

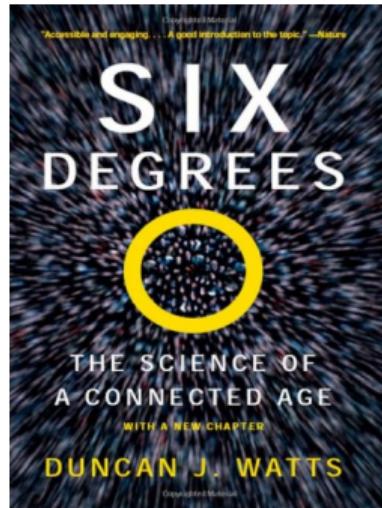
# Introduction

Matthew J. Salganik

Social Networks (Soc 204)  
Princeton University

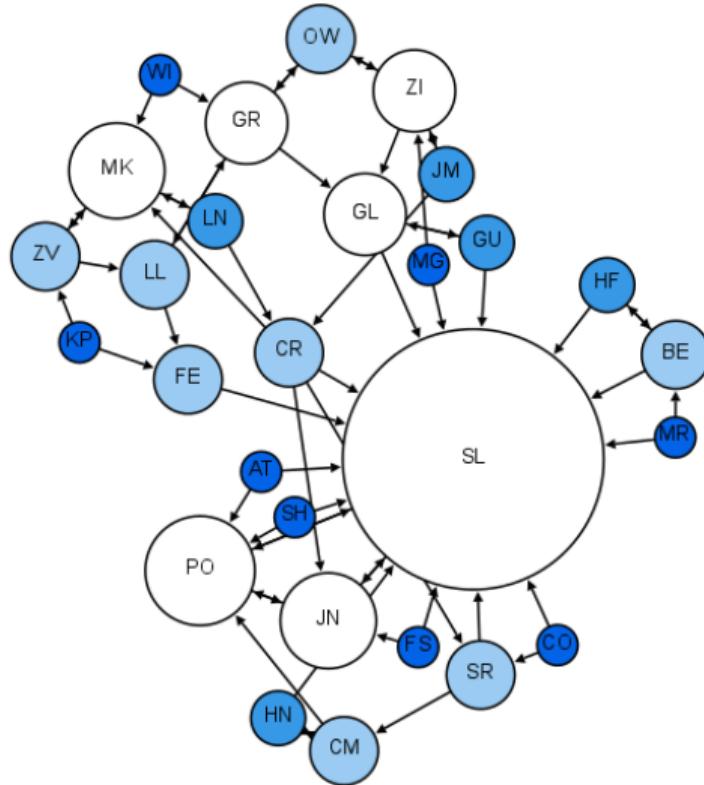
Monday, January 27, 2025  
Week 1, Lecture 1



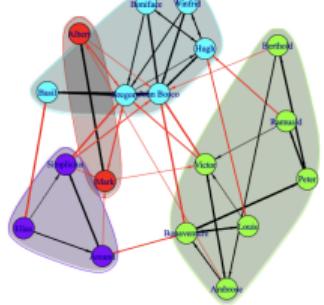


We live in the connected age.

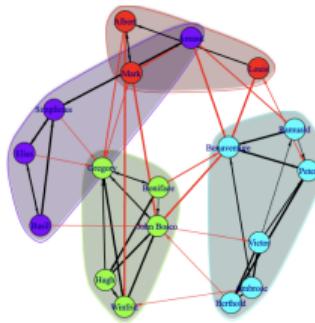
## Second grade class, Moreno



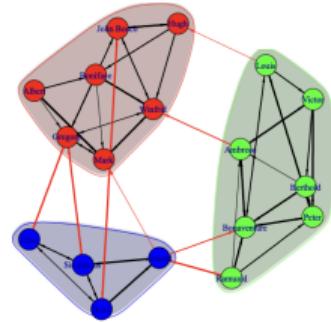
# Monks in a monastery, Sampson



Sampson Monks Time 1

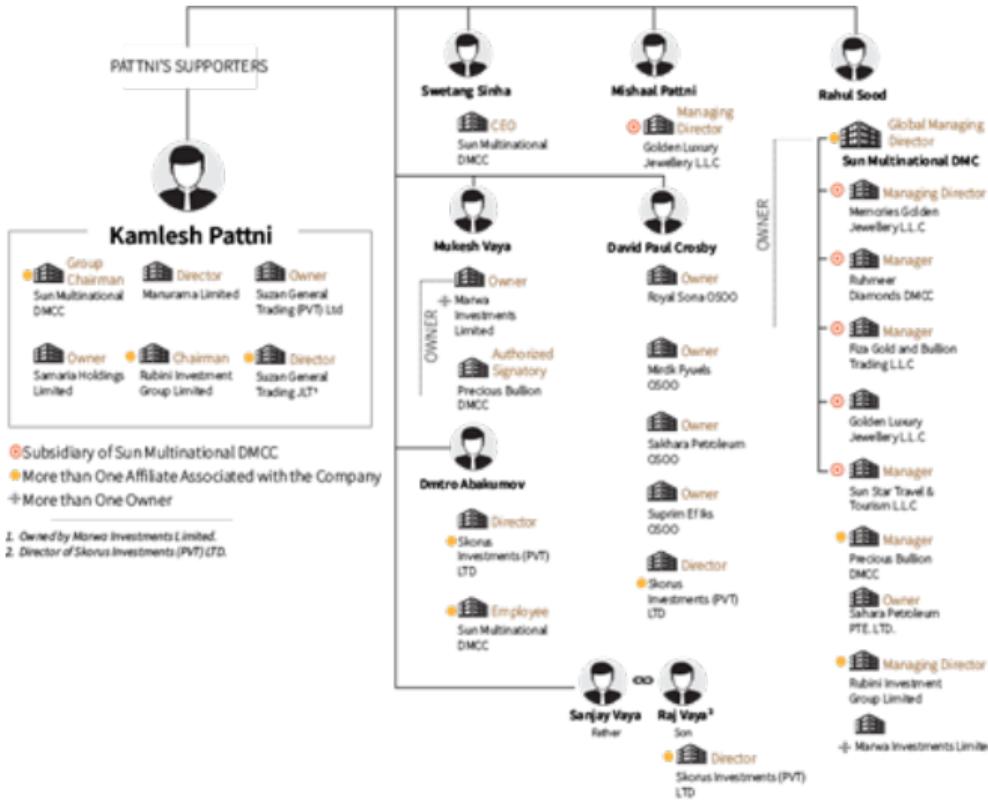


Sampson Monks Time 2

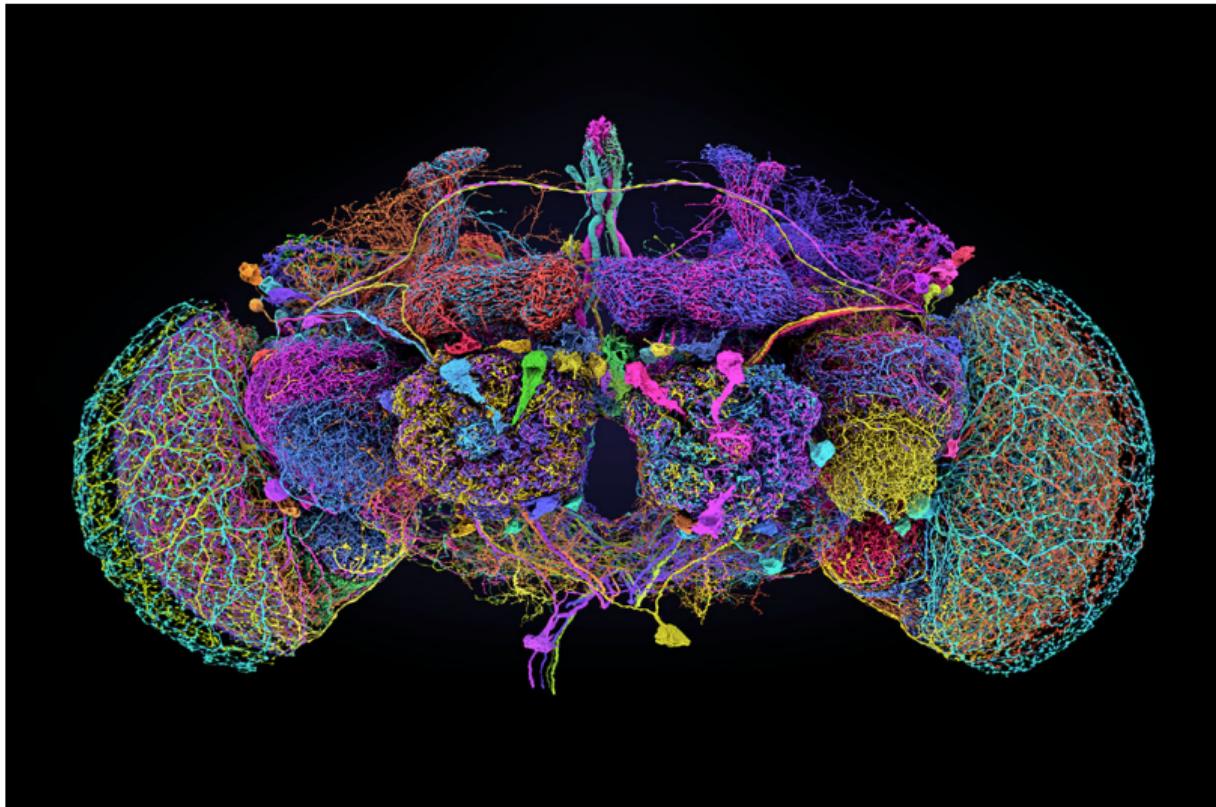


Sampson Monks Time 3

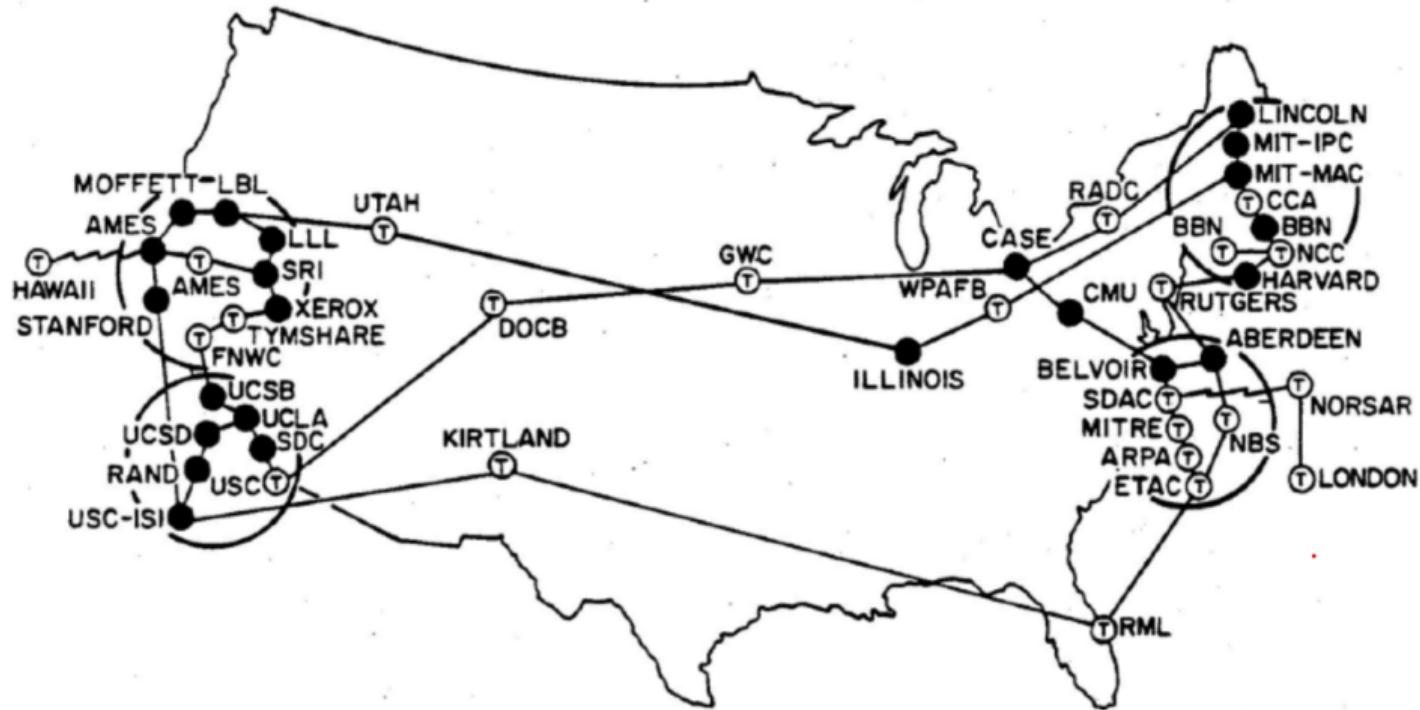
# Gold smuggling network of Kamlesh Pattni according to OFAC



# Connectome *Drosophila melanogaster* (fruit fly)



# ARPAnet in the 1970s



General pattern:

- ▶ nodes
- ▶ edges

## Your turn

Think-pair-share: What are some other examples of networks? They don't need to be social.

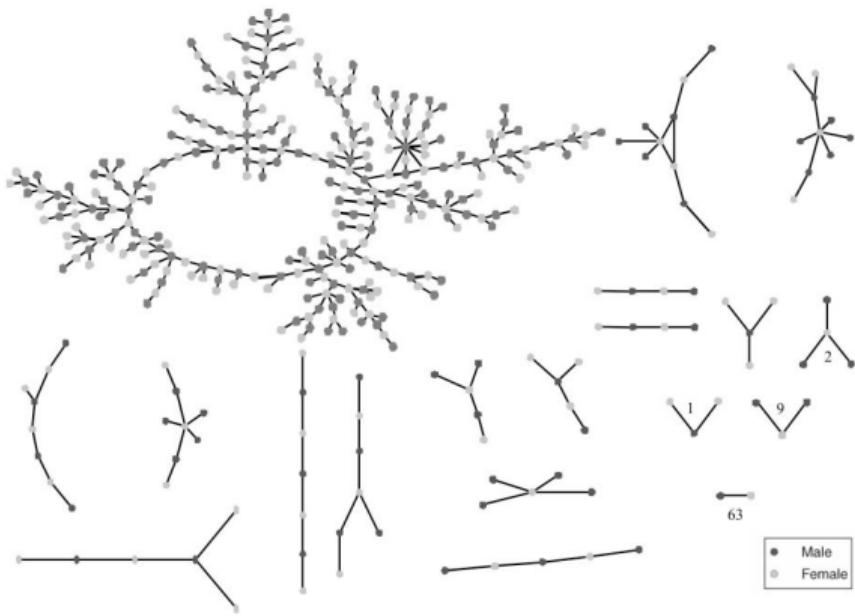


FIG. 2.—The direct relationship structure at Jefferson High

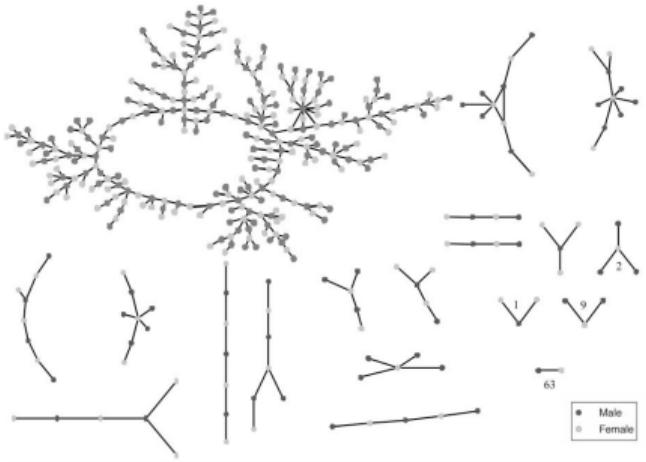
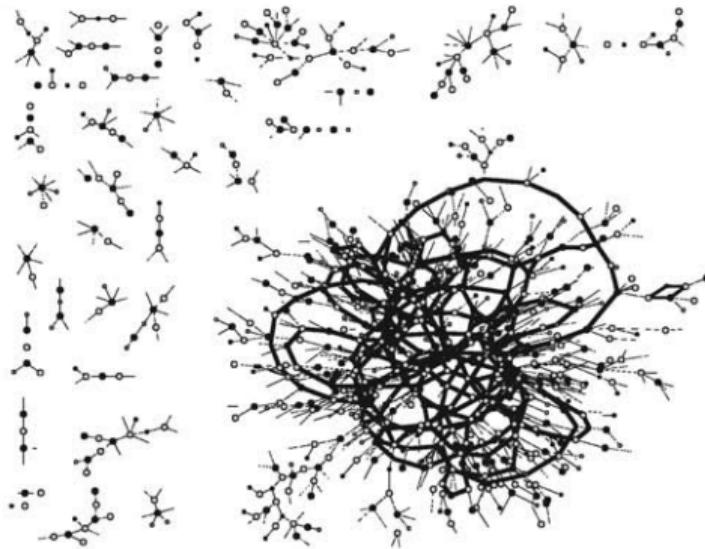
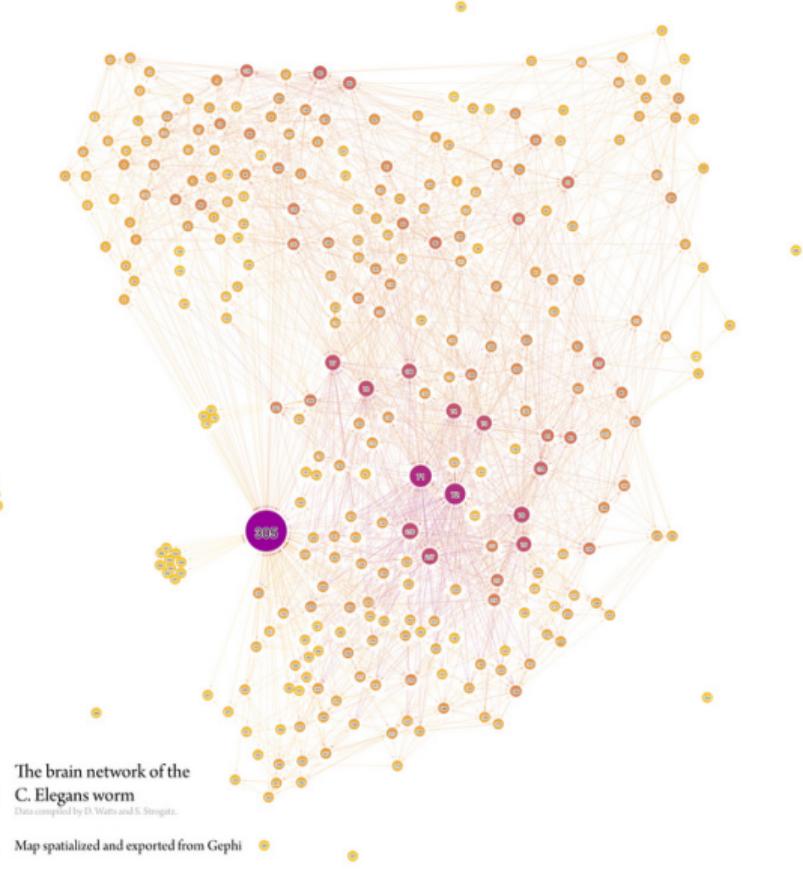


FIG. 2.—The direct relationship structure at Jefferson High

(a) American High School

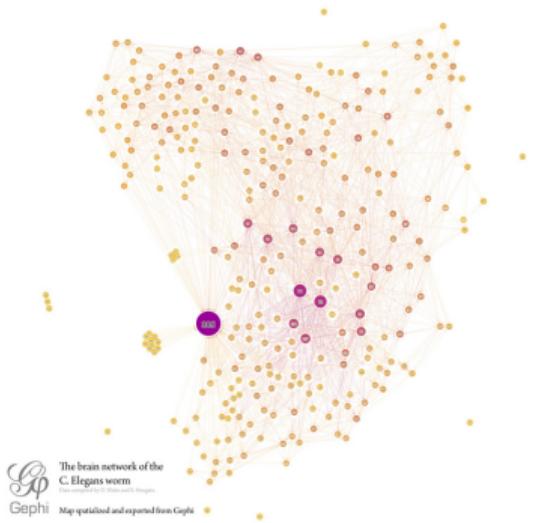


(b) Likoma Island, Malawi

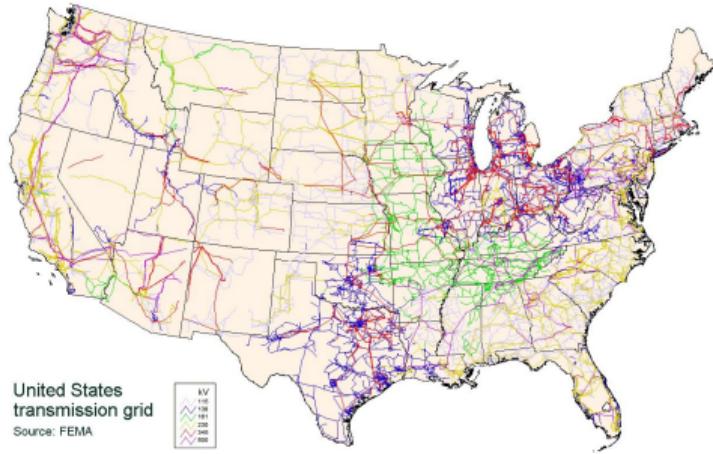


The brain network of the  
*C. elegans* worm  
Data compiled by D. Watts and S. Strogatz.

Map spatialized and exported from Gephi

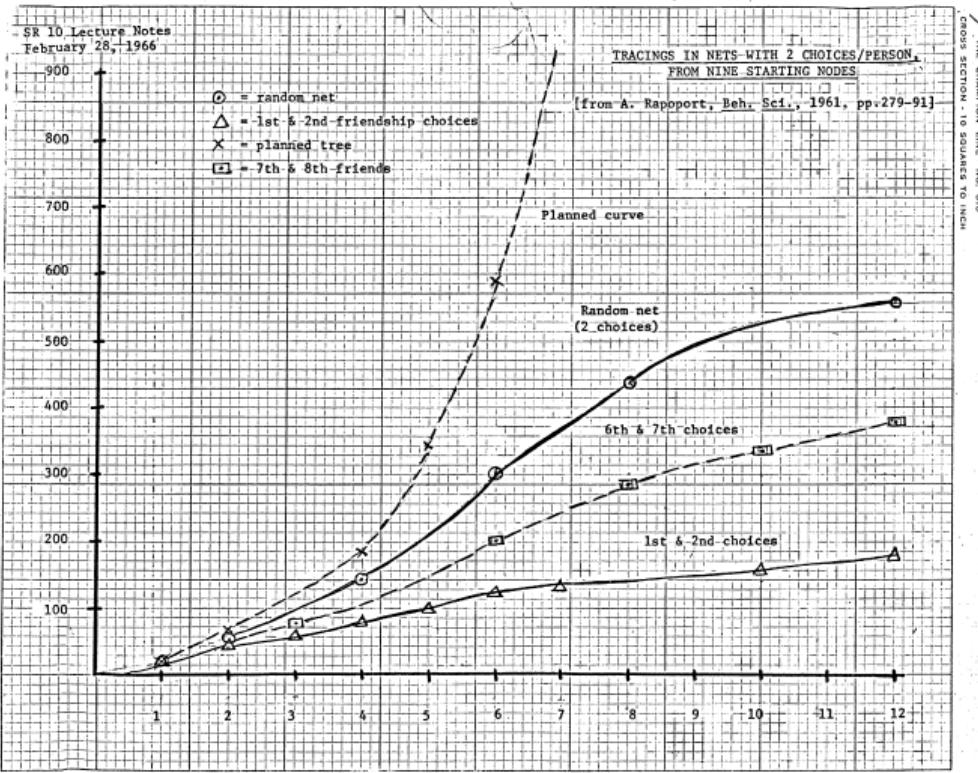


(a) Worm Brain



(b) Power Grid

<https://commons.wikimedia.org/wiki/File:C.elegans-brain-network.jpg> & <https://commons.wikimedia.org/wiki/File:UnitedStatesPowerGrid.jpg>



## Learning objectives

- ▶ Students will be able to **describe** foundational ideas used in the study of networks.

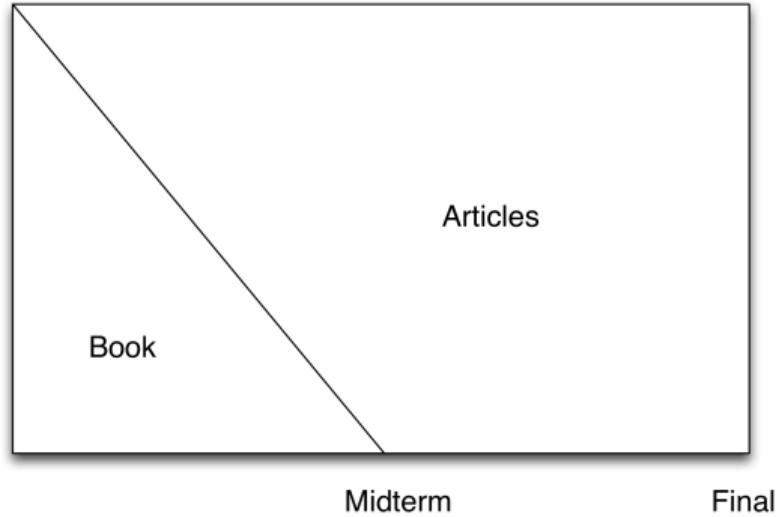
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- ▶ Students will be able to **describe** the interconnections between these ideas.

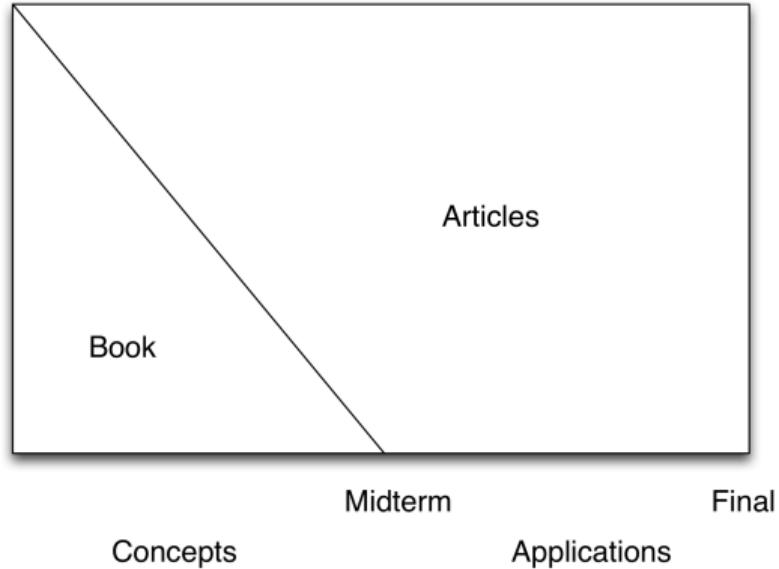
- ▶ Students will be able to **describe** foundational ideas used in the study of networks.
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- ▶ Students will be able to **use** these ideas to gain insight into real-world phenomena.

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- ▶ Students will be able to **evaluate** research that applies these ideas to real-world phenomena.

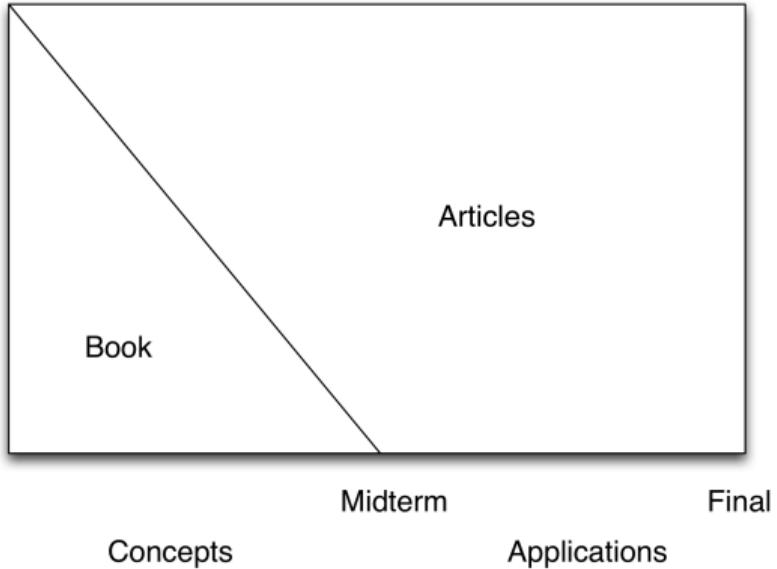
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- ▶ Students will be able to **use** these ideas to gain insight into real-world phenomena.
- ▶ Students will be able to **evaluate** research that applies these ideas to real-world phenomena.
- ▶ Students will be able to **create** research about real-world phenomena.

## Major activities

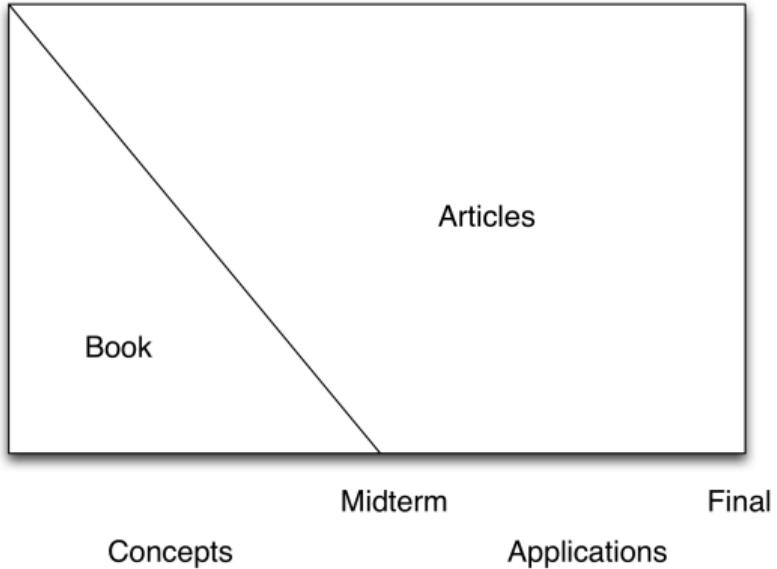




- ▶ First half: Building blocks about structure and dynamics



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- ▶ Second half: Application of building blocks: 1) personal networks and life outcomes; 2) social media; 3) social contagion.



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- ▶ Second half: Application of building blocks: 1) personal networks and life outcomes; 2) social media; 3) social contagion.
- ▶ As course develops you will begin to transition from consumer of research to producer of research.

- ▶ Precept assignment (most weeks)
- ▶ Weekly quiz
- ▶ Midterm exam
- ▶ Final exam

Each week

- ▶ Read Monday pre-read

Each week

- ▶ Read Monday pre-read
- ▶ Do reading

Each week

- ▶ Read Monday pre-read
- ▶ Do reading
- ▶ Come to lecture

Each week

- ▶ Read Monday pre-read
- ▶ Do reading
- ▶ Come to lecture
- ▶ Read Wednesday pre-read
- ▶ Do reading
- ▶ Submit weekly assignment (if needed)
- ▶ Come to lecture
- ▶ Submit quiz on Canvas (by Wed 11:59pm)
- ▶ Attend precept

## Example quiz

The goal of the quiz is to make sure that you keep up with the class. They can be submitted by Wednesday at 11:59pm.

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The goal of the quiz is to make sure that you keep up with the class. They can be submitted by Wednesday at 11:59pm.

Which statement better describes the empirical results from the small world experiment of Travers and Milgram (1969)?

- ▶ About half of the completed chains reached the target through just three people.
- ▶ The completed chains had very little overlap.
- ▶ All the completed chains reached the target through a small number of sociometric stars.

## Example assignment

# Experimental evidence of massive-scale emotional contagion through social networks

Adam D. I. Kramer<sup>a,1</sup>, Jamie E. Guillory<sup>b,2</sup>, and Jeffrey T. Hancock<sup>b,c</sup>

<sup>a</sup>Core Data Science Team, Facebook, Inc., Menlo Park, CA 94025; and Departments of <sup>b</sup>Communication and <sup>c</sup>Information Science, Cornell University, Ithaca, NY 14853

<https://doi.org/10.1073/pnas.1320040111>

## Example assignment

*American Economic Review* 2020, 110(3): 629–676  
<https://doi.org/10.1257/aer.20190658>

# The Welfare Effects of Social Media<sup>†</sup>

By HUNT ALLCOTT, LUCA BRAGHIERI, SARAH EICHMEYER,  
AND MATTHEW GENTZKOW\*

<https://doi.org/10.1257/aer.20190658>

- ▶ Midterm: 60 minutes, open book, roughly like the quizzes but harder
- ▶ Final: 3 hours, open book, moving to higher order learning objectives

Precept philosophy

# INSPIRED CONVERSATIONS

THE  
PRINCETON  
PRECEPT

## GenAI policy

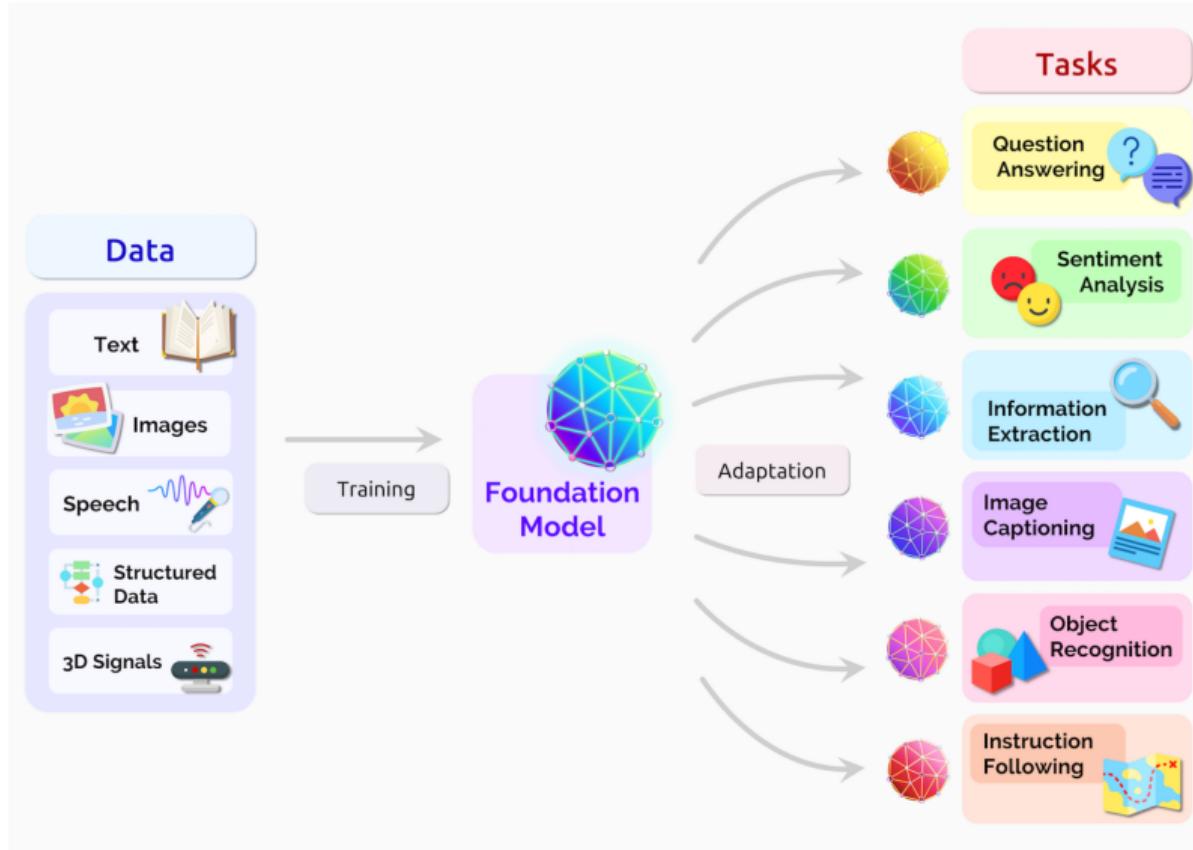
No generative AI in this class. Zero. None.

# GenAI policy



prompt: "a picture of a few students at Princeton University watching a robot actively lift weights in a gym", source: Dalle-E

# Foundation model paradigm



Getting to know each other

About me

About the preceptor:

- ▶ Sofia Avila

About you

- ▶ first year, second year, third year, fourth year

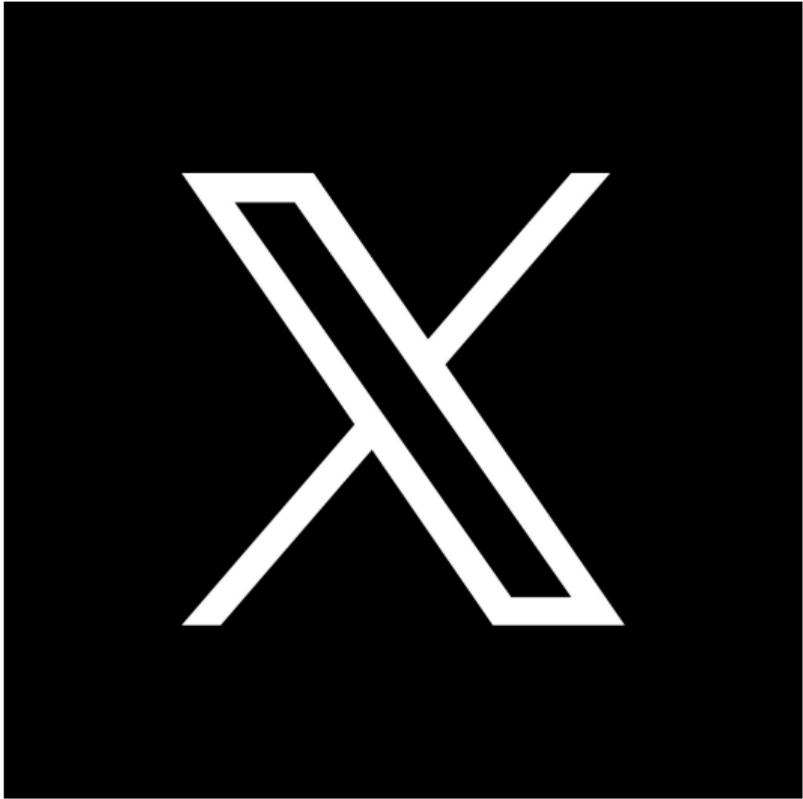
- ▶ first year, second year, third year, fourth year
- ▶ no major, sociology, social science (but not sociology), humanities, natural sciences, cs/engineering



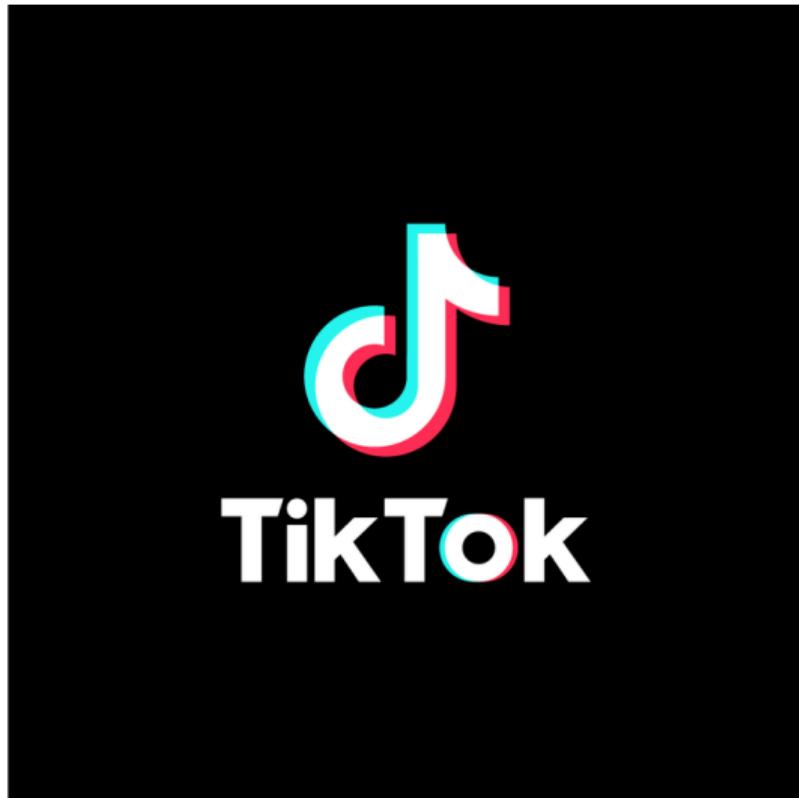
have account, active user (6 of past 7 days)



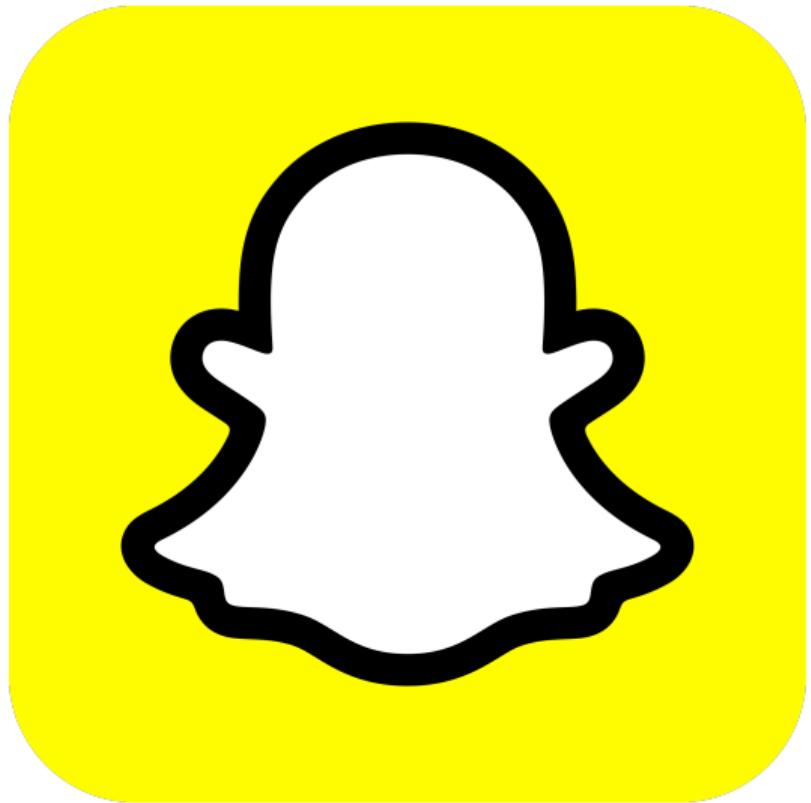
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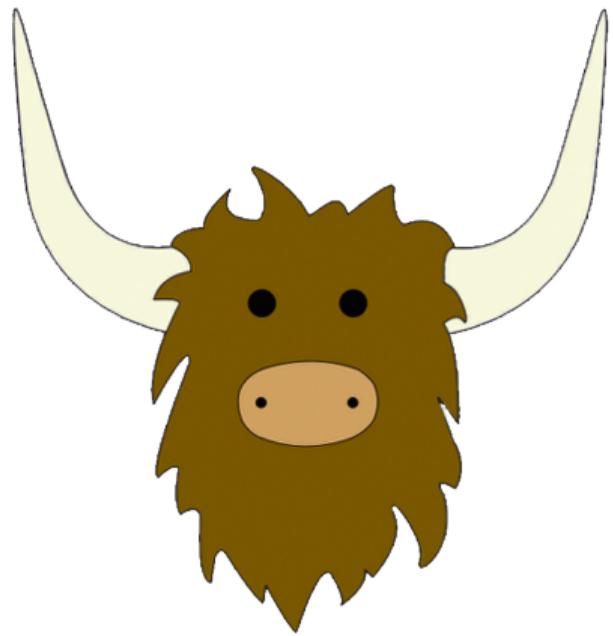
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have account, active user (6 of past 7 days)



have account, active user (6 of past 7 days)



# Yik Yak

have account, active user (6 of past 7 days)

?

## More information about the course

### Logistical notes:

- ▶ We will post an announcement on Canvas when precept times are set
- ▶ There is no precept this week
- ▶ There is an optional ungraded practice quiz this week

## More information about the course

- ▶ Canvas, especially modules page: <https://princeton.instructure.com/courses/17450/modules>

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- ▶ Additional information about class logistics:  
[https://www.princeton.edu/~mjs3/soc204\\_s2025/logistics.shtml](https://www.princeton.edu/~mjs3/soc204_s2025/logistics.shtml)

Is this course right for you?

Next class: The connected age and the small world problem