

Class 9: Madness of crowds

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Sociology 204: Social Networks
Princeton University

Monday, October 3, 2021



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

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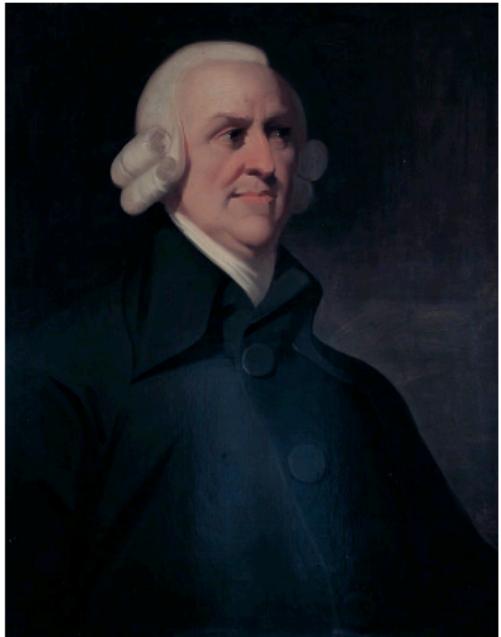
- ▶ basic model for the spread of disease
- ▶ contact patterns are important for the spread of disease

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- ▶ sometimes detailed complete network structure matters

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- ▶ 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

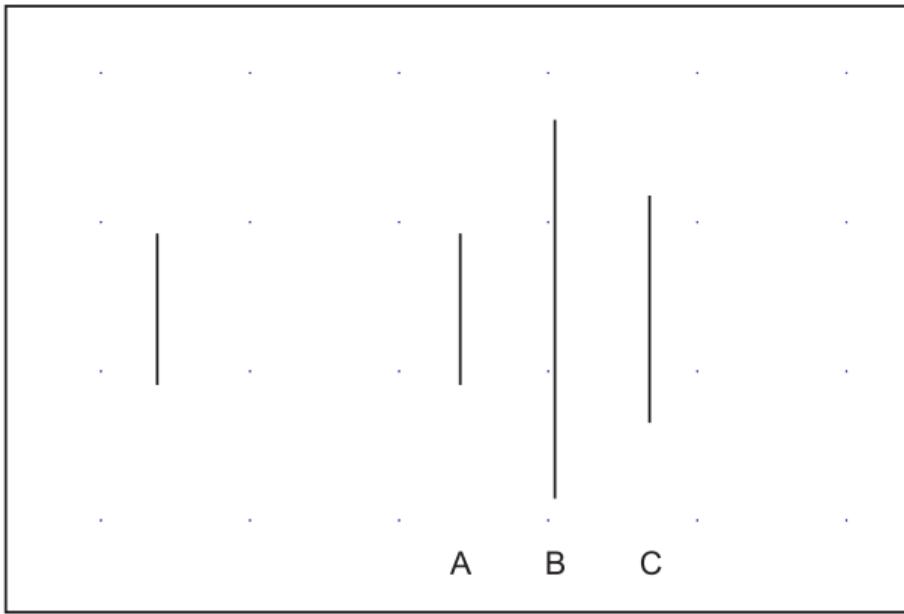
http://commons.wikimedia.org/wiki/File:Adam_Smith_The_Muir_portrait.jpg
http://en.wikipedia.org/wiki/File:Garrett_Hardin.jpg

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

Candy, candy, candy

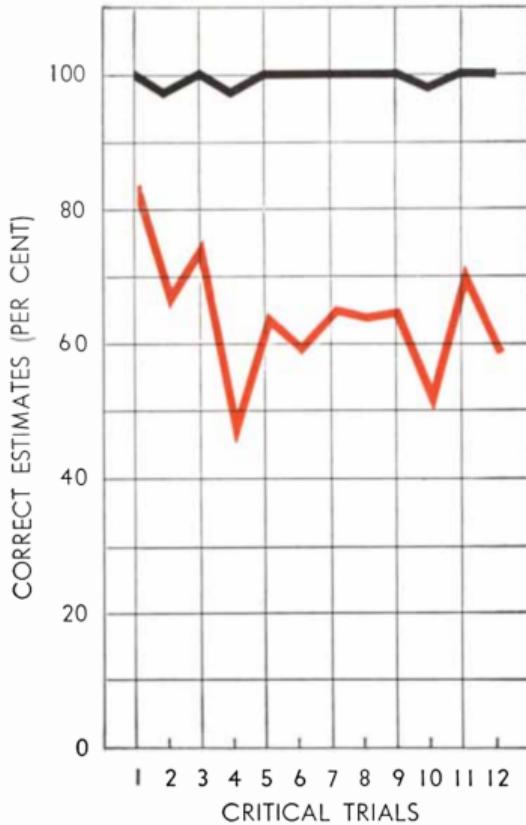
Interdependent individual decisions

7.1

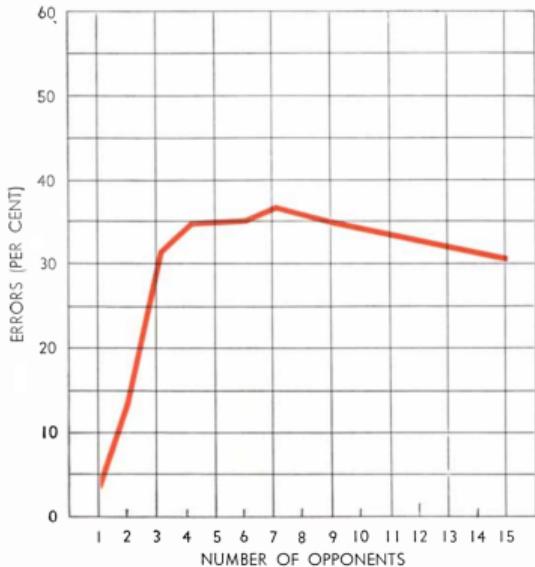




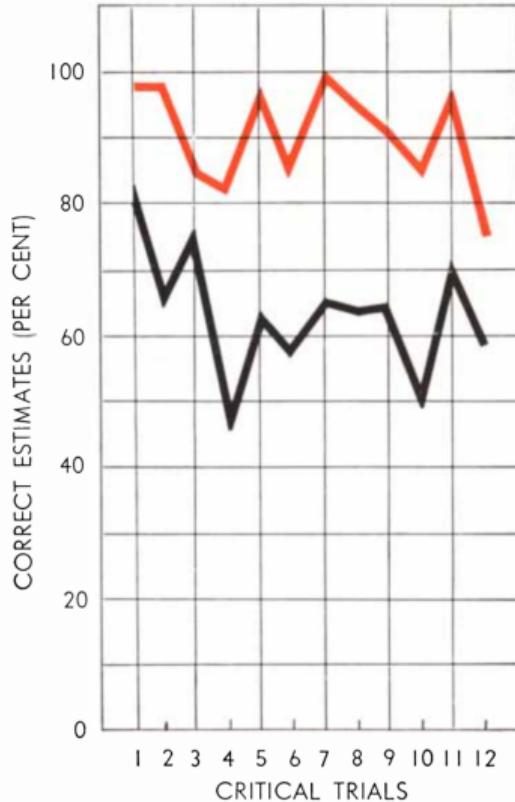
<https://www.youtube.com/watch?v=TYIh4MkcfJA>



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

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AUTHOR OF *A Jane Austen Education*

~~X~~ EXCELLENT
SHEEP

THE MISEDUCATION OF
THE
AMERICAN ELITE

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MEANINGFUL LIFE

Which kinds of externalities were present in the Asch experiment?

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

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Information externalities and coercive externalities

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	

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Private Signal	shot bad	shot bad	shot good	shot good	shot good
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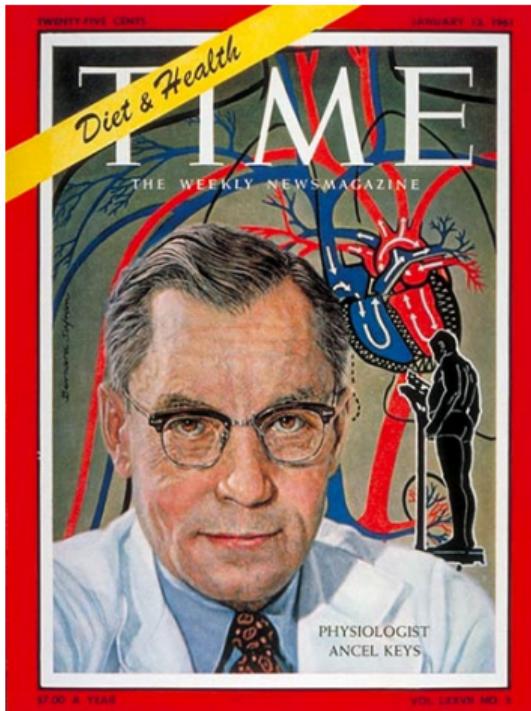
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2. cascades can lead to non-optimal outcomes
3. can be fragile (if someone is willing to break them)
4. cascades depend on the difference between private signal and public behavior

Could something like this really happen?



Candy results

Summary:

- ▶ many decisions are interdependent

Summary:

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

Feedback: <http://bit.ly/soc204-2021>

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)