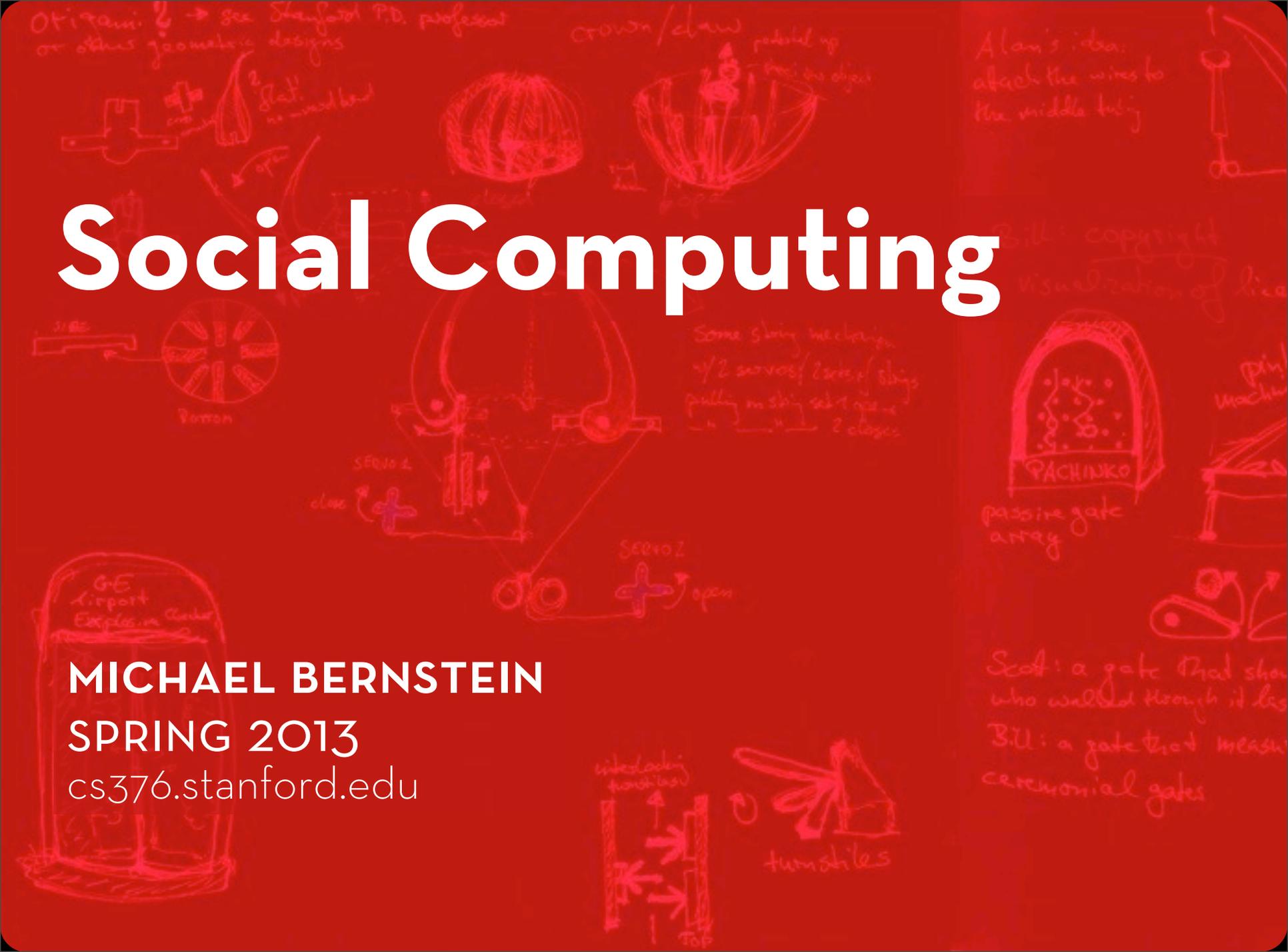


Social Computing

MICHAEL BERNSTEIN

SPRING 2013

cs376.stanford.edu

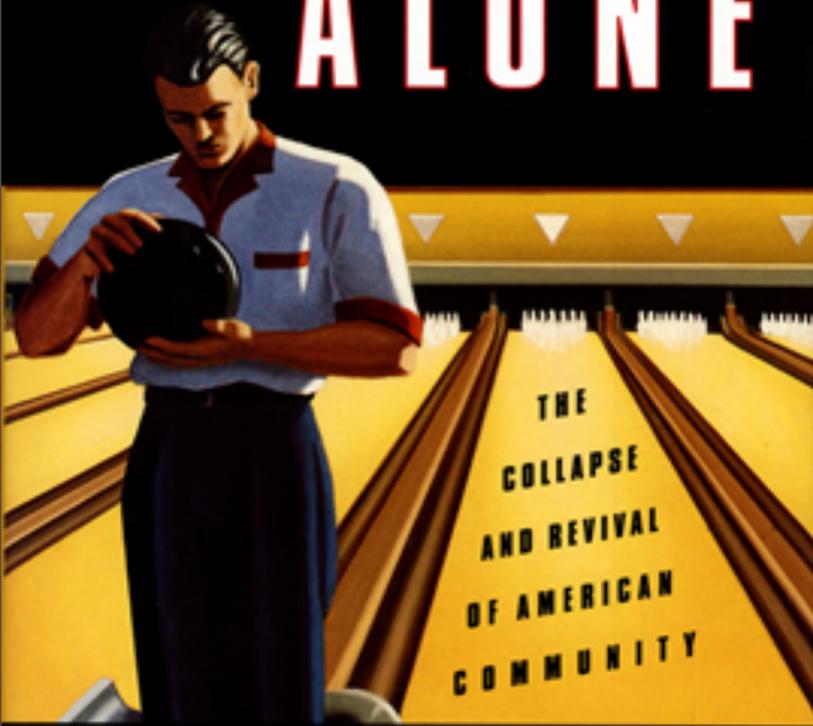


Sociotechnical system

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

Recall: Sociotechnical systems

BOWLING ALONE



Robert D. Putnam

Recall: Social capital

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

[Ellison, Steinfeld and Lampe, JCMC '07]



The Strength of Weak Ties [Granovetter, Am. Jour. of Soc. '73]

- Strong ties: a small number of people you know very well
- Weak ties: your large number of acquaintances
- Theory: your weak ties are bridges to other parts of the network; they can help you find jobs and information

Recall: Strength of weak ties

FeedMe

Navigation » Slashdot »

Show: 0 new items - all items Mark all as read Refresh Feed settings...

How To Make Science Popular Again?

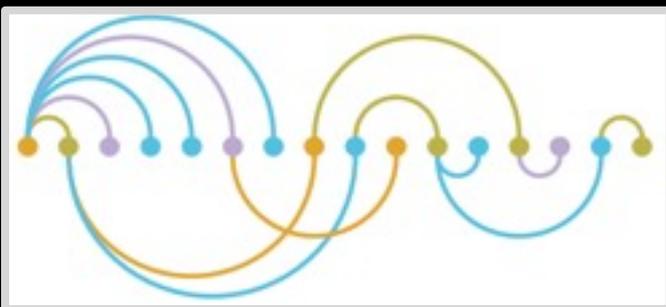
john@doe.om 0 FeedMes today **iane@doe.com** Saw it already fran@foo.org 1 FeedMe today mary@email.com 0 FeedMes today ca@ion.org 0 FeedMes today type a name +

Is it that easy?

send individual emails

Ars Technica has an interesting look at the recent book Unscientific America: How Scientific Illiteracy Threatens Our Future.

ReMail



Chat Circles



Link Different

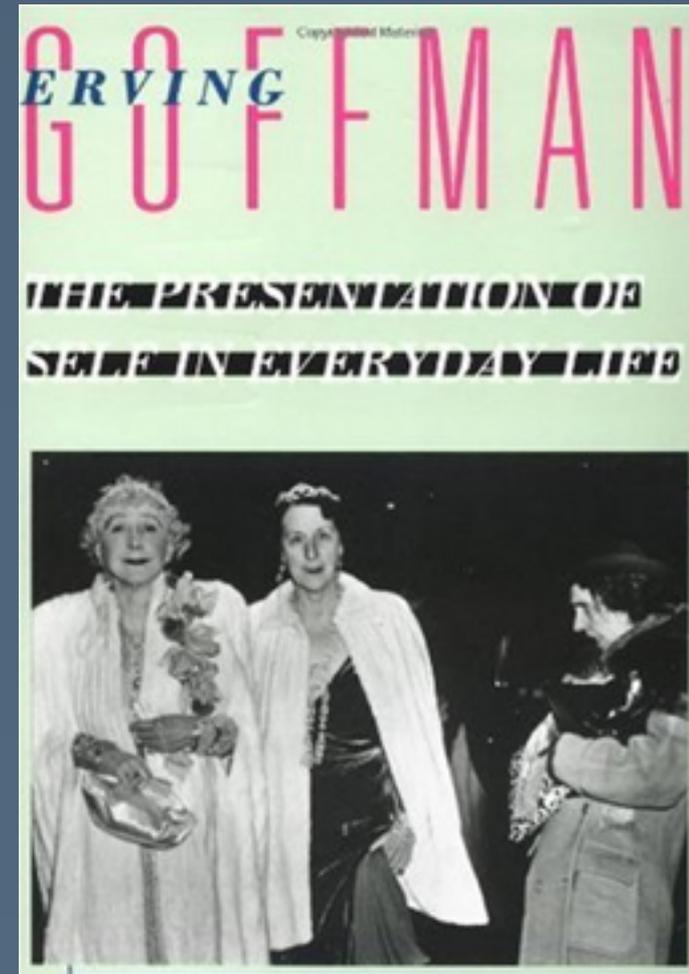
Recall: systems & application research

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



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

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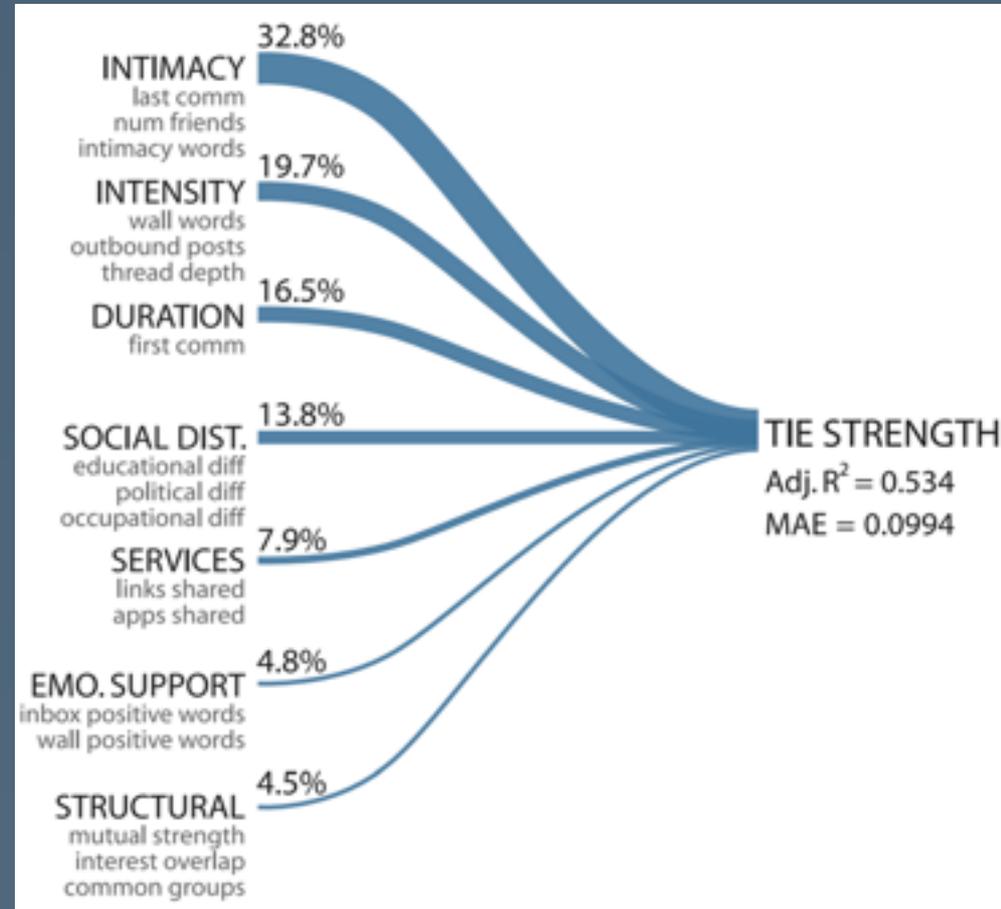
Method: compare survey results (“How many people do you think saw your most recent update?”) to log results

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

Predicting Tie Strength

[Gilbert and Karahalios, CHI '09]

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



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

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- 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?

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 - “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

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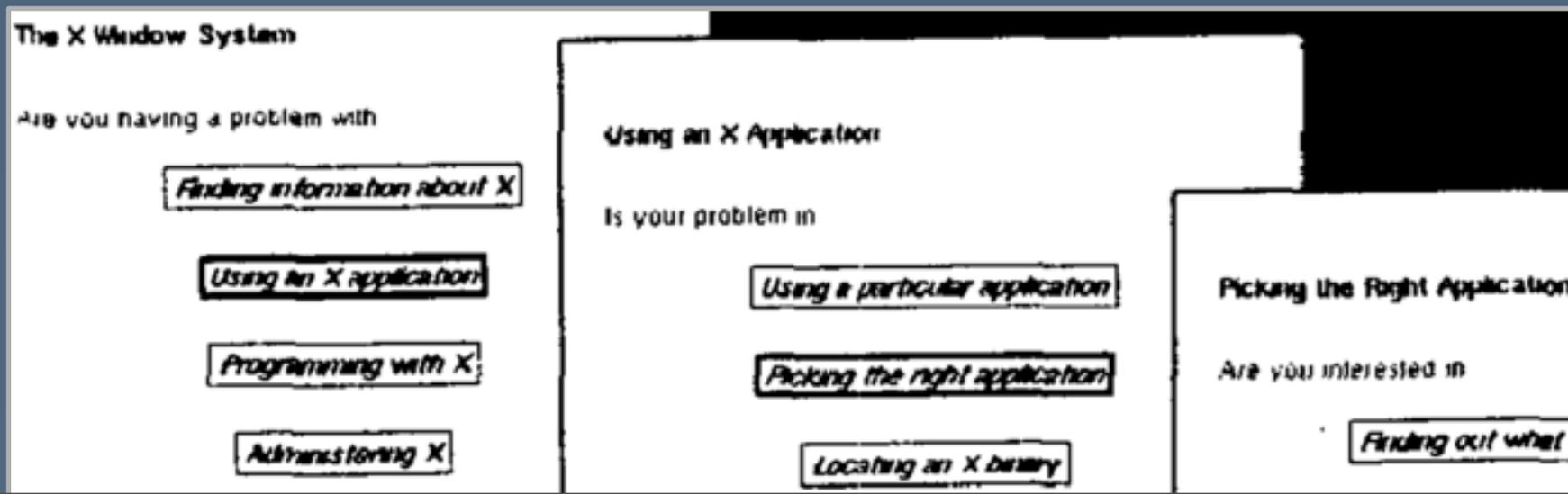
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- Method: rating campaigns on the MovieLens web site
- Results
 - H1 confirmed (3 extra ratings)
 - H2 disconfirmed (group goals produced more)

Experts and questions

Answer Garden

[Ackerman and Malone, OIS '90]

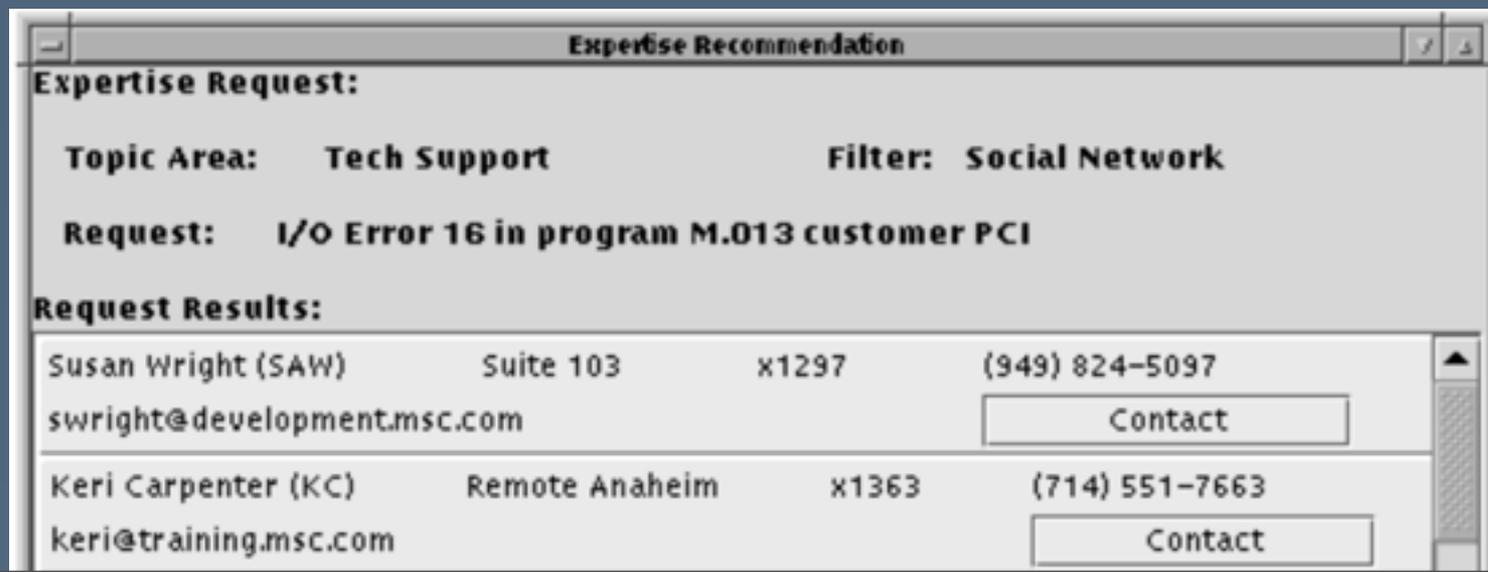
- An “organizational memory” system: knowing what the company knows
- Main idea: members leave traces for others to solve their questions
- The original Yahoo! Answers, Quora, Aardvark



Expertise recommendation

[McDonald and Ackerman, CSCW '00]

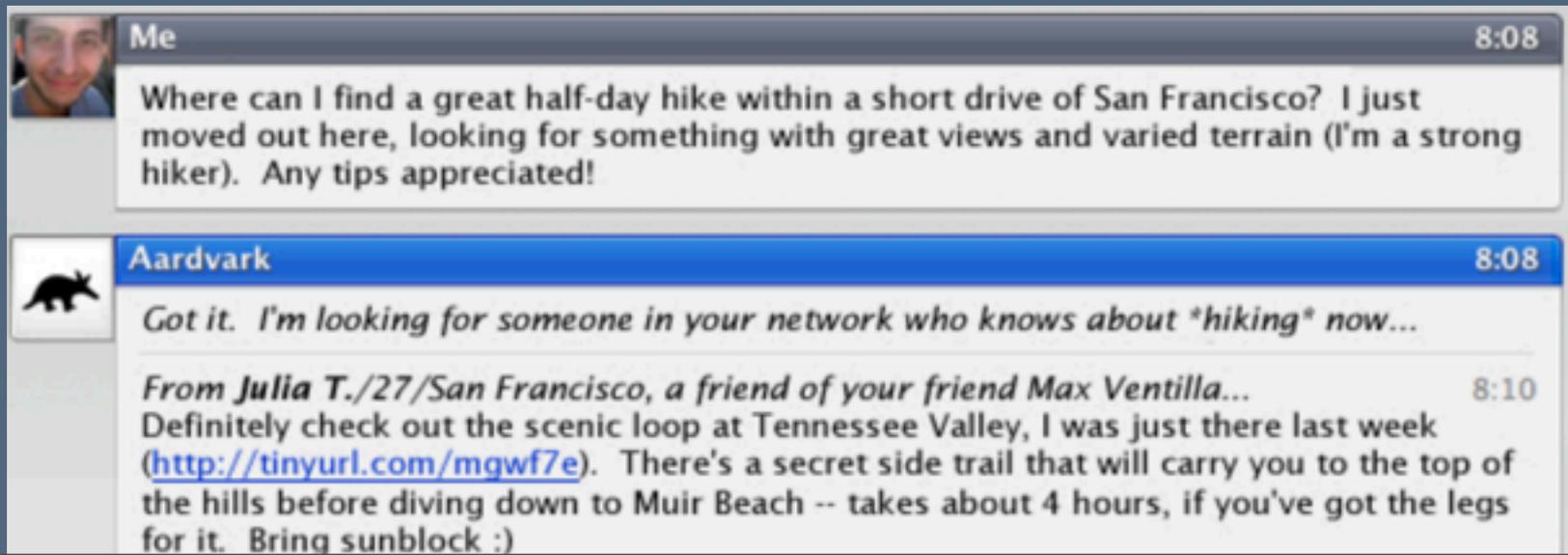
- Recommend people, not documents
- Goal: help organizations know who can tackle each problem



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!



The screenshot shows a chat window with a dark header. The first message is from 'Me' at 8:08, asking for hiking recommendations near San Francisco. The second message is from 'Aardvark' at 8:08, responding that they are looking for someone in the user's network who knows about hiking. Below this is a forwarded message from 'Julia T.' at 8:10, recommending a scenic loop at Tennessee Valley with a secret side trail to Muir Beach.

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 (<http://tinyurl.com/mgwf7e>). There's a secret side trail that will carry you to the top of the hills before diving down to Muir Beach -- takes about 4 hours, if you've got the legs for it. Bring sunblock :)

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]

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[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?

One-sided gatekeeping

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 - Data dive on nominations for breaking news articles on the Wikipedia homepage
 - Stories were nominated and voted on by **elite**, **middle-class**, and **newbie** editors

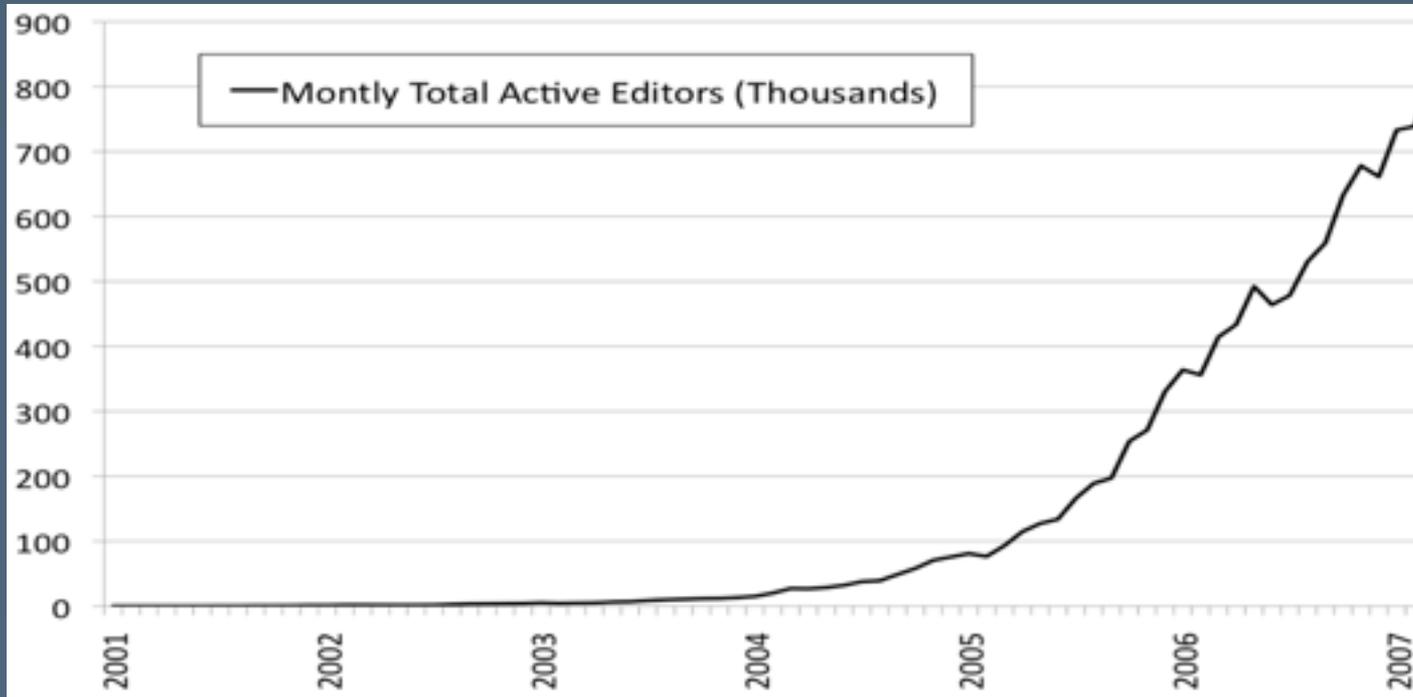
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- Method
 - Data dive on nominations for breaking news articles on the Wikipedia homepage
 - Stories were nominated and voted on by **elite**, **middle-class**, and **newbie** editors
- Result: “one-sided gatekeeping”
 - Elite editors could **block** nominations, but had no ability to get their nominations approved

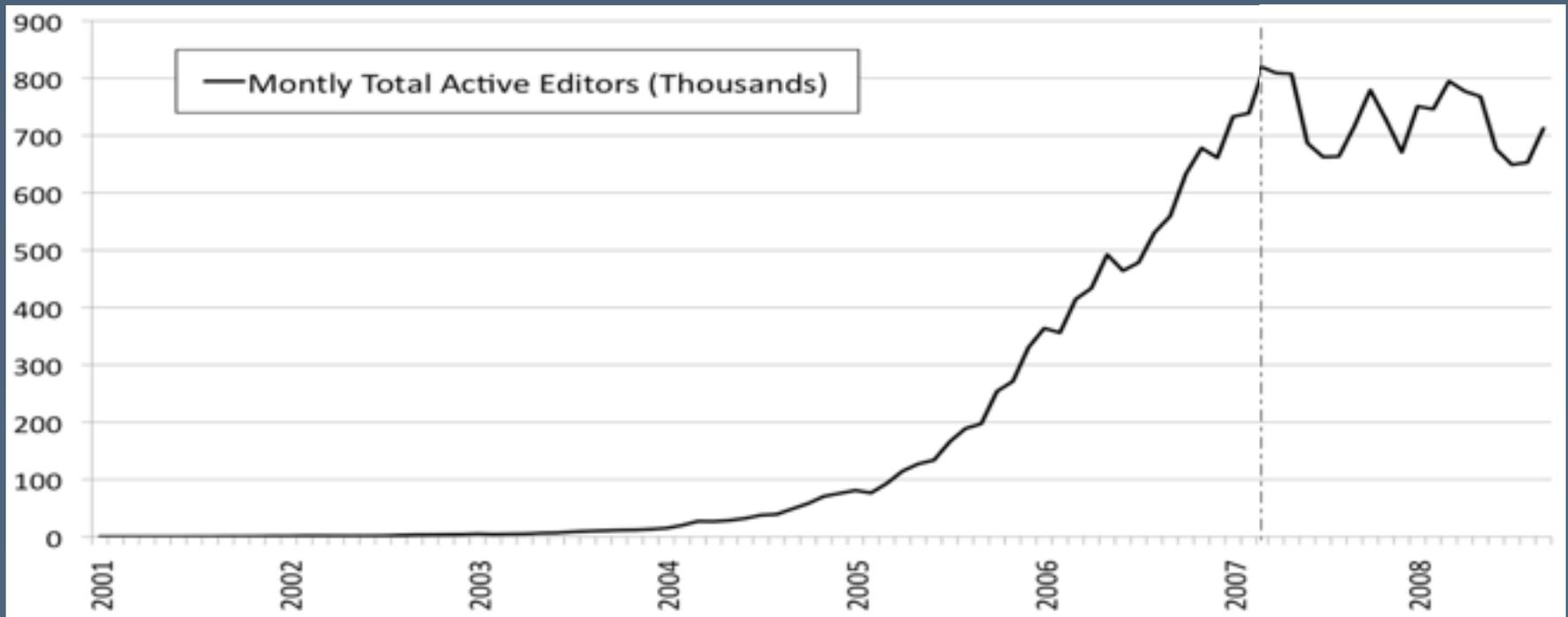
Limited participation opportunities

[Suh et al., WikiSym '09]



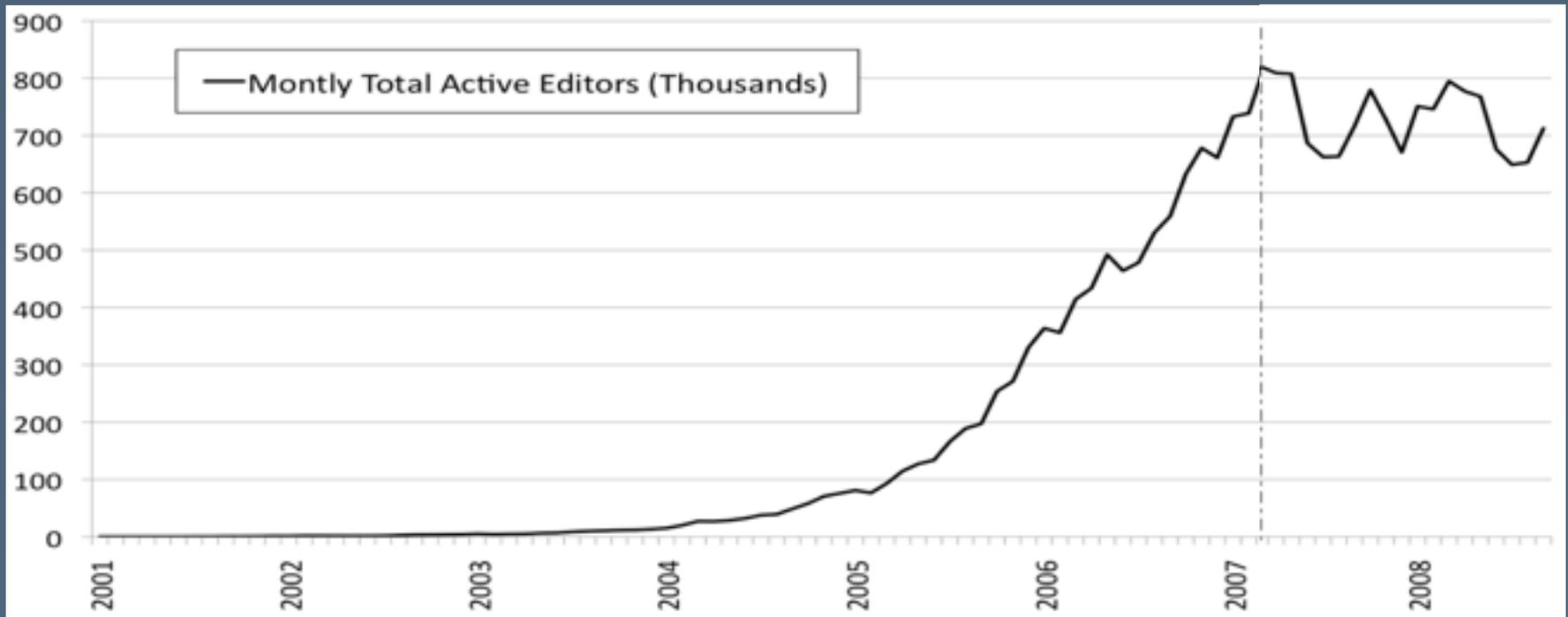
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- Can fit Wikipedia's curve to a ecological population model with a fixed resource limitation

Social influences on the wisdom of crowds

Unpredictability in an artificial cultural market

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

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- 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

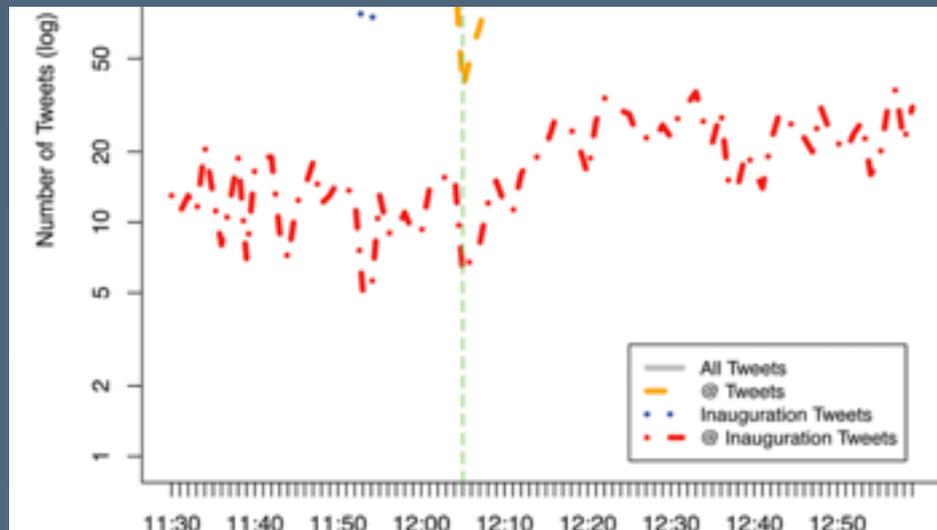


nfekt (69 ★)
100% Positive feedback

Exploration and visualization

Exploring social data

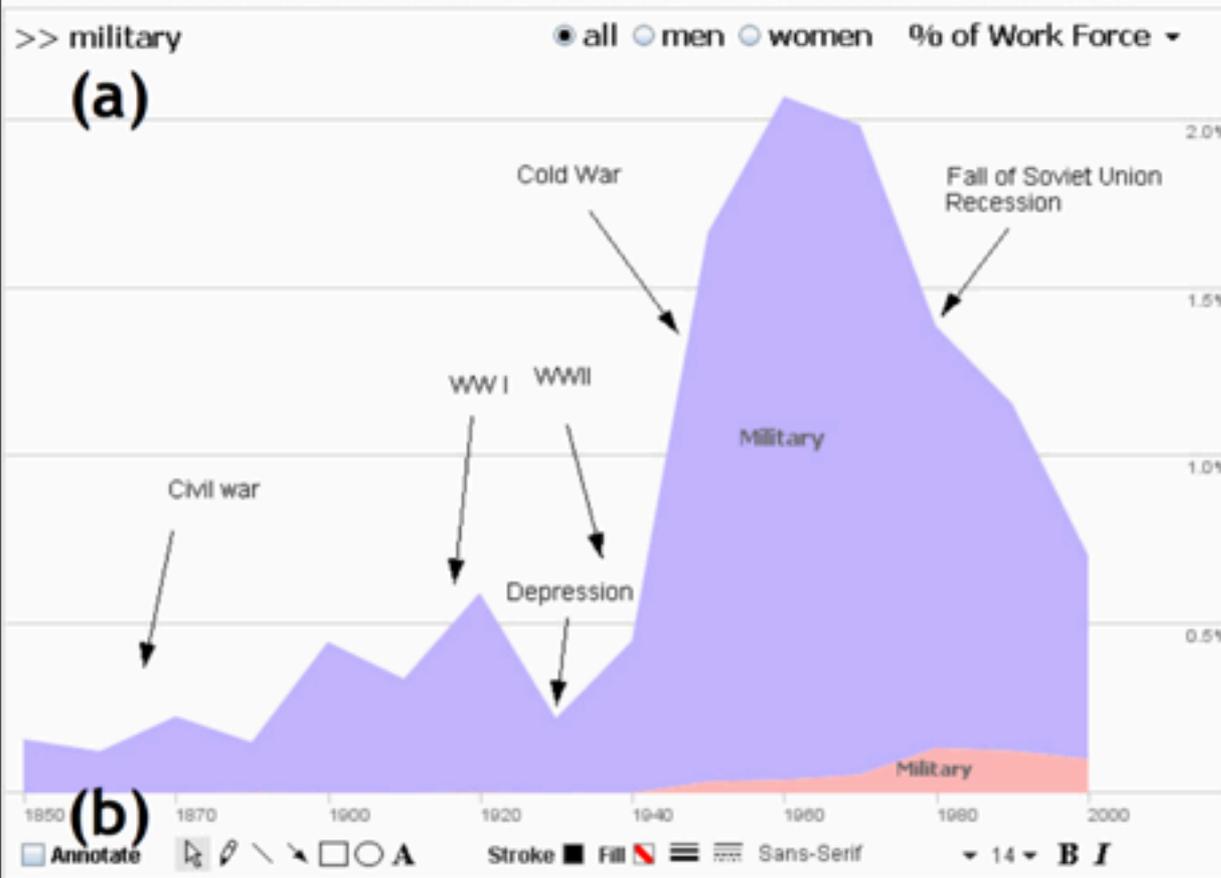
- Social media data can help us understand the world around us
- For example: dips in tweet volume show when people were attending to Obama [Shamma et al., CSCW Horizons '10]



Social data exploration

[Heer, Viégas and Wattenberg, CHI '07]

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



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?

I would agree with that... also see this: [link](#)

Submit **Cancel**

bookmarks (3) **Add View** | **Save** | **Load** | **View All**



(e)

(d)

(c)

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