Infotopia: How Many Minds Produce Knowledge
Infotopia: How Many Minds (Mis-)Produce Knowledge
Groups:

• do not correct but instead amplify individual errors
• emphasize information held by all or most at the expense of information held by a few or one
• fall victim to bandwagon or cascade effects
• end up in a more extreme position in line with the ... tendencies of their members
What is a “group”? 
What is a “group”?

*Infotopia*: “Any collection of people”
What is a “group”?

“two or more people who interact and depend on each other in some way”
(SparkNotes)
What is a “group”?

“A group is a social unit which consists of a number of individuals who stand in role and status relationship to one another stabilized in some degree at the time and who possess a set of value or norms of their own regulating their behaviour at least in matter of consequence to the group.” (Sherif and Sherif 69)
What is a “group”?  
“social group”
“two or more people who interact with one another, share similar characteristics, and collectively have a sense of unity” (Wikipedia)
“an entity that has qualities which cannot be understood just by studying the individuals that make up the group” (Wikipedia)
"those who identify themselves as members of the group” (Reicher 82)
What is a “group”?  

“team”

“a group of people linked in a common purpose” (Wikipedia)

"A team becomes more than just a collection of people when a strong sense of mutual commitment creates synergy, thus generating performance greater than the sum of the performance of its individual members.” (Wikipedia)
What is a “group”? 
“small group” 
“a group of 3 to 20 individuals” (Wikipedia) 
“intentional gathering, meeting regularly for the purpose of joining God’s mission” (crcna.org)
How are outcomes obtained from groups?
How are outcomes obtained from groups?

• Aggregating – act largely independently, self-interested
  • Average, mean, etc.
  • Voting
  • Markets

• Deliberation – interaction
Nicolas de Condorcet
17 September 1743 – 28 March 1794
Condorcet Jury Theorem

Voting:

• If:
  • Each person is more likely than not to be correct, and
  • Majority vote is taken

• Then:
  • The probability that the majority vote will be wrong is very low.
Condorcet Jury Theorem

\[ P(N, p) = \sum_{k=\left\lfloor \frac{N}{2} \right\rfloor}^{N} \binom{N}{k} p^k (1 - p)^{N-k} \]
(Sumpter & Pratt 2009)

$p = 0.6$
Condorcet Jury Theorem

• Analogs in lower organisms
  • Honeybee and ant nest site selection
  • Cockroach aggregation
  • Fish navigation
  • Bacteria behavior (quorum sensing)
Condorcet Jury Theorem

• Fails if
  • $p < 0.5$
  • Non-independence
  • Informational pressure – conform to what is “known”
  • Social pressure – conform to others
  • Decisiveness of individual vote (e.g., vote to convict for murder)
  • Biases
(Sumpter & Pratt 2009)

\[ p = 0.6 \]
(Sumpter & Pratt 2009)

\[ p = 0.4 \]
Condorcet Jury Theorem

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Deliberation

Deliberating groups often do not obtain the knowledge that their members actually have

• Informational influences: group members fail to disclose what they know out of respect for the information publicly announced by others

• Social pressures: lead people to silence themselves to avoid the disapproval of peers and supervisors
How are outcomes obtained from groups?

• Aggregating – act largely independently, self-interested
  • Average, mean, etc.
  • Voting
  • Markets

• Deliberation – interaction

Wikipedia?
Readings for Next Time

• *Infotopia*, Chapter 2


Homework 2

• Do something on Wikipedia (details on website)
• Due: Thursday, October 5
No class Thursday, September 21