location of its final radio contact. No one knew how far or in what direction the sub had traveled subsequently. An officer came up with an interesting idea. He gathered a group of widely diverse people, some experienced in salvage, some in submarines, some in mathematics. He did not ask them to consult with each other. He asked them to participate in a contest for prizes of premium Scotch. Each person placed a bet on what had happened to the sub. Like Galton, the officer performed a statistical analysis on the guesses. The group's consensus judgment was almost precisely correct: searchers found the submarine less than 300 yards from the location the consensus estimate had predicted.

Cognition

A popular television quiz show, *Who Wants to Be a Millionaire*, offered contestants three avenues of assistance in answering questions: they could call a knowledgeable friend, get two out of four answers eliminated from multiple-choice questions, or poll the audience. Interestingly, answers from the randomly assembled audience members were more accurate than answers from informed friends. The friends were correct in only 65% of the cases, but the audience members collectively got 91% of the answers right.

In 1986, the *Challenger* space shuttle exploded shortly after launch. The stock market moved immediately. Four contractors had a role in the launch: Rockwell International, Lockheed, Martin Marietta and Morton Thiokol. All four stocks went down, but Morton Thiokol suffered the most, and languished after the others began to rise again. Curiously, no information seemed to justify the market's judgment that Morton Thiokol was responsible for the explosion – until six months later, when investigators found that its device had been the space shuttle's fatal flaw.

It is not clear how a market of nonexperts figured this out six months before expert investigators did. There is no indication that Morton Thiokol executives sold their

“The interesting thing, ultimately, isn’t that we cooperate with those we know and do business with regularly. The interesting thing is that we cooperate with strangers.”

“The fundamental problem with an information cascade is that after a certain point it becomes rational for people to stop paying attention to their own knowledge – their private information – and to start looking instead at the actions of others and imitate them.”

“The more important the decision, the less likely a cascade is to take hold.”

“Knowing and knowing that you know are apparently two very different skills.”

stock or that insiders exploited privileged information. Nothing happened, except that a diverse group of independent thinkers working in a decentralized way formed an astute aggregate opinion.

The judgment of the crowd is right, time after time. Beating the crowd’s consensus judgment about horse races and football results is very difficult. Google, which uses an algorithm to assess how many Web pages link to certain information sources, essentially samples the wisdom of crowds to form a weighted average.

Diversity

How do bees find food? They don’t coordinate their activities and fly out in a group to fields that their collective judgment identifies as the best prospects for flowers. Instead, individual bees go scouting. The scouts return, and those who found nectar do a kind of dance – the more intense the dance, the more nectar. Other bees follow each scout. Their numbers – curiously enough – almost precisely match the amount of nectar at each site. Like the people at Galton’s fair or the submarine searchers, bees constitute a wise crowd.

Diversity affects honeybee decision making, because as scouts return from different fields, the hive considers a diverse set of possibilities. Diversity is so valuable that political science research has discovered that a random group of nonexperts is more effective at solving sophisticated problems than a group of experts. Apparently, the experts’ knowledge is so similar that the value of diversity is lost. Interestingly enough, then, an organization composed entirely of extremely smart people may be less effective in the market than an organization embracing a range of people.

This does not mean that utterly uninformed people are smarter than experts, but rather that a group of people with different kinds of expertise and varying perspectives may be collectively wiser than the best and brightest. In fact, one of the most consequential failures of the best and brightest was the John F. Kennedy administration’s Bay of Pigs invasion. The administration and its military planners shut out dissenting voices, and paid a steep price for homogeneity. Diversity brings assorted points of view into a group, and makes it easier for people to express their differences. Diversity almost always guarantees independence.

Independence and Imitation

Independence buttresses the wisdom of crowds in two ways: it prevents the correlation of bad decisions from driving the entire group in the wrong direction. And, it ensures a range of perspectives, from old and familiar to new and unconventional.

Independence is valuable in groups, but difficult to achieve. Human beings are social animals and tend to influence each other. When the influence of the group becomes too pronounced, people engage in herd behavior. Herding is the phenomenon that creates stock market bubbles and other manias. Herding behavior often results from an “information cascade,” which happens when people believe that other people’s examples convey important information – about the value of a stock, the quality of a restaurant or the like. Indeed, in New York City, people often favor restaurants with long lines, apparently believing that if the food were bad, people would not be standing in line to eat it.

Some cascades are good for society. For example, machinist William Sellers provoked a cascade that enabled the adoption of standardized screws. He first persuaded influential customers, such as the Pennsylvania Railroad, to adopt standardized screws. The more influential customers he persuaded to buy the screws, the easier it became for

“A Bank of England study (concluded that)... groups could make intelligent decisions quickly, and could do better than their smartest members.”

“The decisions that democracies make may not demonstrate the wisdom of the crowd. The decision to make them democratically does.”

him to persuade others to do likewise. Eventually the cascade resulted in widespread use of standard screws, without which mass production is almost inconceivable. Yet, information cascades may also cause trouble, as any stock market bubble illustrates.

Decentralization

America’s intelligence system is highly decentralized. Numerous agencies gather and analyze intelligence. Yet these agencies collectively failed to assemble the pieces of information that would have allowed them to predict and possibly prevent the September 11 attacks. Perhaps centralization could solve such problems. On the other hand, crowds are more correct when they are decentralized, although they are not invariably accurate or correct.

Decentralization helps ensure the independence and diversity that crowds need in order to be wise. The problem with decentralization is that sometimes information that is available in one part of the crowd does not reach another part. What is needed, therefore, is not centralization, but rather more effective decentralization.

For example, the various intelligence agencies could retain their independence, but link their databases so that information might flow more freely. Or, in another example, decision markets could allow experts in various agencies to bet on future events in world hotspots. Indeed, when a Policy Analysis Market (PAM) was proposed in 2003, it was defeated after a storm of congressional criticism. This market would have allowed people to place bets even on the likelihood of terrorist attacks and assassination attempts. Such a market could have contributed substantially to better decision making by policy makers.

Coordination

The El Farol bar in Sante Fe, New Mexico, became moderately famous in economic literature after economists studied it as an example of coordination. If El Farol was at 60% capacity, it was a fun place to be. At more than 60%, it was too crowded to be fun. The coordination problem that economists considered was: How did people decide when to go to the bar, given that they wanted it to be slightly more than half empty when they arrived. The economists discovered that individuals used very different strategies to decide to go or not. Indeed, sometimes the bar would be too crowded – or, conversely, almost empty – for weeks. Yet, on average, the bar was just about right: more or less 60% full.

Crowds can be remarkably good at coordination, based on their culture, convention and expectation. In another experiment, a researcher asked a group of law students to imagine that they had to meet someone in New York City, but that they did not know where or at what time. Remarkably, most of them picked Grand Central Station’s information booth as the place, and high noon as the time. The researcher decided that people internally marked certain “focal points.”

Culture and expectations are strong determinants of these focal points. If the law students were left in the middle of the Gobi Desert, they would be unlikely to know where to meet. Perhaps, however, two Mongolian herdsmen would have just as much difficulty finding a focal point in Manhattan.

About The Author

James Surowiecki is a staff writer at *The New Yorker*, which publishes his popular business column, “The Financial Page.”