Social Computing

MICHAEL BERNSTEIN

CS 376

Recall…

Sociotechnical system

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

Recall…

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

[Ellison, Steinfeld and Lampe, JCMC '07]

BOWLING ALONE

THE COLLAPSE AND REVIVAL OF AMERICAN COMMUNITY

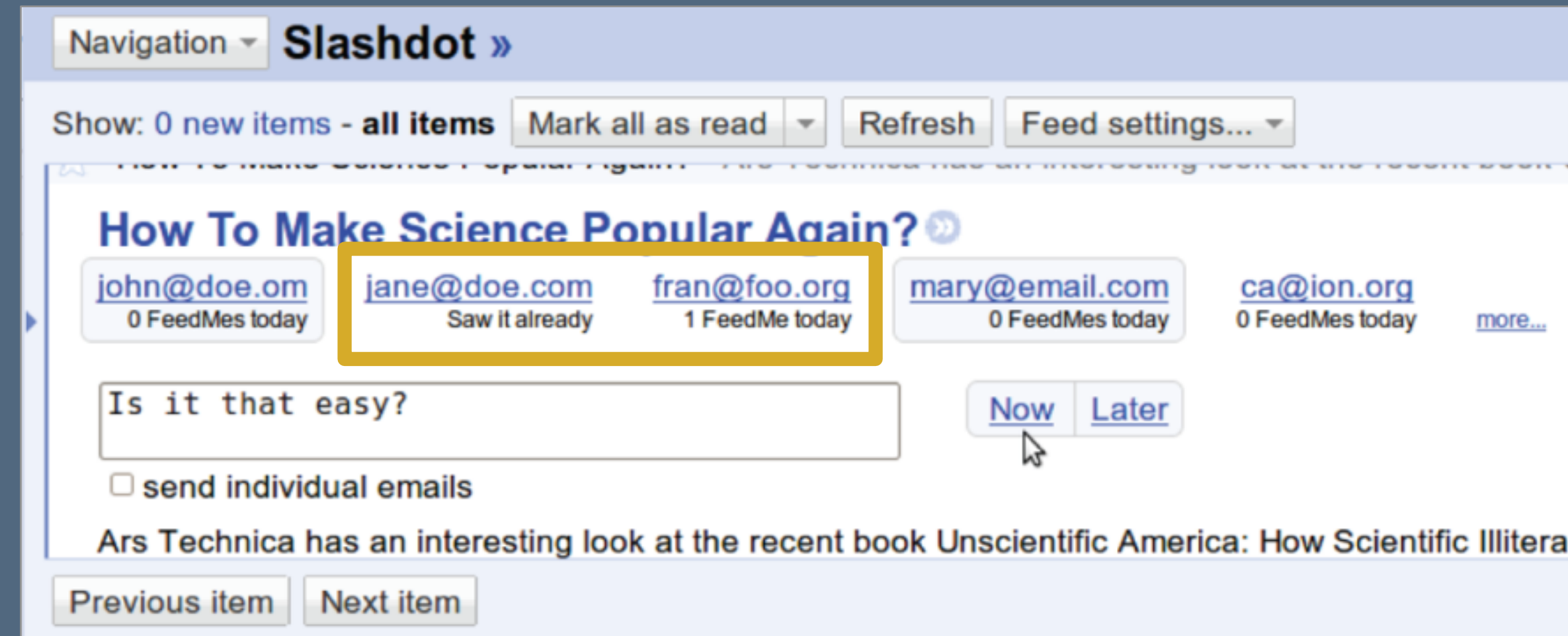Robert D. Putnam
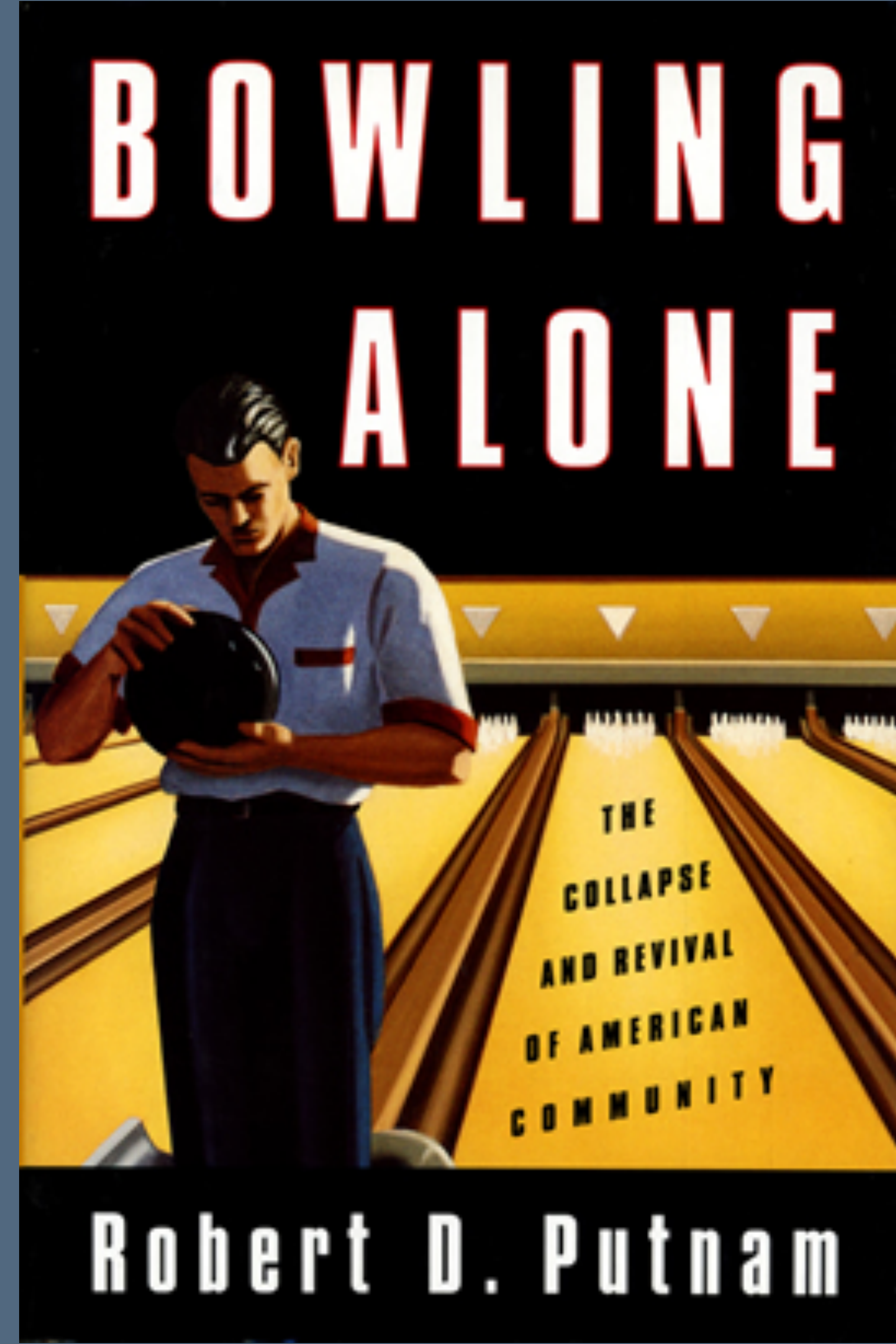
Recall...

- The Strength of Weak Ties
  [Granovetter '73]

Recall...

- Systems and applications research
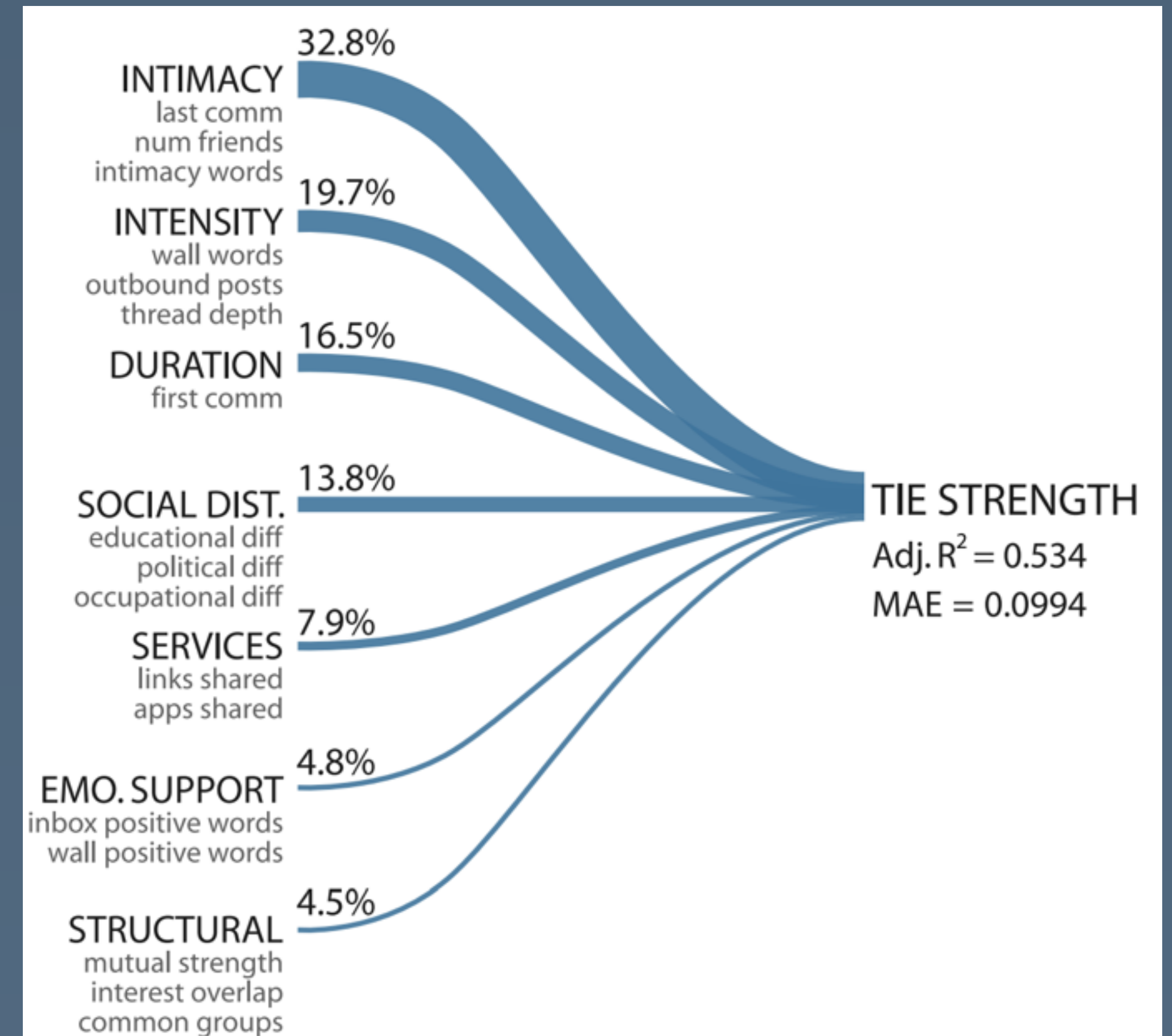
FeedMe
ReMail
Chat Circles
Link Different

Recall…

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

Operationalizing theory

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

ERVING GOFFMAN

THE PRESENTATION OF SELF IN EVERYDAY LIFE

"One of the most trenchant contributions to social psychology in this generation." —American Journal of Sociology

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)
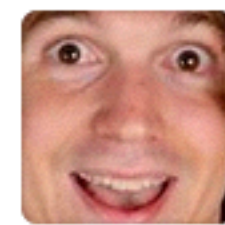
Michael Bernstein
February 24

CS 376 is the best and I am studying hard right now!

Michael Bernstein
February 24

I got into Stanford! English major, here I come!

Michael Bernstein
February 24

After a lot of soul-searching, English isn't for me…

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."

Motivating participation

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]

- 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

Contributions via goal-setting
[Beenen et al., CSCW '04]

- Specific, high-challenge goals are known to increase performance on tasks
- Hypotheses
  - H1: specific numeric goals will produce more participation than "do your best" goals
  - H2: individual goals will produce more participation than group goals
- Method: rating campaigns on the MovieLens web site
- Results
  - H1 confirmed (3 extra ratings)
  - H2 disconfirmed (group goals produced more)

Experts and questions

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
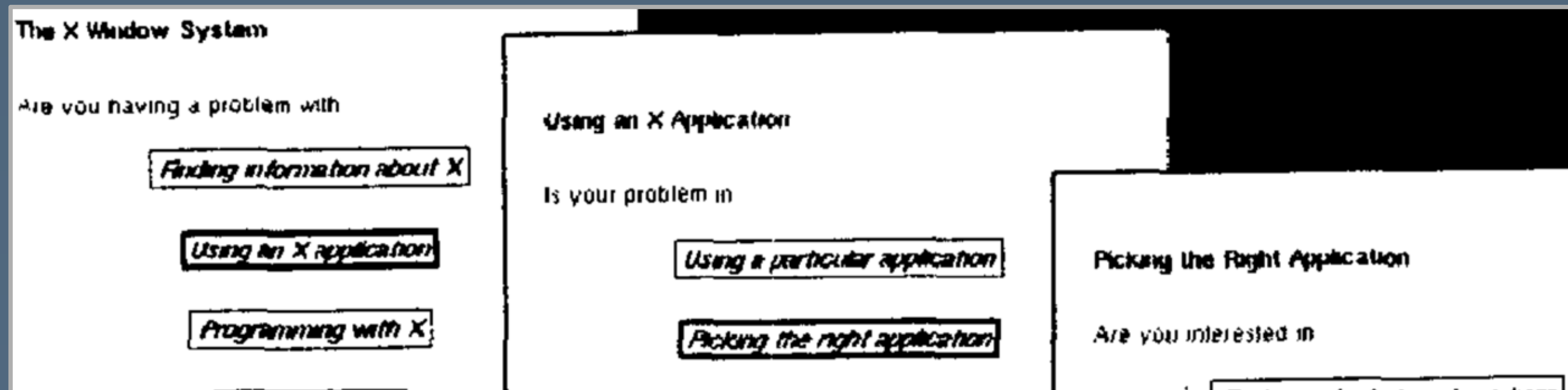
Expertise recommendation
[McDonald and Ackerman, CSCW '00]

- Recommend people, not documents
- Goal: help organizations know who can tackle each problem
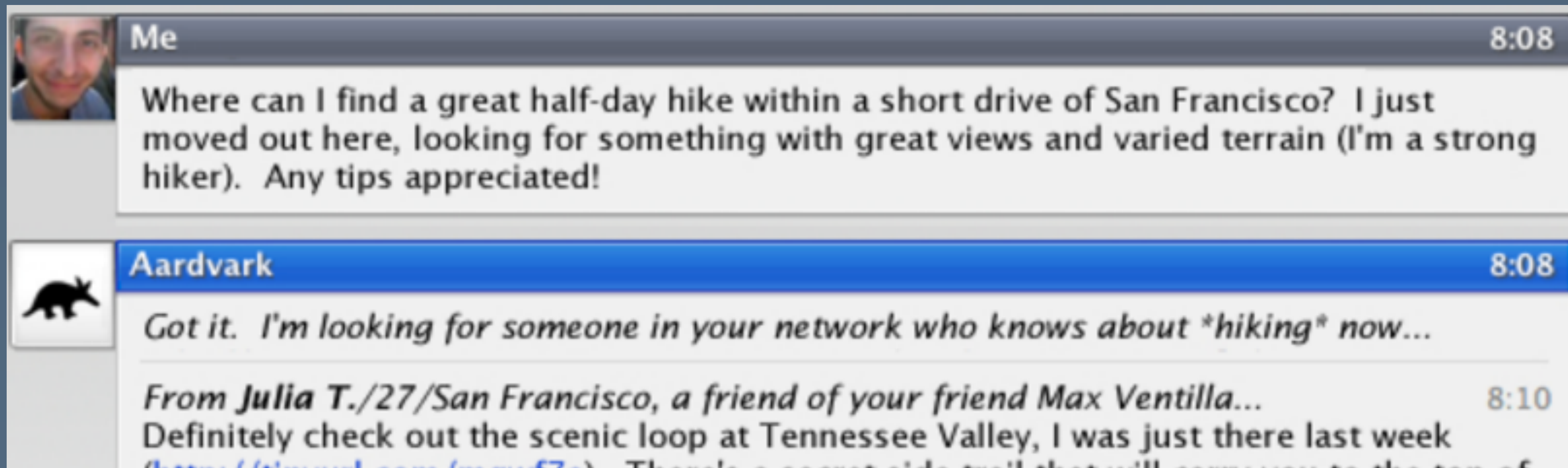
Aardvark: social search engine
[Horowitz and Kamvar, WWW '10]

- 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!

Me	8:08
Where can I find a great half-day hike within a short drive of San Francisco? I just moved out here, looking for something with great views and varied terrain (I'm a strong hiker). Any tips appreciated!	

Aardvark	8:08
Got it. I'm looking for someone in your network who knows about *hiking* now...	

From *Julia T.*/27/San Francisco, a friend of your friend Max Ventilla...	8:10
Definitely check out the scenic loop at Tennessee Valley, I was just there last week	

Codeopticon

[Guo, UIST '15]

- Enable one tutor to help many students learning programming at once
- Visualizations help find "stuck" students

Watch many learners code and debug in real time
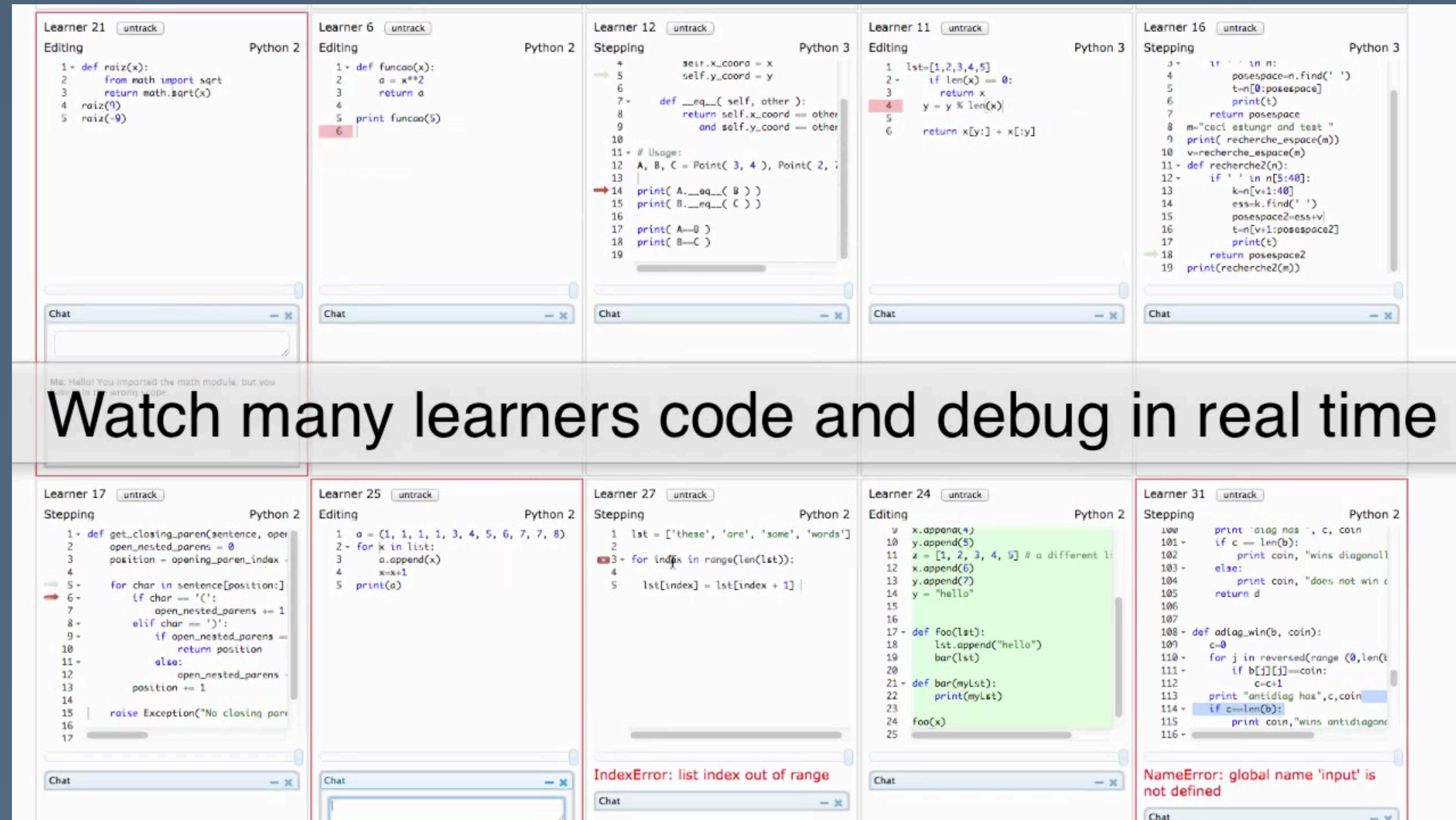
Leadership and collective action

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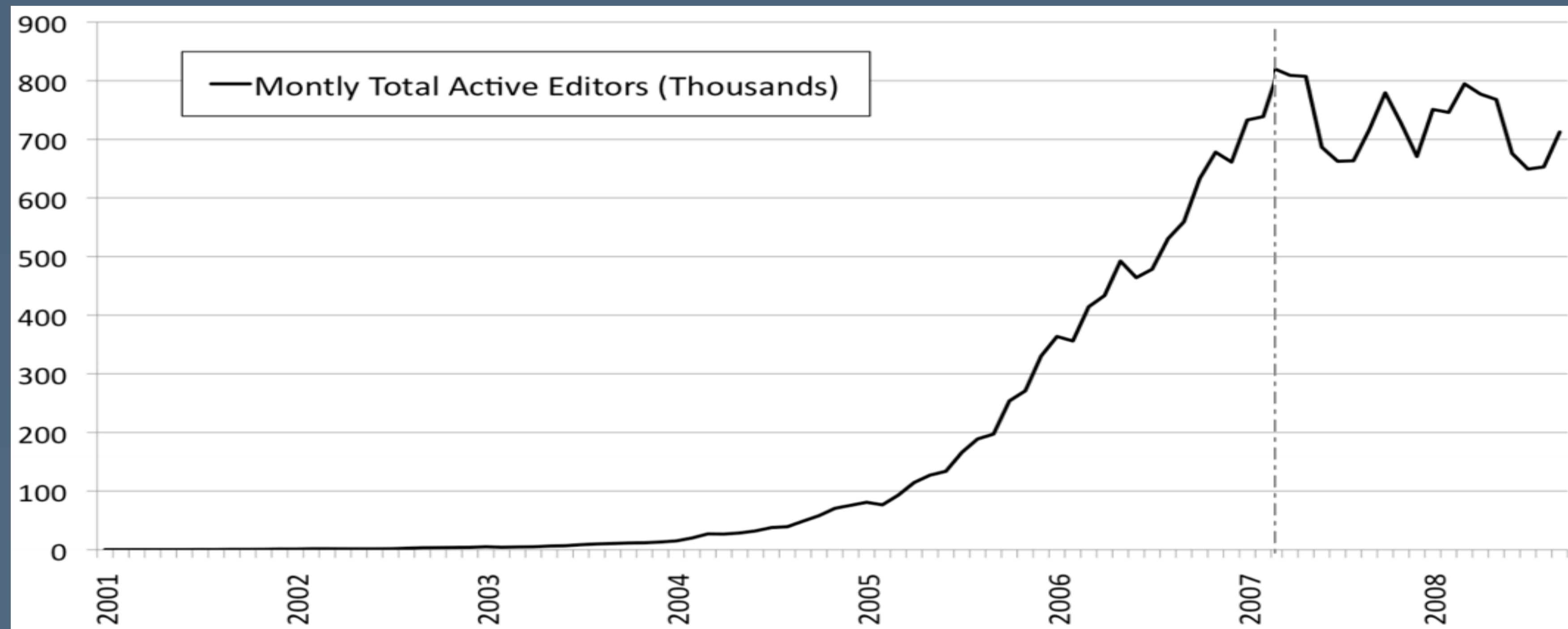
More decline
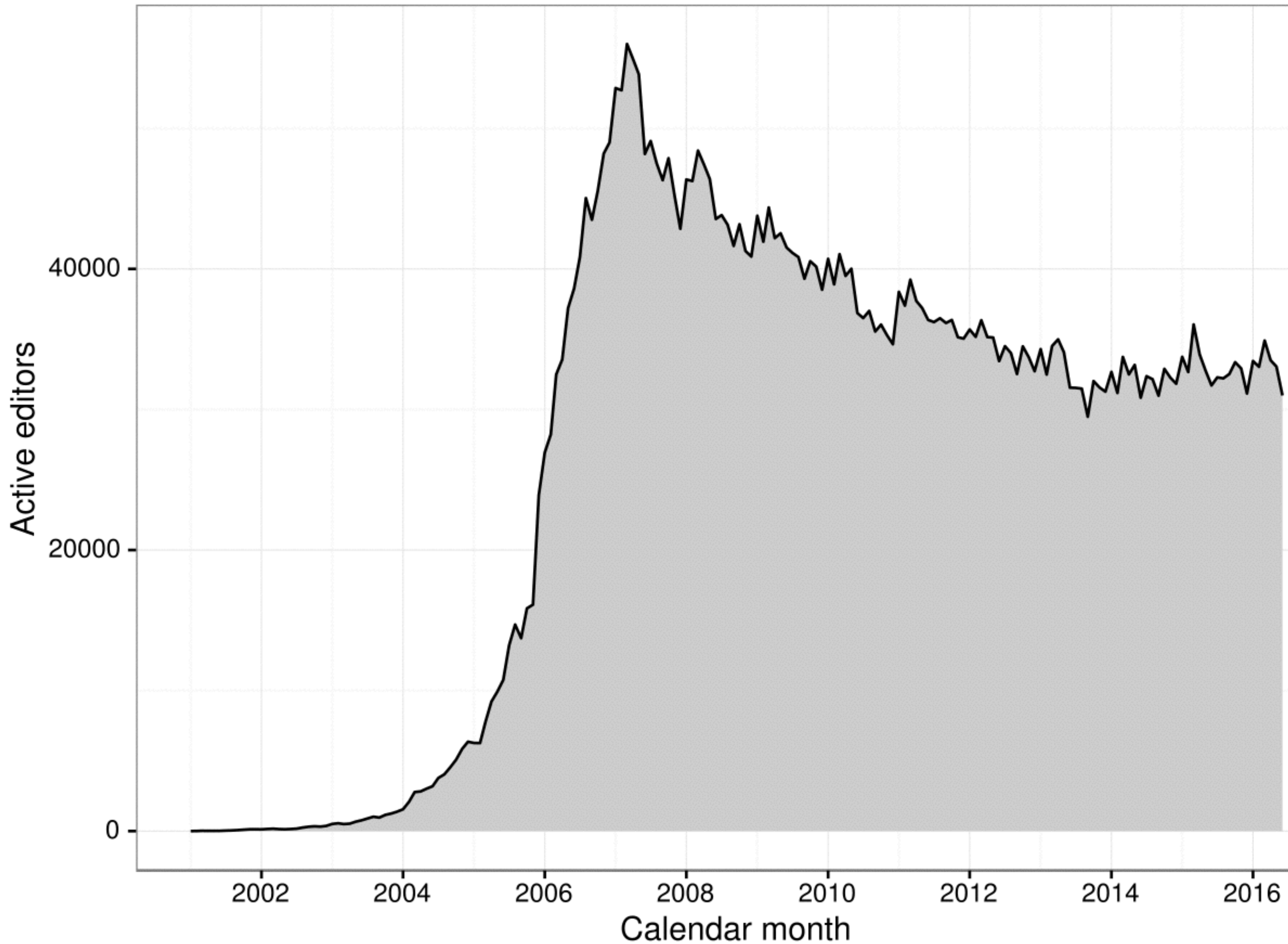
[Halfaker et al., American Behavioral Scientist '13] and [Wikimedia]

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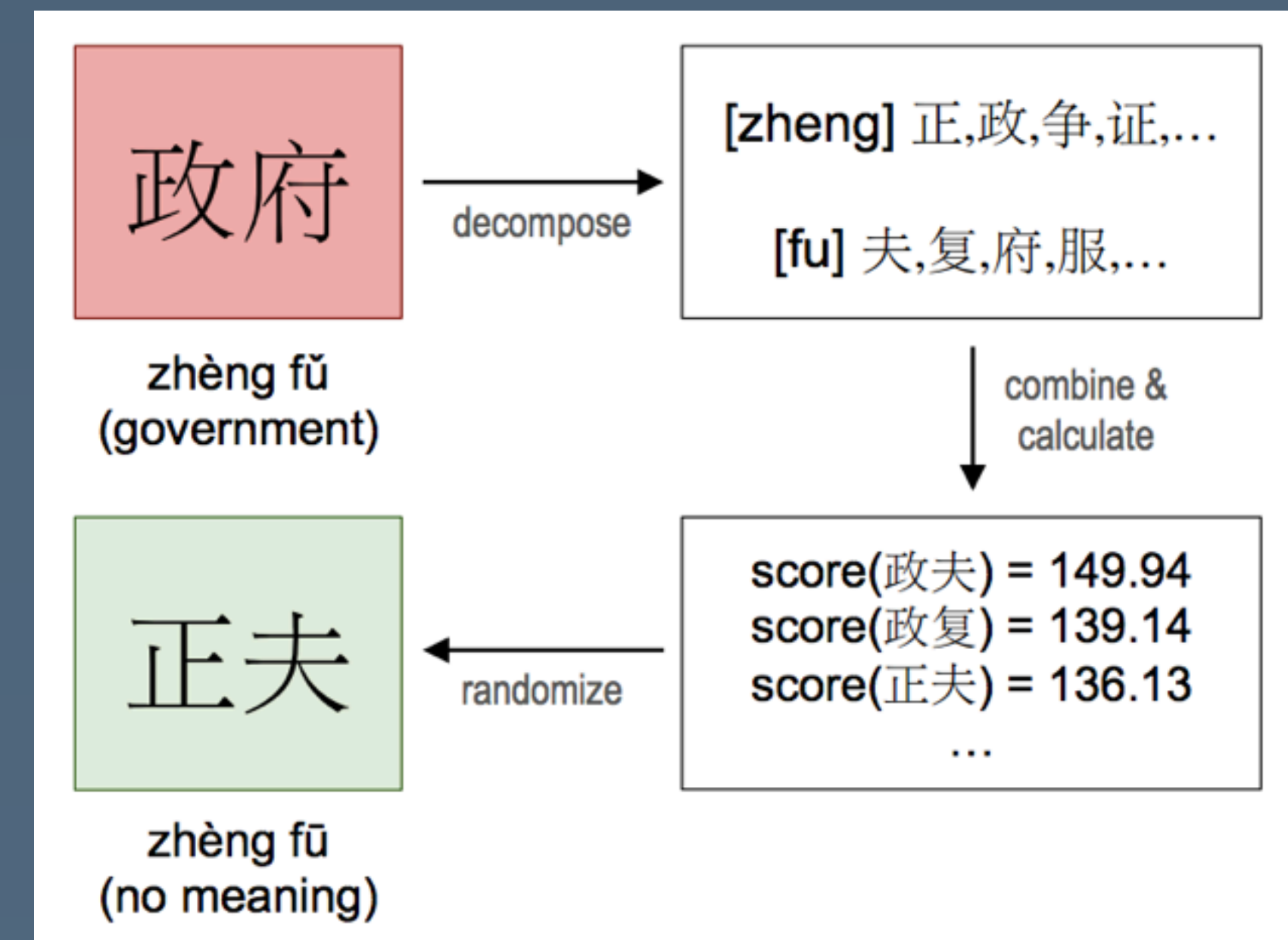
- This work introduces an algorithm that decomposes words and nondeterministically creates homophones that are likely to create confusion for censors

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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

Credibility and online rumors
[Mitra and Gilbert, ICWSM 2015]

- Social media are a space for spreading information, but how much misinformation are they spreading?

- CREDBANK: a corpus of 60 million tweets annotated by humans to indicate how credible the event is

- 24% of events in the Twitter stream are seen as not reliable…

Exploration and visualization

Exploring social data

- Social media data can help us understand the world around us
- For example: dips in tweet volume show when people are attending to Obama in his SOTU address
[Shamma et al., CSCW Horizons '10]
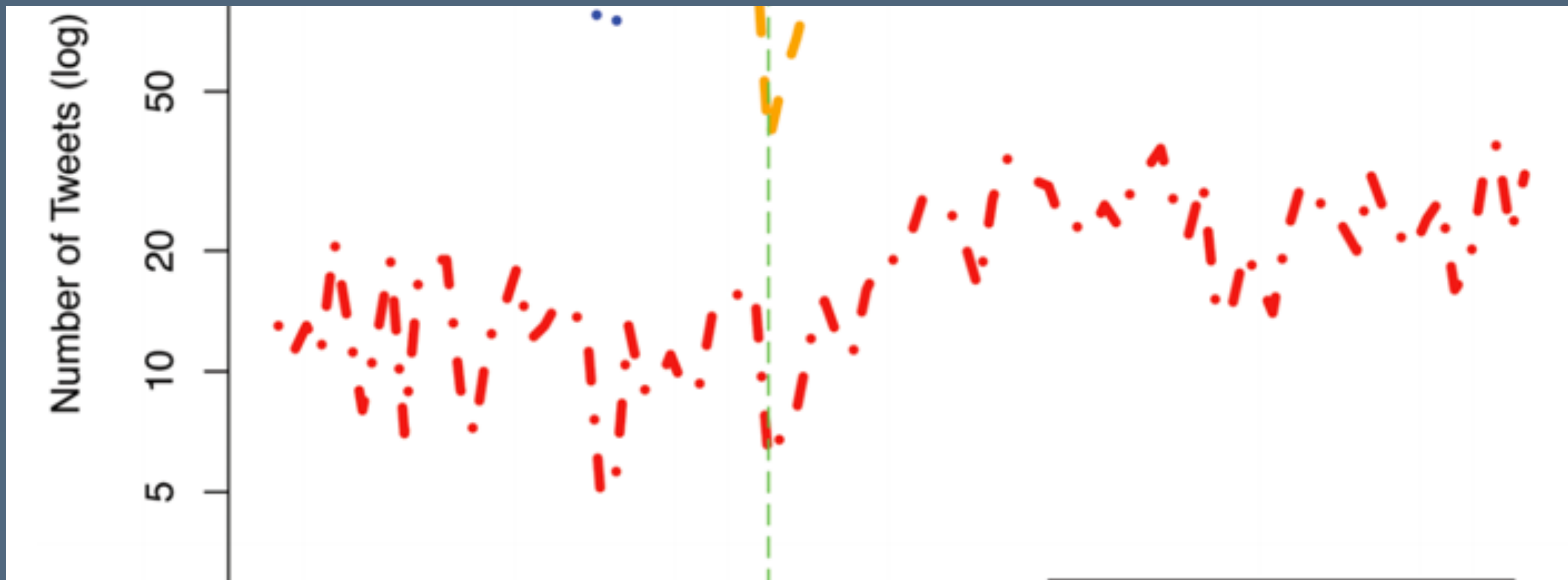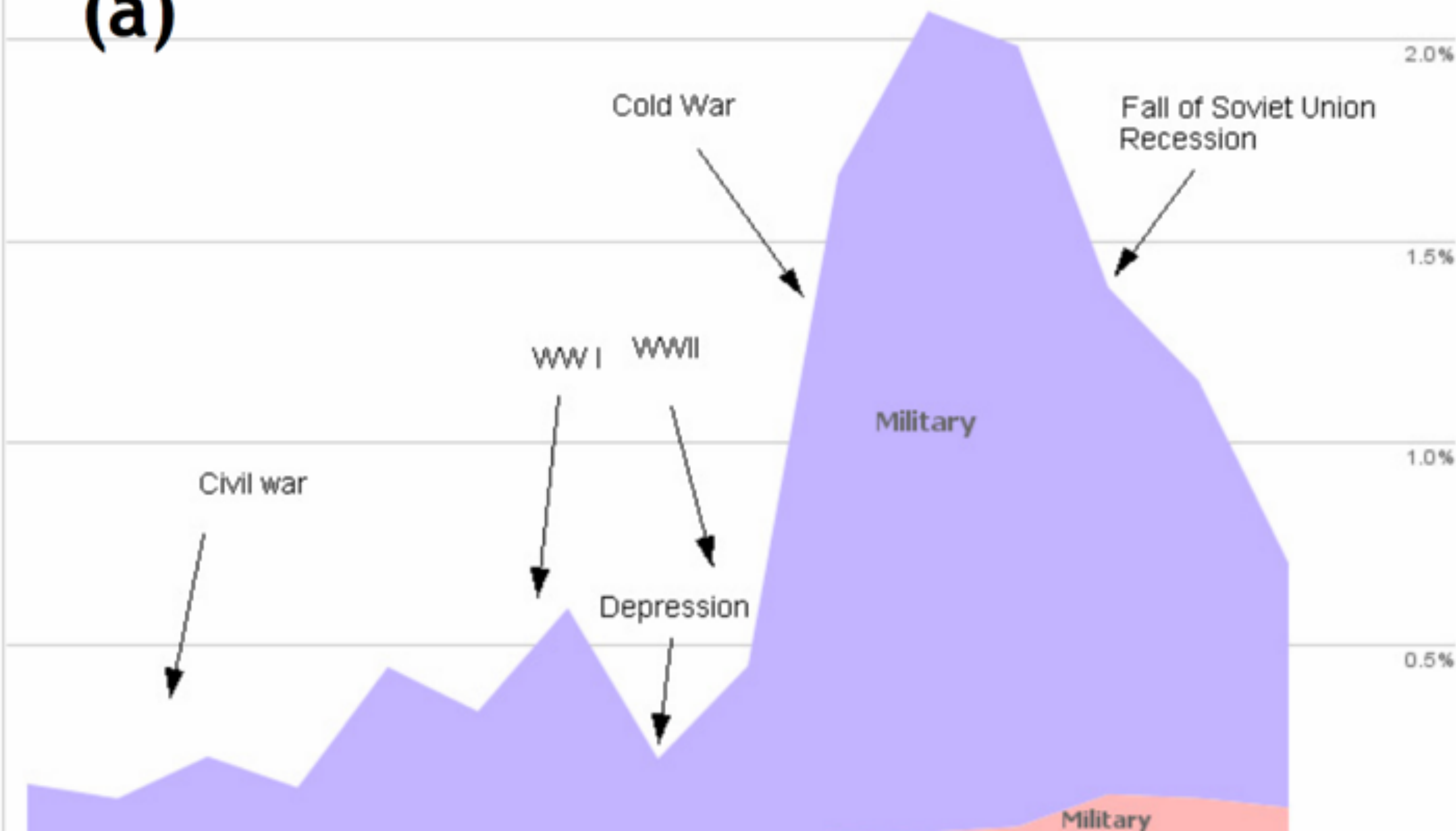
Social data exploration

[Heer, Viégas and Wattenberg, CHI '07]

Reported Occupations of U.S. Labor Force, 1850-2000 (source: http://ipums.org)

(a)

>> military

○ all ○ men ○ women   % of Work Force ▾

Cold War

Fall of Soviet Union
Recession

2.0%

1.5%

WW I   WWII

Military

1.0%

Civil war

Depression

0.5%

Military

(e)

comments (5) **New Comment | View All (139)**

here are labels where I would have expected big jumps.
▨ by **Martin Sharp** on Fri Jul 21, 2006 10:16 AM

well, there was also the cold war right after ww2, which might be part of
the reason why there's such a huge jump after the 40s. It is also interesting
that there is such a drop between the 70s and the 80s.
by **Julia Hernandez** on Fri Jul 21, 2006 11:01 AM

I guess a lot of it has turned to robots, and the industrial complex, as martin
suggested, though it would be interesting to see the comparison of the fall
in military personal next to the rise in DOD funding for robots and industry.
by **Jesse O'Brien** on Fri Jul 21, 2006 11:51 AM

I think the jumps have more to do with the economy at large rather than
any particular military conflict. Lots of money in conflict has already been
spent before the conflict starts.
▨ by **Fred Klein** on Wed Aug 2, 2006 10:24 AM

reply

Is this military info right?

| **B** | *I* | <u>U</u> | ABC | 🌐 | 🔧 | ☺ |

I would agree with that... also see this: link

(d)

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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

Discussion rooms

Rotation	Littlefield 107	Littlefield 103
a	12	34
b	24	13
c	14	23
d	34	12
e	13	24
f	23	14