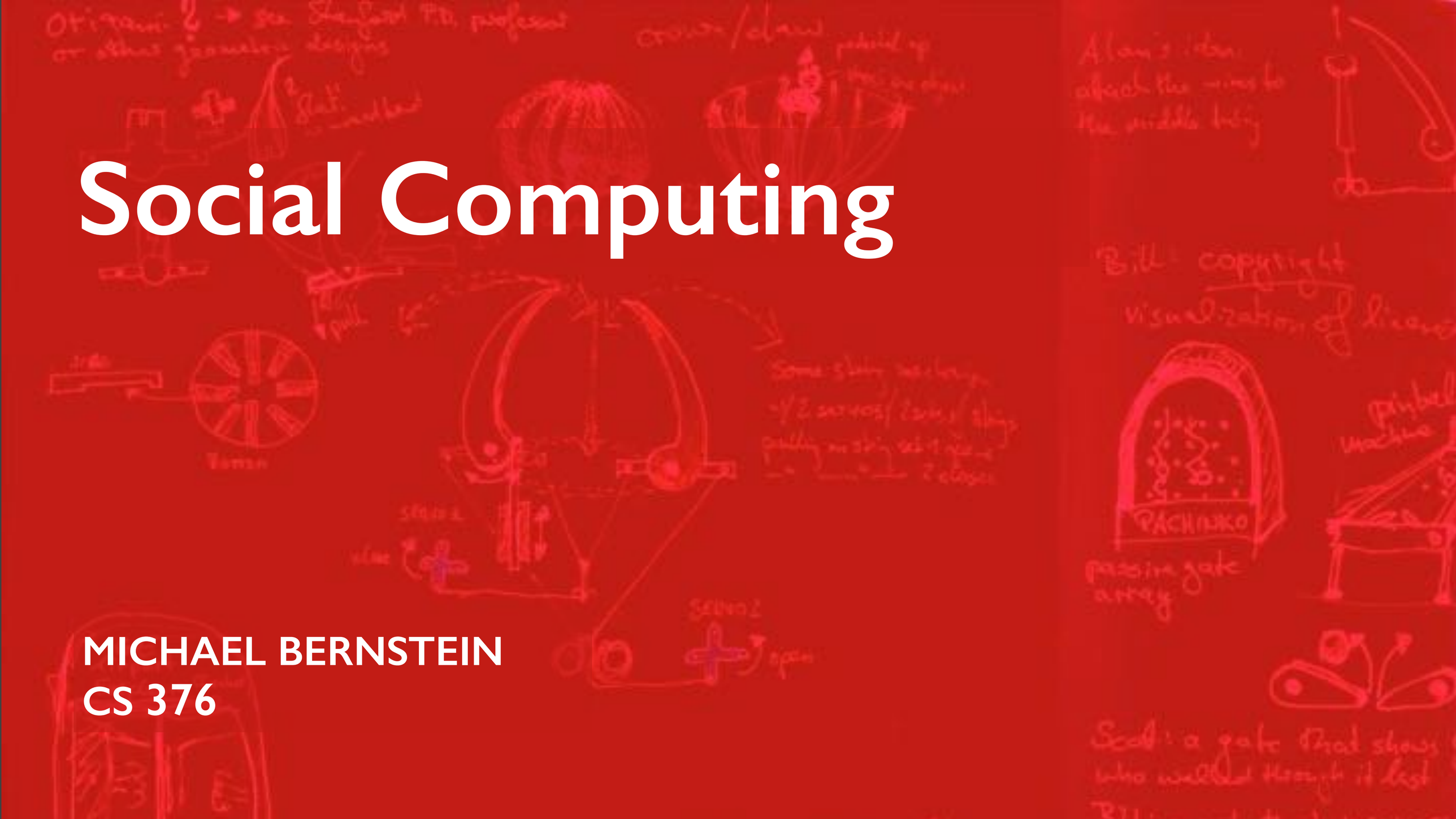
Social Computing



MICHAEL BERNSTEIN
CS 376

Announcements

- Project abstract draft due Friday

Recall…

Sociotechnical system

Emergent behaviors result from interactions
between social relationships and technological interventions.

Social computing

- Aims to understand how technology impacts human social behavior, and design those mediating systems more effectively

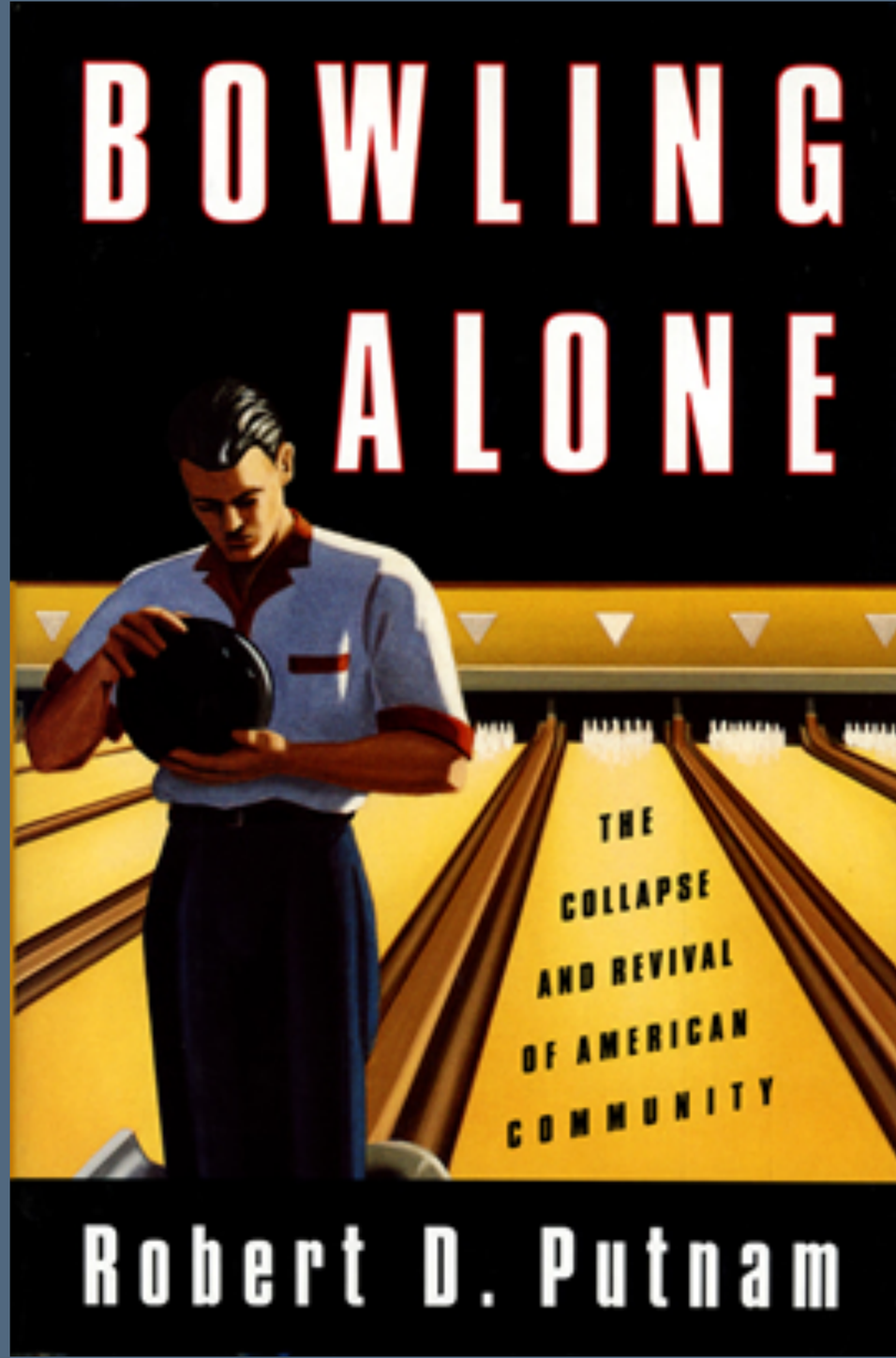
- Today we will cover:
  - Operationalizing theory: drawing on the social sciences
  - Designing online communities: what makes communities thrive?
  - Social influence: how do people impact each other?
  - Knowledge sharing: groups that share and gather information
  - Leadership and collective action: what role do these play online?

Operationalizing theory

Recall...

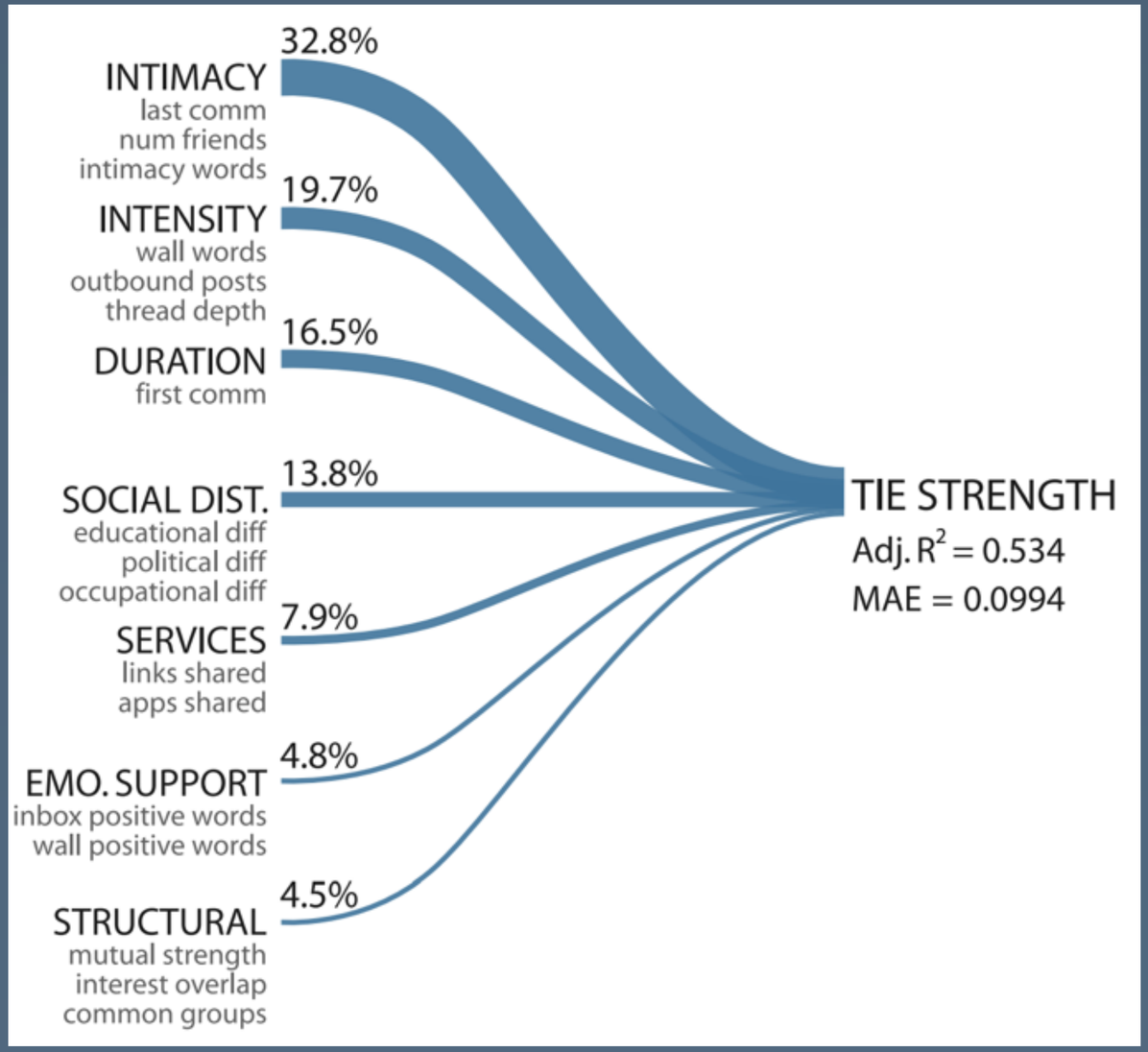
- Facebook usage increases all types of social capital, especially bridging social capital

  [Ellison, Steinfeld and Lampe, JCMC '07]



Recall…

- Can we observationally model tie strength? [Granovetter '73]
- Most predictive:
  - Days since last communication
  - Days since first communication
  - Wall words exchanged
  - Mean strength of mutual friends



YOU READ THIS

Does SNS use impact tie strength? [Burke and Kraut 2014]

- "The Internet Paradox" [Kraut 1998]: people are more lonely the more they use the internet. Does Facebook use really displace other forms of social interaction?

- Method: longitudinal time-series analysis of self-reported tie strength, compared to Facebook activity logs
- Result: composed pieces (comments, posts, messages) increase it substantially, but one-click pieces (likes) only by a bit

How does SNS impact ____?

- Well-being?
  - "Receiving targeted, composed communication from strong ties was associated with **improvements in well-being** while viewing friends' wide-audience broadcasts and receiving one-click feedback were not." [Burke and Kraut 2016]

- Job hunting?
  - "Most people are helped through one of their numerous weak ties but **a single stronger tie is significantly more valuable at the margin**" [Gee, Jones and Burke 2017]

Presentation of Self in Everyday Life

[Goffman 1959]

- Established face-to-face interaction between people as an object of study
- Metaphor: life as performance
  - People work to guide the impression that people develop of them
  - On-stage: public life
  - Off-stage: private life

The Many Faces of Facebook

[Zhao et al., CHI '13]

- Facebook appears monolithic, but there are three functional regions
- Semistructured interviews
- Performance region (for now)
- Exhibition region (for later)
- Personal region (for reflection)

Estimating audience size

[Bernstein et al., CHI 2013]

How might our activities be impacted if we are incorrectly estimating our audience size?

Method: compare survey results ("How many people do you think saw your most recent update?") to log results

Facebook users underestimate audience size by **4x**

Median reach is **35% per post** and **61% per month**

Many want larger audiences but **already have them**

Reasoning about FB's algorithms

[Eslami et al., CHI 2015]

- What are peoples' mental models of social news feed algorithms?
- Result: over half of Facebook users are unaware of the existence of the news feed algorithm
  - "Initial reactions for these previously unaware participants were surprise and anger."
  - "Participants were most upset when close friends and family were not shown in their feeds."

Online communities

Motivation: why participate?

- Intrinsic motivators: drawn from my own desires to complete a goal or task
  - Examples: pleasure, hobby, developing a skill, demonstrating a skill
- Extrinsic motivators: do not derive from my relationship with the goal or task
  - Examples: money, graduation, points, badges
- Motivation Crowding Theory
  - Applying external motivators to an intrinsically motivated task reduces participation

Contributions via uniqueness

[Beenen et al., CSCW '04]

YOU READ THIS

- Social loafing: why should I contribute if many others could as well?
- Hypothesis: calling out the uniqueness of contributions will increase participation
- Method: rating campaign on MovieLens
  - "As someone with fairly unusual tastes, you have been an especially valuable user of MovieLens [...] You have rated movies that few others have rated: [...]"
- Result: participants in the uniqueness condition rated 18% more movies

Anyone can become a troll

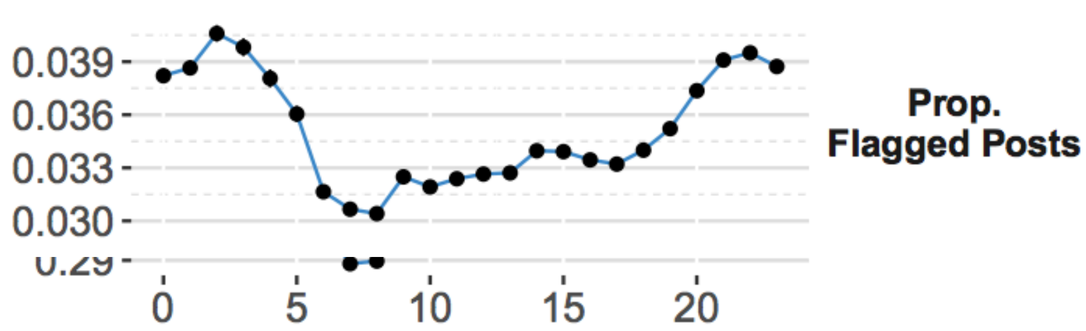
[Cheng et al., CSCW 2017]

- Popular press: trolling is confined to an antisocial minority
- This paper: a substantial amount of online trolling is due to normal people on a bad day

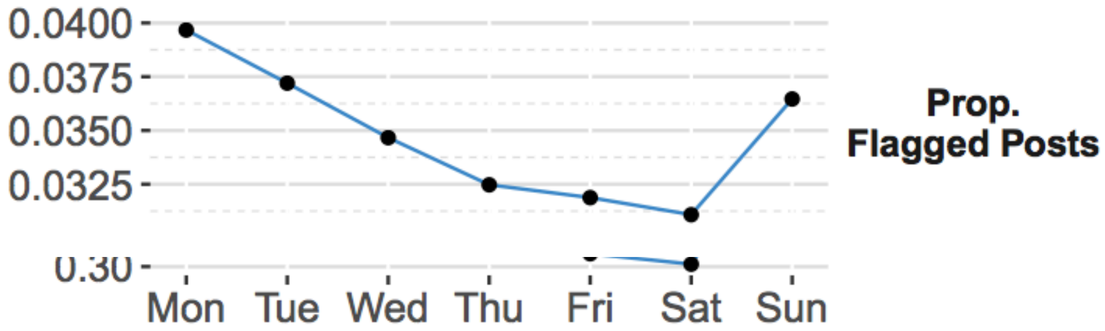
- Experiment: put people in a good or bad mood, show them positive or negative initial posts in a thread
  - Measure resulting trolling behavior

	Positive Mood	Negative mood
Positive context	35% trolling	49% trolling
Negative context	47% trolling	68% trolling

- Replicating on a large dataset of comments on CNN.com, trolling behavior tracks known regular human mood patterns:



(a) Time of Day (EDT)



(b) Day of Week

How do we manage trolls?

[Chandrasekharan et al., CSCW 2017–2018]

- Question: does banning bad behavior help, or just relocate the behavior?
- Dataset: Reddit banned /r/CoonTown and /r/FatPeopleHate as violating its hate speech policy
- Result: many accounts left; those that stayed, did not introduce hate speech into other subreddits they migrated into


The New York Times

BUSINESS DAY

Reddit Limits Noxious Content by Giving Trolls Fewer Places to Gather

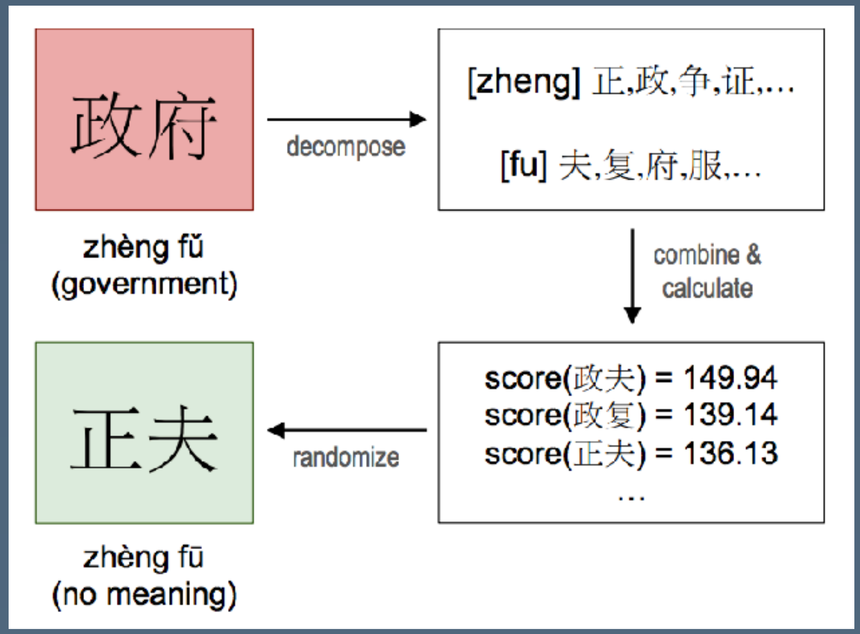
The Shift

By KEVIN ROOSE SEPT. 25, 2017

Combating censorship

[Hiruncharoenvate, Lin and Gilbert, ICWSM '15]

- The Chinese government censors sensitive topics on social media
- However, homophones can be difficult for censors to distinguish from intended use
  - 和谐 (slang 'censorship') vs. 河蟹 (river crab)

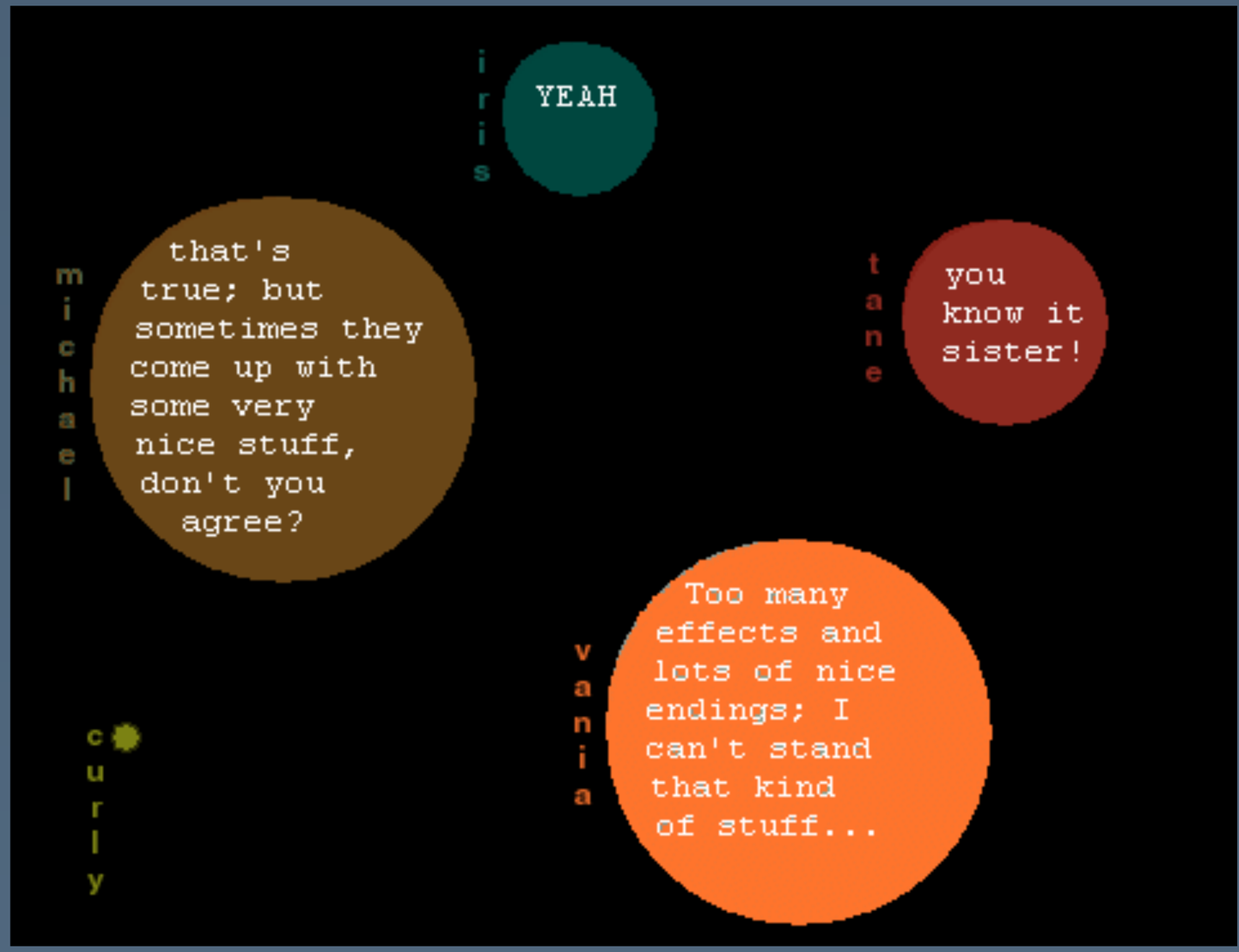


- This work introduces an algorithm that decomposes words and nondeterministically creates homophones that are likely to create confusion for censors

Discussion

[Viégas and Donath, CHI '99]

- Chat circles: "narrowcasting" via physical proximity



Social influences on the wisdom of crowds

Unpredictability in an artificial cultural market

[Salganik, Dodds, and Watts, Science '06]

- Puzzle: it is extremely difficult for experts to predict which songs, movies and books will be hits
- Method: 14,000 participants download free music from an online site
  - Random assignment: no download info, or one of eight worlds that all start with zero downloads
- Result: huge variance in download counts
  - Best songs rarely did poorly, worst songs rarely did well; any other outcome was possible

Reputation systems

[Resnick and Zeckhauser, Adv. Appl. Microeconomics '02]

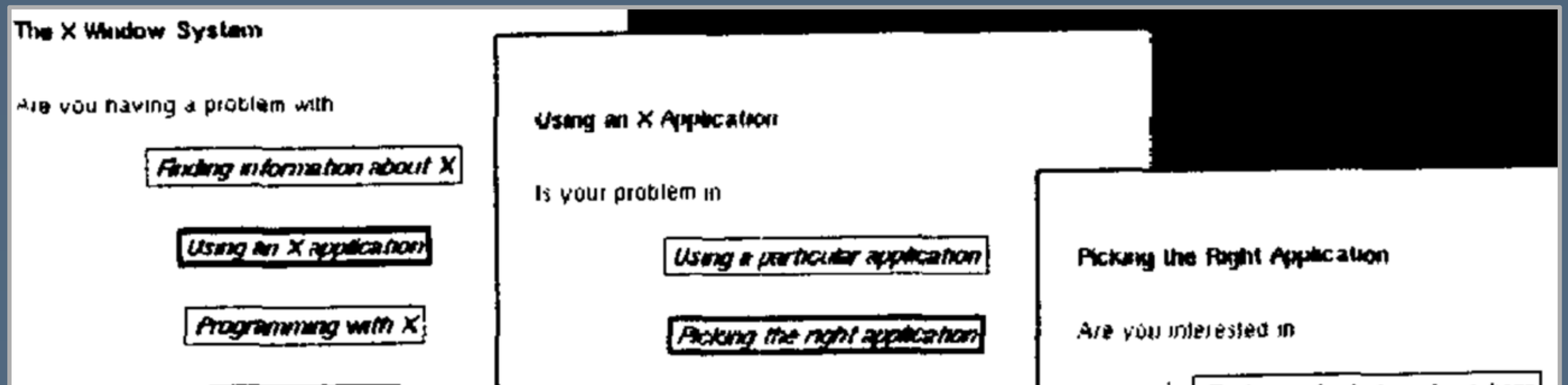
- Reputation is a core signal in social systems
- Study of eBay feedback
  - Despite incentives to free ride, over half of eBay transactions leave feedback
  - Feedback is almost always positive
  - High reputations didn't lead to higher seller prices
  - Evidence of reciprocation and retaliation

Knowledge sharing

Answer Garden

[Ackerman and Malone, OIS '90]

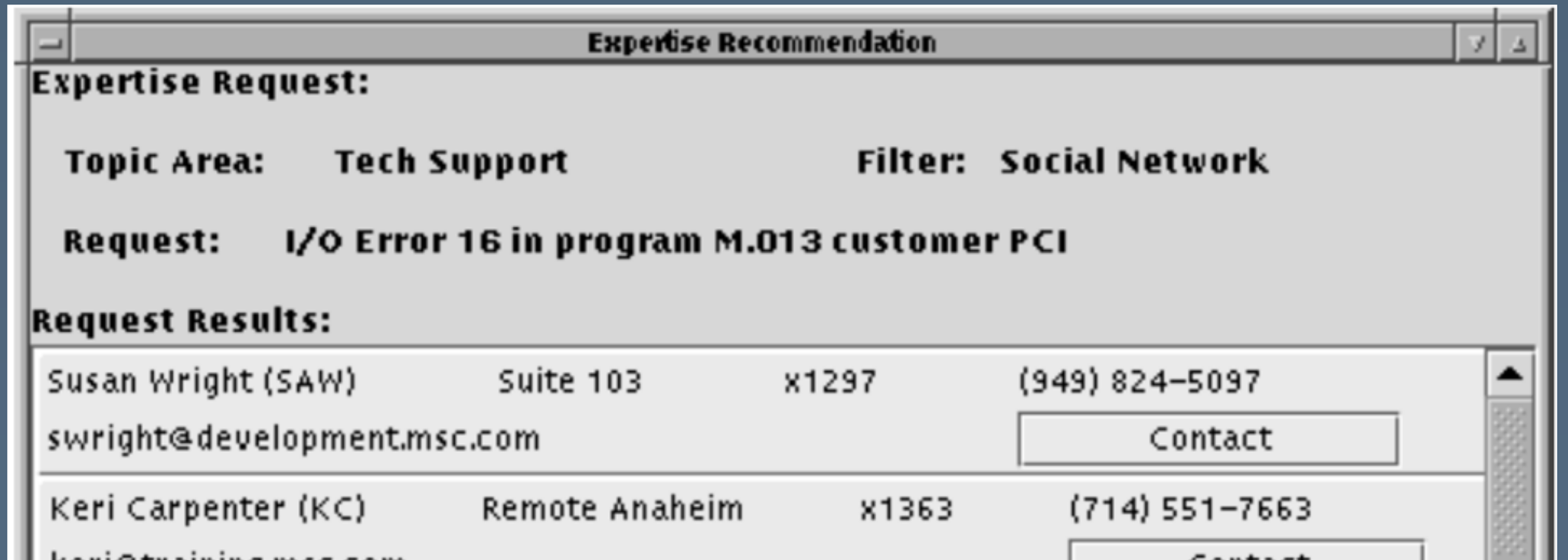
- An "organizational memory" system: knowing what the company knows
- Main idea: members leave traces for others to solve their questions
- The original Yahoo! Answers, Quora, Aardvark



Expertise recommendation

[McDonald and Ackerman, CSCW '00]

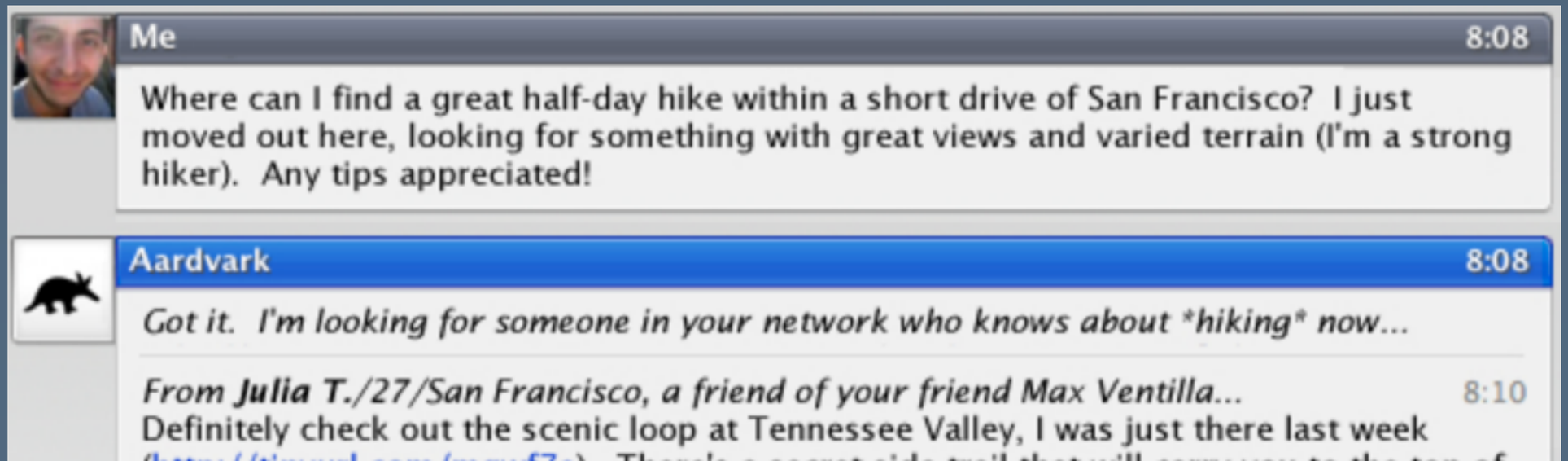
- Recommend people, not documents
- Goal: help organizations know who can tackle each problem



Aardvark: social search engine

[Horowitz and Kamvar, WWW '10]

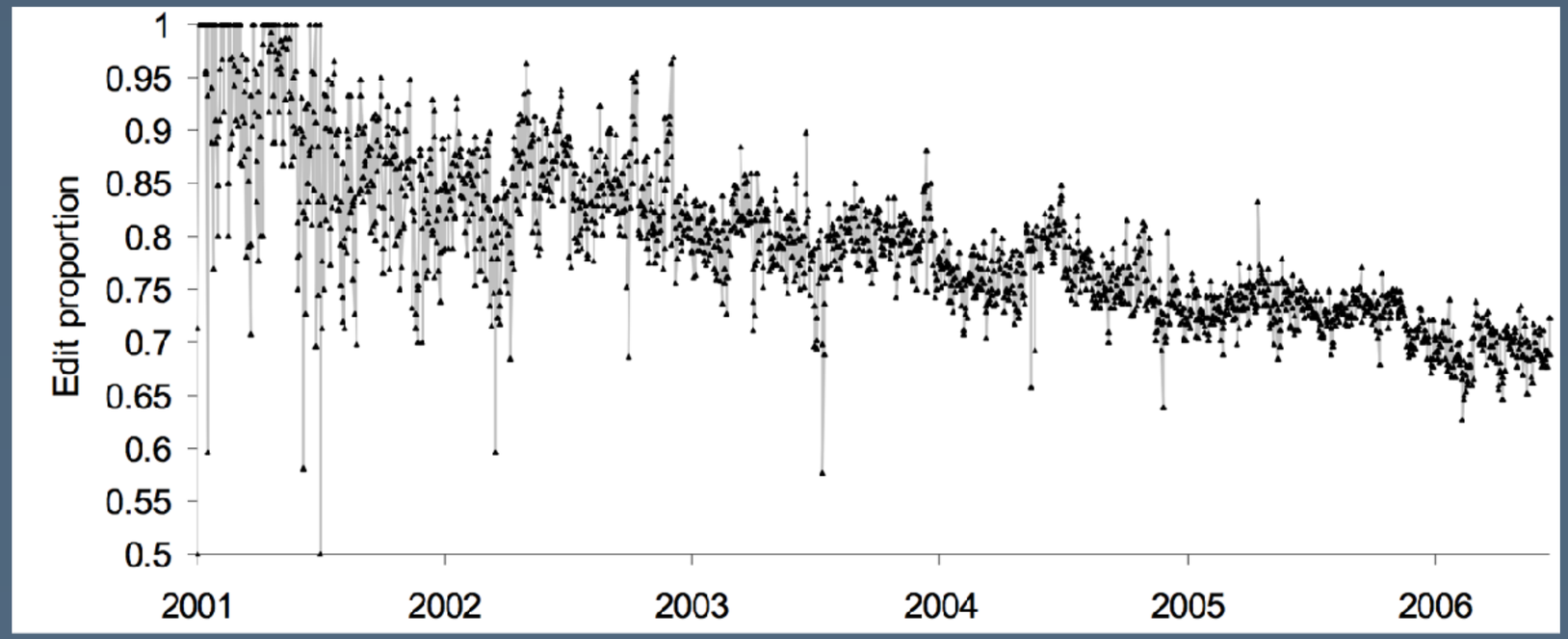
- Technical challenge: question routing over IM
  - Use a joint model over topical relevance and social distance
- Interesting equilibrium: people were more willing to answer questions than ask them!



Leadership and collective action

Recall: conflict and coordination

- **What happens to collaboration costs as Wikipedia grows?** [Kittur, Suh, Pendleton, and Chi, CHI '07]



Amount of direct work on articles goes down, and activity on coordination pages goes up

What makes a leader?

- Reader-to-leader framework
  [Preece and Shneiderman, AIS Trans. HCI '09]
  - Readers > Contributors > Collaborators > Leaders
  - Goal: guide users into each new stage
  - See also: Legitimate peripheral participation
    [Lave and Wenger '91]
- Leaders are born, not made
  [Panciera, Halfaker, Terveen, GROUP '09]
  - Power editors on Wikipedia do more work than others, even from their first day on Wikipedia

One-sided gatekeeping

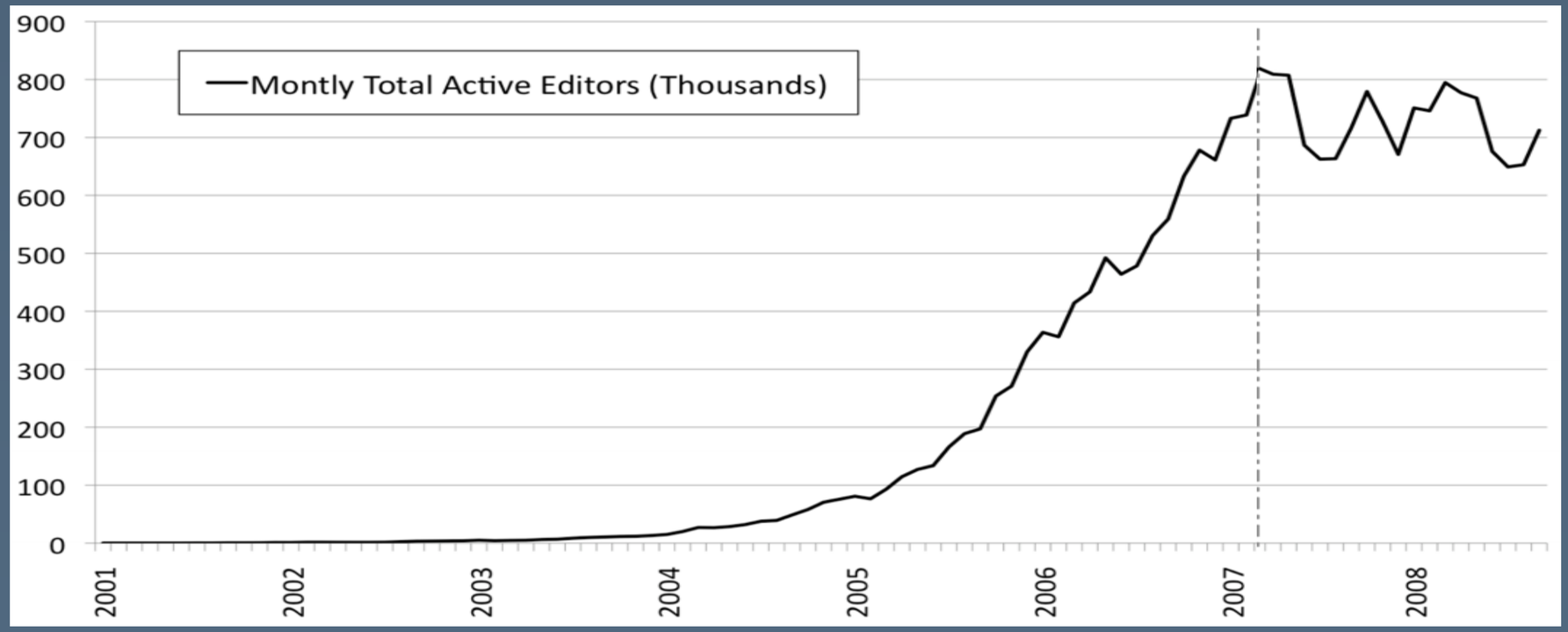
[Keegan and Gergle, CSCW '10]

- How powerful are leaders in open communities like Wikipedia?
- Method
  - Data mine nominations for breaking news articles on the Wikipedia homepage
  - Stories were nominated and voted on by elite, middle-class, and newbie editors
- Result: "one-sided gatekeeping"
  - Elite editors could block nominations, but had no ability to get their nominations approved

No place to participate

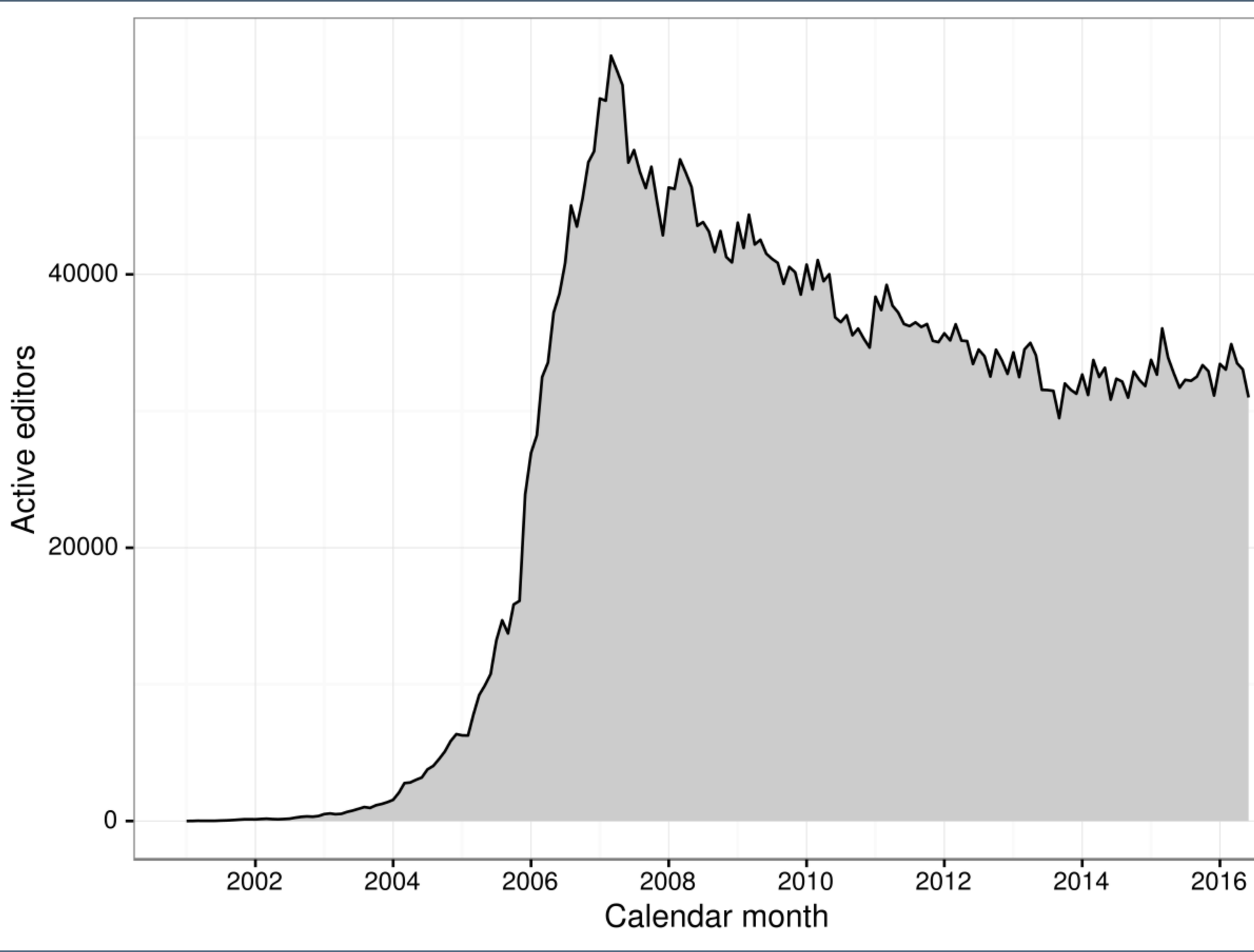
[Suh et al., WikiSym '09]

- Can fit Wikipedia's curve to a ecological population model with a fixed resource limitation



More decline

[Halfaker et al., American Behavioral Scientist '13] and [Wikimedia]



Skills for social computing research

- Skills for understanding and designing social computing systems are complementary
- Understanding: computational social science methods and theory
  - Social psychology, sociology, data mining
- Designing: core challenge is designing for emergent behavior