

How About Non-SMEs? Can They Be Of Use?

Discussion within Working Group
4, Joint Experimentation MORS
Workshop
3-5 October 2006

Joint Forces Command,
Norfolk, VA

E.P. Visco
genevisco@earthlink.net

Points of Departure

- Source: *The Wisdom of Crowds*
- Anecdotes
- Implications
- Possibilities
- Consequences

James Surowiecki, *The Wisdom of Crowds*, Anchor Books, 2005 (Business staff writer, *The New Yorker*, "The Financial Page"; site: www.wisdomofcrowds.com)

Part I: practical examples; cognition, coordination, cooperation; necessary conditions: diversity, independence, special kind of decentralization

Part II: case studies; ways in which collective intelligence flourishes or flounders; bad decisions as well as good decisions.

Stories

- Francis Galton, 1906, & the ox
- John Craven, 1968, *Scorpion*
- *Challenger* & the stock market
- Sports' betting
- Google
- Iowa Electronic Markets
- Other (e.g., jury trials)

Country Fair; 85 years old; statistics & science of heredity; breeding matters (only a few people had the characteristics to keep societies healthy); attempts to prove vast majority did not have the needed characteristics. Weight judging contest: fat ox, guessing weight after slaughtered & dressed; sixpence per guess; 800 guessers (that comes to 20 Pounds Sterling!); distribution & statistics of guesses (787); mean value: 1197 pounds; actual weight of dressed ox: 1198.

Scorpion, May 1968; disappeared enroute to Newport News; no idea of what happened; search area 20 miles wide, thousands of feet deep; Craven (reported in Sontag & Drew, *Blind Man's Bluff*) assembled team (mixed disciplines: mathematicians, submarine experts, salvagers); best guess of likelihood of scenarios (Chivas Regal prizes); application of Bayes's theorem(?)—representation of group's collective wisdom; five months after disappearing, *Scorpion* found: 220 yards from where group said it would be. [Some problems with Surowiecki's treatment of the story: see Sontag & Drew, *Blind Man's Bluff* for a more complete discussion of the event.]

Challenger, 11.38, 28 Jan 1986, blew up 74 seconds into launch; immediate impact in stock market: 4 major contractors (Rockwell Int—shuttle builder & main engines; Lockheed—ground support; Martin Marietta—external fuel tank; Morton Thiokol—solid-fuel booster); 21 minutes after explosion: Rockwell down 6%; Lockheed down 5%; Martin Marietta down 3%; Morton Thiokol down so rapidly trading halted at 6%; by day's end down 12%; stocks of other 3 cos crept back to about 3% down.

Balance of betting (football games, etc); Google: most relevant responses in first few "hits"; IEM: futures betting (elections, market behaviors)

The Wisdom of Crowds

- Collective intelligence: cognitive, coordination, cooperation
- Necessary conditions: diversity, independence, decentralization

Collective intelligence useful for 3 kinds of problems: cognition (definitive solution); coordination (group members figuring out how to coordinate behavior with each other, knowing that everyone else is trying to do the same); cooperation (getting self-interested, distrustful people to work together even when narrow self-interest seems to indicate that no individual should take part).

Necessary, but not sufficient(?), conditions for a crowd to be wise: diversity, independence, a particular kind of decentralization. Diversity & independence important because the best collective decisions are the product of disagreement & contest, not consensus or compromise.

Discussion

- Role of SME: planning, conducting, assessing
- Vetting SME
- Non-SME role: planning, conducting, assessing?
- Consequences

What are the roles of SME in planning, conducting & assessing joint experiments?

Are there accepted standards for vetting SME? If so, what are the most important ones and how can discipline be maintained, particularly during the conduct of experiments?

Can non-SME make contributions to planning, conducting & assessing experiments? If so, what are the particulars: vetting, discipline...?

Intended & unintended consequences: can we guess what they might be (collective intelligence?)?