The Wisdom of Crowds

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(Redirected from Wisdom of crowds)
See also: Wisdom of the crowd

The Wisdom of Crowds: Why the Many Are Smarter Than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations, published in 2004, is a book written by James Surowiecki about the aggregation of information in groups, resulting in decisions that, he argues, are often better than could have been made by any single member of the group. The book presents numerous case studies and anecdotes to illustrate its argument, and touches on several fields, primarily economics and psychology.

The opening anecdote relates Francis Galton's surprise that the crowd at a county fair accurately guessed the weight of an ox when their individual guesses were averaged (the average was closer to the ox's true butchered weight than the estimates of most crowd members, and also closer than any of the separate estimates made by cattle experts).[1]

The book relates to diverse collections of independently-deciding individuals, rather than crowd psychology as traditionally understood. Its central thesis, that a diverse collection of independently-deciding individuals is likely to make certain types of decisions and predictions better than individuals or even experts, draws many parallels with statistical sampling, but there is little overt discussion of statistics in the book.

The Wisdom of Crowds

Cover of mass market edition by Anchor

Author	James Surowiecki
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Its title is an allusion to Charles Mackay's *Extraordinary Popular Delusions and the Madness of Crowds,* published in 1841.[*citation needed*]

Contents

Types of crowd wisdom

Surowiecki breaks down the advantages he sees in disorganized decisions into three main types, which he classifies as

- Cognition

  Thinking and information Processing
  Market judgment, which he argues can be *much* faster, more reliable, and less subject to political forces than the deliberations of experts or expert committees.

- Coordination

  Coordination of behavior includes optimizing the utilization of a popular bar and not colliding in moving traffic flows. The book is replete with examples from experimental economics, but this section relies more on naturally occurring experiments such as pedestrians optimizing the pavement flow or the extent of crowding in popular restaurants. He examines how *common understanding* within a culture allows remarkably accurate judgments about specific reactions of other members of the culture.

- Cooperation

  How groups of people can form networks of trust without a central system controlling their behavior or directly enforcing their compliance. This section is especially pro free market.

Four elements required to form a wise crowd

Not all crowds (groups) are wise. Consider, for example, mobs or crazed investors in a stock market bubble. According to Surowiecki, these key criteria separate wise crowds from irrational ones:

Criteria	Description
Diversity of opinion	Each person should have private information even if it's just an eccentric interpretation of the known facts.
Independence	People's opinions aren't determined by the opinions of those around them.
Decentralization	People are able to specialize and draw on local knowledge.
Aggregation	Some mechanism exists for turning private judgments into a collective decision.

Failures of crowd intelligence

Surowiecki studies situations (such as rational bubbles) in which the crowd produces very bad judgment, and argues that in these types of situations their cognition or cooperation failed because (in one way or another) the members of the crowd were too conscious of the opinions of others and began to emulate each other and conform rather than think differently. Although he gives experimental details of crowds collectively swayed by a persuasive speaker, he says that the main reason that groups of people intellectually conform is that the system for making decisions has a systematic flaw.

Surowiecki asserts that what happens when the decision making environment is not set up to accept the crowd, is that the benefits of individual judgments and private information are lost and that the crowd can only do as well as its smartest member, rather than perform better (as he shows is otherwise possible). Detailed case histories of such failures include:

Extreme	Description
Homogeneity	Surowiecki stresses the need for diversity within a crowd to ensure enough variance in approach, thought process, and private information.
Centralization	The Columbia shuttle disaster, which he blames on a hierarchical NASA management bureaucracy that was totally closed to the wisdom of low-level engineers.
Division	The US Intelligence community, the 9/11 Commission Report claims, failed to prevent the 11 September 2001 attacks partly because information held by one subdivision was not accessible by another. Surowiecki's argument is that crowds (of intelligence analysts in this case) work best when they choose for themselves what to work on and what information they need. (He cites the SARS-virus isolation as an example in which the free flow of data enabled laboratories around the world to coordinate research without a central point of control.) The Office of the Director of National Intelligence and the CIA have created a Wikipedia style information sharing network called Intellipedia that will help the free flow of information to prevent such failures again.
Imitation	Where choices are visible and made in sequence, an "information cascade"[2] can form in which only the first few decision makers gain anything by contemplating the choices available: once past decisions have become sufficiently informative, it pays for later decision makers to simply copy those around them. This can lead to fragile social outcomes.
Emotionality	Emotional factors, such as a feeling of belonging, can lead to peer pressure, herd instinct, and in extreme cases collective hysteria.

Connection

Surowiecki presented a session entitled *Independent Individuals and Wise Crowds, or Is It Possible to Be Too Connected?*[3]

> The question for all of us is, how can you have interaction without information cascades, without losing the independence that's such a key factor in group intelligence?

He recommends:

- Keep your ties loose.
- Keep yourself exposed to as many diverse sources of information as possible.
- Make groups that range across hierarchies.

Tim O'Reilly[4] and others also discuss the success of Google, wikis, blogging, and Web 2.0 in the context of the wisdom of crowds.

Applications

Surowiecki is a very strong advocate of the benefits of decision markets and regrets the failure of DARPA's controversial Policy Analysis Market to get off the ground. He points to the success of public and internal corporate markets as evidence that a collection of people with varying points of view but the same motivation (to make a good guess) can produce an accurate aggregate prediction. According to Surowiecki, the aggregate predictions have been shown to be more reliable than the output of any think tank. He advocates extensions of the existing futures markets even into areas such as terrorist activity and prediction markets within companies.

To illustrate this thesis, he says that his publisher is able to publish a more compelling output by relying on individual authors under one-off contracts bringing book ideas to them. In this way they are able to tap into the wisdom of a much larger crowd than would be possible with an in-house writing team.

Will Hutton has argued that Surowiecki's analysis applies to value judgments as well as factual issues, with crowd decisions that "emerge of our own aggregated free will [being] astonishingly... decent". He concludes that "There's no better case for pluralism, diversity and democracy, along with a genuinely independent press."[5]

Applications of the wisdom-of-crowds effect exist in three general categories: Prediction markets, Delphi methods, and extensions of the traditional opinion poll.

Prediction markets

Main article: Prediction market

The most common application is the prediction market, a speculative or betting market created to make verifiable predictions. Surowiecki discusses the success of prediction markets. Similar to Delphi methods but unlike opinion polls, prediction (information) markets ask questions like, "Who do you think will win the election?" and predict outcomes rather well. Answers to the question, "Who will you vote for?" are not as predictive.

Assets are cash values tied to specific outcomes (e.g., Candidate X will win the election) or parameters (e.g., Next quarter's revenue). The current market prices are interpreted as predictions of the probability of the event or the expected value of the parameter. Betfair is the world's biggest prediction exchange, with around $28 billion traded in 2007. NewsFutures is an international prediction market that generates consensus probabilities for news events. Several companies now offer enterprise class prediction marketplaces to predict project completion dates, sales, or the market potential for new ideas.[*citation needed*]. A number of Web-based quasi-prediction marketplace companies have sprung up to offer predictions primarily on sporting events and stock markets but also on other topics. Those

companies include Piqqem, Cake Financial, Covestor, Predictify, and the Motley Fool (with its Fool CAPS product).

Delphi methods

Main article: Delphi method

The Delphi method is a systematic, interactive forecasting method which relies on a panel of independent experts. The carefully selected experts answer questionnaires in two or more rounds. After each round, a facilitator provides an anonymous summary of the experts' forecasts from the previous round as well as the reasons they provided for their judgments. Thus, participants are encouraged to revise their earlier answers in light of the replies of other members of the group. It is believed that during this process the range of the answers will decrease and the group will converge towards the "correct" answer. Many of the consensus forecasts have proven to be more accurate than forecasts made by individuals.

In Popular Culture

TV illusionist Derren Brown claimed to use the Wisdom of Crowds concept to explain how he apparently *predicted* the UK National Lottery results in September 2009. His explanation was met with criticism in the on-line community, who argued the concept was misapplied[6]. The Wisdom of Crowd concept by definition requires a known truth or absolute in order to work; the lottery has no such previously-existent absolute outcome. The methodology employed was too, flawed; the sample of people, couldn't have been totally objective and free in thought, because they were gathered multiple times and socialised with each other too much; a condition Surowiecki tells us is corrosive to pure independence and the diversity of mind required (Surowiecki 2004:38). Groups thus fall into groupthink where they increasingly make decisions based on influence of each other and are thus *less* accurate. However, other commentators have suggested that, given the entertainment nature of the show, Brown's misapplication of the theory may have been a deliberate smokescreen to conceal his true method[7][8].

Criticism

In his book *Embracing the Wide Sky*, Daniel Tammet finds fault with this notion. He explains that this notion may work in the Who Wants to be a Millionaire scenario because audience members have various levels of knowledge that can be coordinated to provide a correct answer in aggregate: Some persons will know the correct answer, others will know what are not the right answers and some will have no clue. Those who know the right answer will choose it, and the others will choose among what might seem the possible answers. The result will be to give a slight edge to the correct answer, even if only a few actually know the correct answer.

However, Tammet points out the potential for problems in systems which have less well defined means of pooling knowledge: Subject matter experts can be overruled and even wrongly punished by less knowledgeable persons in systems like Wikipedia, citing a case of this on Wikipedia. Furthermore, Tammet mentions the assessment of the accuracy of Wikipedia as described in a study mentioned in Nature in 2005, outlining several flaws in the study's methodology which included that the study made no distinction between minor errors and large errors.

Tammet also cites the Kasparov versus the World, an online competition that pitted the brainpower of tens of thousands of online chess players choosing moves in a match against Gary Kasparov, which was won by Kasparov, not the "crowd."

Multiple examples of when individuals are smarter than crowds might also be found on 1 vs. 100 game show winner list.

See also

- Central Limit Theorem
- Collaborative Filtering
- Collarity
- Crowd funding
- Crowd psychology
- Crowdsourcing
- Dumb agent theory
- Dotmocracy
- Efficient market hypothesis
- Groupthink
- Information Routing Group
- Informational cascade
- Iowa Electronic Markets
- Open source governance
- Piqqem
- Policy Analysis Market supported by the author of The Wisdom of Crowds
- Problem solving
- Scenario Voting, a Microsoft application of The Wisdom of Crowds
- Who Wants To Be A Millionaire? (The "Ask the Audience" option)
- Wideband delphi

References

1. ^ Introduction (page XII): Although Surowiecki's description of the "averaging" calculation (page XIII) implies that Galton first calculated the *mean*, inspection of the original 1907 paper indicates that Galton considered the *median* the best reflection of the crowd's estimate. (Galton, Francis (1907-03-07). "Vox Populi" (http://galton.org/essays/1900-1911/galton-1907-vox-populi.pdf?page=7) . *Nature*. http://galton.org/essays/1900-1911/galton-1907-vox-populi.pdf?page=7. "the middlemost estimate expresses the vox populi".). Galton's quotation from the end of this paper (given by Surowiecki on page XIII) actually refers to the surprising proximity of the median and the measurement, and not to the (much closer) agreement of mean and measurement (which is the context Surowiecki gives it in). The mean (only 1 pound, rather than 9, from the ox's weight) was only calculated in Galton's subsequent reply to a letter from a reader, though he still advocates use of the median over any of the "several kinds" of mean (Galton, Francis (1907-03-28). "Letters to the Editor: The Ballot-Box" (http://galton.org/cgi-bin/searchImages/galton/search/essays/pages/galton-1907-ballot-box_1.htm) . *Nature*. http://galton.org/cgi-bin/searchImages/galton/search/essays/pages/galton-1907-ballot-box_1.htm. "my proposal that juries should openly adopt the median when estimating damages, and councils when estimating money grants, has independent merits of its own".); he thinks the median, which is analogous to the 50% +1 vote, particularly democratic.
2. ^ Sushil Bikhchandani, David Hirshleifer, Ivo Welch. October 1992. "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades." *Journal of Political Economy*, Vol. 100, No. 5, pp. 992-1026.

3. ^ Independent Individuals and Wise Crowds, or Is It Possible to Be Too Connected? (http://conferences.oreillynet.com/cs/et2005/view/e_sess/7022) at the 2005 Emerging Technology Conference
4. ^ O'Reilly -- What Is Web 2.0 (http://oreilly.com/web2/archive/what-is-web-20.html?page=3)
5. ^ Hutton, Will (2005-09-18). "Comment: The crowd knows best" (http://observer.guardian.co.uk/comment/story/0,6903,1572869,00.html) . Guardian Unlimited. http://observer.guardian.co.uk/comment/story/0,6903,1572869,00.html. Retrieved 2007-11-14.
6. ^ Dimartino-Marriott, Martin (2009-09-15). "Comment: Derren Brown's Interpretation of the Wisdom of Crowds" (http://www.martinblueprint.co.uk/derren-brown-and-the-wisdom-of-crowds) . MartinBlueprint.co.uk. http://www.martinblueprint.co.uk/derren-brown-and-the-wisdom-of-crowds. Retrieved 2010-01-06.
7. ^ "Brown Lotto trick 'confuses' fans" (http://news.bbc.co.uk/1/hi/entertainment/8252235.stm) . BBC News. http://news.bbc.co.uk/1/hi/entertainment/8252235.stm. Retrieved 2009-09-13.
8. ^ . Sky News. http://news.sky.com/skynews/Home/UK-News/Derren-Brown-Lottery-Trick-YouTube-Video-By-Cyriak-Harris-Appears-To-Show-Split-Screen-Behind-Stunt/Article/200909315382474?chooseNews=stories. Retrieved 2010-02-16.

Further reading

- Bikhchandani, Sushil, David Hirshleifer, and Ivo Welch. "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades." *Journal of Political Economy*, Vol. 100, No.5, pp. 992-1026, 1992.
- Ivanov, Kristo (1972). Quality-control of information: On the concept of accuracy of information in data banks and in management information systems: The University of Stockholm and The Royal Institute of Technology. (Doctoral diss. Diss. Abstracts Int. 1974, Vol 35A, 3, p. 1611-A. Nat. Techn. Info. Service NTIS order No. PB-219297
- Johnson, Steven, *Emergence: the connected lives of ants, brains, cities and software* (2002) Scribner, ISBN 0-684-86876-8
- Le Bon, Gustave. (1895), *The Crowd: A Study of the Popular Mind (http://onlinebooks.library.upenn.edu/webbin/gutbook/lookup?num=445)* . Available from Project Gutenberg at University of Pennsylvania
- Lee, Gerald Stanley. (1913). *Crowds. A moving-picture of democracy (http://www.gutenberg.org/etext/15759)* . Doubleday, Page & Company. Available from Project Gutenberg
- Sunstein, Cass R., *Infotopia: How Many Minds Produce Knowledge* (2006) Oxford University Press, ISBN 0195189280
- Surowiecki, James (2004). *The Wisdom of Crowds: Why the Many Are Smarter Than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations* Little, Brown ISBN 0-316-86173-1
- Tarde, Gabriel (2001, orig. 1901). *L'opinion et la foule*. BookSurge Publishing, ISBN 0543970833

External links

- James Surowiecki - Independent Individuals and Wise Crowds (http://itc.conversationsnetwork.org/shows/detail468.html) Audio interview from IT Conversations
- Wired Magazine (http://www.wired.com/wired/archive/14.06/look.html) *Look Who's Crowdsourcing*
- MIT Center for Collective Intelligence (http://cci.mit.edu/) *Prof. Tom Malone's research center*
- C/Net News (http://news.cnet.com/Tech-lessons-learned-from-the-wisdom-of-crowds/2100-1014_3-6143896.html) *Tech lessons learned from the wisdom of crowds'*
- Openeur - Scientific Blog about Open Innovation & Entrepreneurship

(http://www.openeur.com/blog/en)

- Basherman.net (http://www.bsherman.net/WisdomofCrowds.mp3) , Interview with James Surowiecki and Joyce Berg of the Iowa Electronic Markets
- Galton.org (http://galton.org/essays/1900-1911/galton-1907-vox-populi.pdf) , "Francis Galton, Vox Populi, Nature, v75, p450-451" (scanned facsimile)
- Game Tycoon (http://www.edery.org/2006/09/using-games-to-tap-collective-intelligence/) *Using Games to Tap Collective Intelligence*. Part 2 (http://www.edery.org/2006/11/using-games-to-tap-collective-intelligence-part-2/) of the article.
- Economist - The Crowd Within (http://www.economist.com/science/displaystory.cfm?story_id=11614183) Individuals being their own "crowd" to make better guesses
- The End of Wall Streets Boom (http://www.portfolio.com/news-markets/national-news/portfolio/2008/11/11/The-End-of-Wall-Streets-Boom) This article is about the stupidity of the crowds, more specific about the investor and investment banker crowds

Categories: Social information processing | 2004 books | Crowdsourcing

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