Class 9: Madness of crowds

Matthew J. Salganik

Sociology 204: Social Networks
Princeton University

Monday, February 24, 2025

1. Watts, Chapter 7.
2. Asch, S.E. (1955). Opinions and social pressure. *Scientific American*.
3. Easley D. and Kleinberg, J. (2010). "Networks, Crowds, and Markets: Chapter 16". (skim mathematical model in Sections 16.3-16.6)
4. Tierney, J. (2007). Diet and fat: A severe case of mistaken consensus. *New York Times*

Review:

- basic model for the spread of disease

Review:

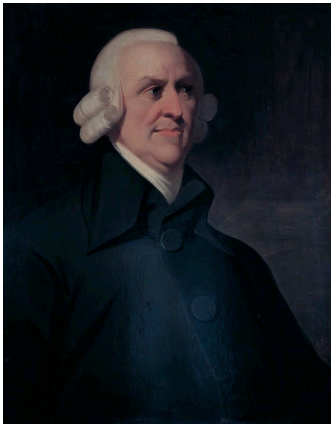
- basic model for the spread of disease
- contact patterns are important for the spread of disease

Review:

- basic model for the spread of disease
- contact patterns are important for the spread of disease
- sometimes detailed complete network structure matters

Review:

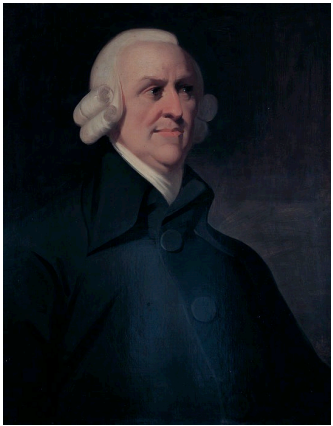
- basic model for the spread of disease
- contact patterns are important for the spread of disease
- sometimes detailed complete network structure matters
- simple rules by individuals can aggregate to complex network patterns



(a) Adam Smith: Invisible Hand

(b) Garrett Hardin: Tragedy of the Commons

http://commons.wikimedia.org/wiki/File:Adam_Smith_The_Muir_portrait.jpg
http://en.wikipedia.org/wiki/File:Garrett_Hardin.jpg



(a) **Wisdom of crowds**

(b) **Madness of crowds**

http://commons.wikimedia.org/wiki/File:Adam_Smith_The_Muir_portrait.jpg
http://en.wikipedia.org/wiki/File:Garrett_Hardin.jpg

Need to separate two things:

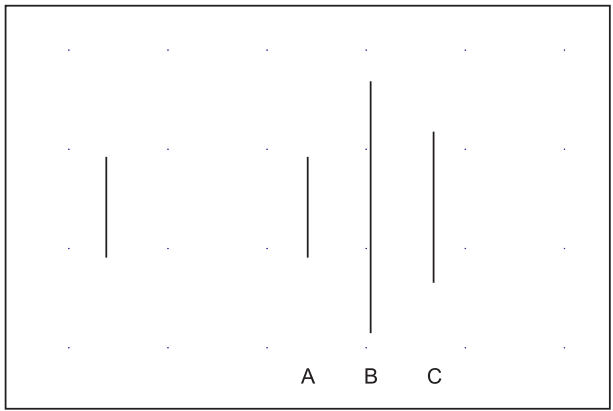
- interdependence of decision making
- consequences of interdependent decision making for collective outcomes

Candy, candy, candy

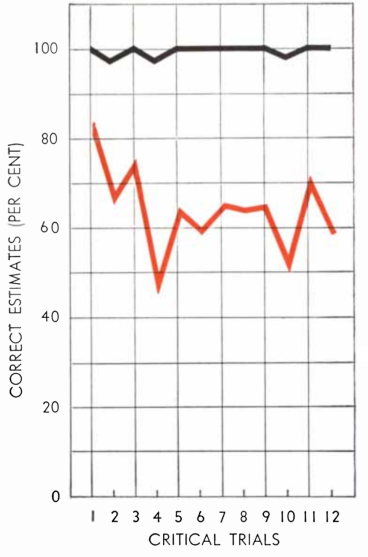
Need to separate two things:

- interdependence of decision making
- consequences of interdependent decision making for collective outcomes

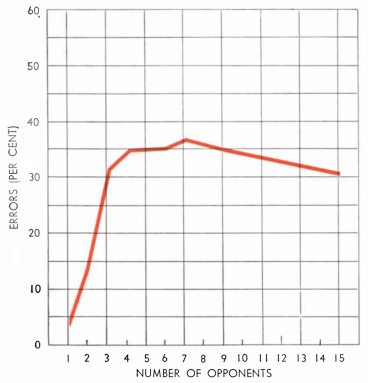
7.1



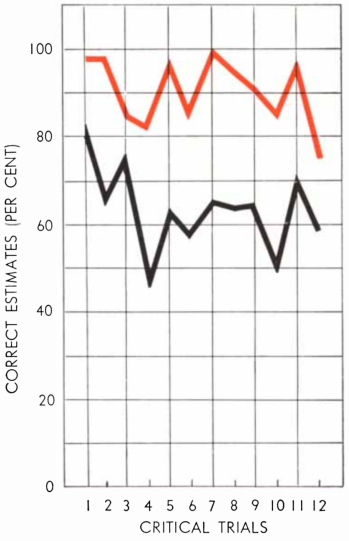
https://www.youtube.com/watch?v=TYIh4MkcfJA



ERROR of 123 subjects, each of whom compared lines in the presence of six to eight opponents, is plotted in the colored curve. The accuracy of judgments not under pressure is indicated in black.



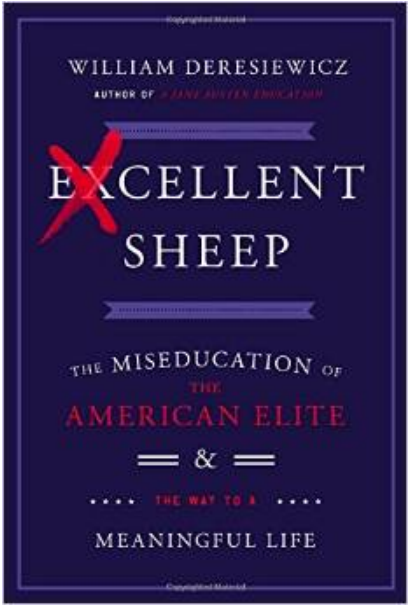
SIZE OF MAJORITY which opposed them had an effect on the subjects. With a single opponent the subject erred only 3.6 per cent of the time; with two opponents he erred 13.6 per cent; three, 31.8 per cent; four, 35.1 per cent; six, 35.2 per cent; seven, 37.1 per cent; nine, 35.1 per cent; 15, 31.2 per cent.



TWO SUBJECTS supporting each other against a majority made fewer errors (*colored curve*) than one subject did against a majority (*black curve*).

The Asch line experiment has an elegant design

- Creates tunable conflicting forces: evidence of the senses and social force (opinions of others).
- Many possible variations, as you saw.


WILLIAM DERESIEWICZ
AUTHOR OF A JANE AUSTEN EDUCATION
EXCELLENT SHEEP
THE MISEDUCATION OF THE AMERICAN ELITE
&
THE WAY TO A MEANINGFUL LIFE

Which kinds of externalities were present in the Asch experiment?

1. information externalities
2. coercive externalities
3. market externalities
4. coordination externalities*

Which kinds of externalities were present in the Asch experiment?

1. information externalities
2. coercive externalities
3. market externalities
4. coordination externalities*

Information externalities and coercive externalities

Need to separate two things:

- interdependence of decision making
- consequences of interdependent decision making for collective outcomes

What happens if we have a bunch of people who are all being influenced by each other?

	Alice
Private Signal Public Action	

	Alice
Private Signal	shot bad
Public Action	

	Alice
Private Signal	shot bad
Public Action	no shot

	Alice	Bob
Private Signal	shot bad	shot bad
Public Action	no shot	

	Alice	Bob
Private Signal	shot bad	shot bad
Public Action	no shot	no shot

	Alice	Bob	Clarence
Private Signal	shot bad	shot bad	shot good
Public Action	no shot	no shot	

	Alice	Bob	Clarence
Private Signal	shot bad	shot bad	shot good
Public Action	no shot	no shot	no shot

	Alice	Bob	Clarence	David
Private Signal	shot bad	shot bad	shot good	shot good
Public Action	no shot	no shot	no shot	

	Alice	Bob	Clarence	David
Private Signal	shot bad	shot bad	shot good	shot good
Public Action	no shot	no shot	no shot	no shot

	Alice	Bob	Clarence	David	Edgar
Private Signal	shot bad	shot bad	shot good	shot good	shot good
Public Action	no shot	no shot	no shot	no shot	

	Alice	Bob	Clarence	David	Edgar
Private Signal	shot bad	shot bad	shot good	shot good	shot good
Public Action	no shot	no shot	no shot	no shot	no shot

	Alice	Bob	Clarence	David	Edgar
Private Signal	shot bad	shot bad	shot good	shot good	shot good
Public Action	no shot	no shot	no shot	no shot	no shot

This example highlights some important points about information cascades:

1. cascades can occur pretty easily

This example highlights some important points about information cascades:

1. cascades can occur pretty easily
2. cascades can lead to non-optimal outcomes

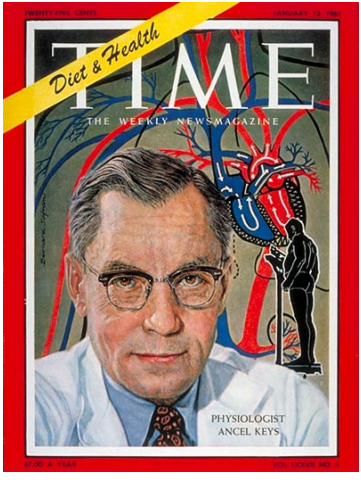
This example highlights some important points about information cascades:

1. cascades can occur pretty easily
2. cascades can lead to non-optimal outcomes
3. can be fragile (if someone is willing to break them)

This example highlights some important points about information cascades:

1. cascades can occur pretty easily
2. cascades can lead to non-optimal outcomes
3. can be fragile (if someone is willing to break them)
4. cascades depend on the difference between private signal and public behavior

Could something like this really happen?



For your assignment this week, you'll be asked to write about another example.

Candy results

Summary:

- many decisions are interdependent

Summary:

- many decisions are interdependent
- when there are interdependent decisions, individual rationality can lead to collective irrationality

Review and feedback: https://rb.gy/wl08de

Next class:

- Gladwell, M. (1996). The tipping point. *The New Yorker*.
- Watts, Chapter 8.
- Watts, D.J. (2002). A simple model of global cascades on random networks. *Proceedings of the National Academy of Sciences*. (Warning: this paper has hard math)