
BOOK REVIEW

A review of *The Wisdom of Crowds*, by James Surowiecki, 2005. New York: Anchor Books, xxii + 306 pp. ISBN 0-385-72170-6. \$14.00 USD

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James Surowiecki's *The Wisdom of Crowds* examines the baffling but scientifically validated phenomena of "intelligent groups"—groups that consistently outperform even their smartest members. The book differentiates between 3 types of collective problem solving: cognitive, coordinative, and cooperative intelligence. Surowiecki details certain mechanisms enabling collectives to quickly and efficiently solve these types of problems; he also investigates why, sometimes, collective intelligence backfires, producing inefficient—even dumb—groups.

Written for the popular audience, the book is pleasantly devoid of any scientific jargon; it provides a delightful stroll into the empirically-tested world of crowd intelligence, especially behaviors that complexivists are bound to relish: bottom-up, emergent, self-organizing behavior. The thesis of the book: "The best way for a group to be smart, i.e., smarter than its smartest member, is for each person in it to think and act as independently as possible" (pp. xix–xx). The trick, however, is for the group to somehow harness the individuals' intelligences and provide a flexible feedback loop where individuals have access to other's ideas without developing a rigid, top-down, bureaucratic hierarchy; it is not as easy as it sounds. Market prices and certain voting systems are examples of "groupthink" that usually produce collective wisdom. But, as Surowiecki notes, the world of group intelligence is awash with paradoxes: for example, although communication is essential for group intelligence, too much communication actually stifles overall collective wisdom.

From research into how pedestrians coordinate their cross-flow movements, how the American taxation body (the IRS) uses group dynamics to boost their tax revenue, and to anguished failures like the loss of the NASA Columbia crew, Surowiecki presents

a wide variety of crowd behaviors and tries to tease out the underlying principles contributing to successful or unsuccessful group intelligence.

He reviews some of the history of American business practices, arguing that part of the reason for the success of global competitors is the poor use of American company resources by top-down managerial structures that often place undo faith in the wisdom of elite decision-makers like CEO's. For example, Ford Motor Company has 15 layers of managers and committees separating the factory worker from the chairman; Toyota, by contrast, has only 5. One American company in the 1980s had 223 layers of bureaucracy to bypass before a new product was accepted. Surowiecki argues persuasively that companies like Toyota succeed by developing company structures to rapidly and fluidly respond to customers' desires (another case in point is Zara, a clothing manufacture that goes from prototype to mass production in 2 weeks' time, an unprecedented feat in fashion apparel). Also, Toyota's revolutionary Toyota Production System (TPS) eliminates the typical assembly line protocol of a single worker assembling in isolation from nearby assemblers, and instead creates teams of workers that control, for themselves, the production process. These teams are able to solve problems more quickly, problems that would normally need to ascend the managerial pipeline before solutions were found and trickled back down to the factory floor. Additionally, Toyota's TPS operates on a new doctrine that workers should be trained for a variety of operations and understand the production process from the ground up; such a view is a clear departure from engrained beliefs that the way to make products faster and cheaper is to minutely specify workers' jobs and to have them concentrate their powers on efficiently perfecting a small piece of the assembly process. These examples are sure to invite or otherwise prompt educational researchers to contemplate contemporary education and educational reform processes.

Similarly interesting are the descriptions of the incredible groupthink formed by the international community to correctly identify the mysterious killer SARS in one month through open cooperation between national laboratories linked through the internet. Surowiecki details the self-organizing nature of the independent laboratories, the absence of top-down control by the World Health Organization (WHO), and the intriguing question of *who* actually discovered the coronavirus responsible for SARS.

Other descriptions of the wisdom of crowds include studies of optimal traffic patterns defined as "coherent flow" where "cars are traveling as one" (p. 155). Peculiarly, coherent flow cannot develop below a certain threshold. More traffic actually accelerates the transportation network, at least, up to a point. But once the new threshold is reached, the stability of traffic jams, their backward growth upon highways, and the resistance to changing form against hours of the constant stream of cars flowing through and fighting the jam formation offer insights into why such systems like education, once formed, are incredibly difficult to change (p. 151).

Surowiecki also describes the success of open market systems to predict events more reliably than any committee of experts. Financial committees, for example, always predict future markets better, studies find, than even the most expert members of the committees.

Especially insightful are Surowiecki's depictions and analyses of collective intelligence disasters, such as the bureaucratic bungling at NASA that led to the Columbia Space Shuttle breakup. He argues that the reason NASA was not successful in bringing back the Columbia crew in 2005, although it had previously succeeded in bringing the stricken Apollo 13 astronauts home in the sixties, was due to organizational dysfunction in the hierarchical levels of NASA's recent bureaucracy. Back in the 1960s, most scientists at NASA had spent years working in the private sector, and brought a fluid, dynamic group approach to solving problems, quite unlike the current NASA administration where graduates come straight from college study into a rigid NASA structure. Vital information that could have succeeded in bringing the crew safely home was lost in the multi-layered decision making of tunnel-visioned committees led by individuals who had already made up their minds, and simply sought evidence supporting their positions (actual transcripts of meetings are included to illustrate this point). What is really tragic are the multiple attempts by NASA engineers to obtain on-board photos of the predicted foam damage—requests that invariably would have highlighted the dangers of reentry and possibly saved the crew, but which fell on dead ears. The upper-level management decided not to engage the astronauts in the simple life-saving task of examining the wing damage, declaring that if damage was done to the wing, there was nothing that could be done about it, so why even examine it? Hardly the attitude that prevailed during the Apollo 13 crisis! Faced with an utter lack of information, risk-assessment teams could not make accurate predictions about the damage the dislodged foam could have made to the wing's protective heat-shield tiles; their tentative reports highlighting their lack of information and inability to predict damage (because of resistance of team leaders to provide that information) further entrenched management in their beliefs the foam damage was insignificant to the mission.

Other examples of collective stupidity include the plank road building frenzy in late 19th-century America (where cities and states started building plank roads because everybody around them were, with no one stopping to examine the actual costs), and the still entrenched television rating system. Surowiecki claims that what is really needed to overcome paralyzing group consensus and stagnation is a single dissenting opinion. Not that group members will abandon their own positions like the whiplashing jurors in *Twelve Angry Men*, but rather the dissenting positions provide reason for more grounded analysis of previously held beliefs. Dissenters actually make the collective smarter, even though the individual group members' intelligence has not changed.

Some quotes that complexivists may find appealing are: "We can anatomize these acts and explain what gives rise to them. But there is something irreducible at their heart, and it marks the difference between society on the one hand and just a bunch of people living together on the other" (p. 142), and "Individual irrational acts, in other words, can produce collectively rational outcomes" (p. 116). Additional tidbits include: "Experiments showed that... even imperfect markets populated by imperfect people could still produce near-ideal results" (p. 103); "Culture also enables coordination ...by establishing norms and conventions that regulate behavior" (p. 92), and "How can

people voluntarily—that is, without anyone telling them what to do—make their actions fit together in an efficient and orderly way?There's no guarantee that groups will come up with smart solutions. What is striking, though, is just how often they do."

What makes this book so potentially appealing to a complexivist audience are the detailed descriptions of a variety of phenomena not described in typical complexivist literature, especially the examination of groups that are collectively retarded. Surowiecki mentions no connection to complexivists or their research; this neutrality provides a startling look into phenomena such as diversity, interaction, decentralized control, and the like—concepts perhaps overused by complexivists.

There is also no explicit educational connection to the book. He mentions no research on organized educational reform attempts, classroom interactions, or the like. Nevertheless, Surowiecki provides a freshness to the phenomena of collective decision-making, emergent events, and decentralized movements that is sure to entice the educationally-minded complexivist because one can extrapolate the examples into an imaginative educational context. By using Surowiecki's conclusions, we can see some fruitful possibilities for enhancing educational processes. Principally, Surowiecki's perspective can be applied to improving education through at least three related yet distinct phenomena: cognitive, coordination, and cooperation problems. Some educational reform efforts are cognitive, some are coordinative, and others cooperative.

In summary, this work is a survey of research studies and other collective experiences that demonstrate collective intelligence in action. It is not written for a complex or educational audience, which is why I highly recommend this reading; this distance provides a semi-objective look at phenomena deliciously enticing to complex educational researchers. In particular, Surowiecki offers readers deeper insight into the inner workings of empirically-tested social groups. The main premise of the work focuses on delineating the subtle interplays that make groupthinking either smarter or dumber than the individual members of the group. The only major irritation I felt while reading the book was the lack of detailed references to the studies cited (although a healthy notes section provides some additional information to guide me in my outside searches). But Surowiecki's vibrant prose and myriad examples amply make up for any shortcomings.