Social Computing

CS 278 · SOC 174 · SOC 274 | Stanford University | Michael Bernstein

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How can we design the social systems that we inhabit?

What is social computing?

Social computing systems are computational systems that mediate social interactions.

> *bluesky, discord, doodle, doordash, ebay, ed, email, facebook, facetime, figma, fizz, github, groupme, imdb, instagram, line, lyft, mastodon, mechanical turk, messenger, MMOs, notion, patreon, pinterest, reddit, roblox, signal, slack, snapchat, spotify, skype, stackoverflow, threads, tiktok, tumblr, twitch, twitter (x), uber, venmo, viber, weibo, whatsapp, when2meet, wikipedia, youtube, zoom*

Sometimes they help us get things done;
Sometimes they make our lives more fun;
Sometimes they are critical to governance and decision making.

What is social computing design?

Increasingly, we are fashioning social environments online.

Social computing design asks how to fashion those environments to support the community in achieving its goals.

How do we cross the chasm between the social interactions that the group wants to support, and the computing techniques that we know about or have at our disposal? [Ackerman 2000]

Every social system is designed.

How should students interact with each other in this class? How should students interact with me?

If you don't design, you default. And often the default is far worse.

> What happens if you don't set norms with your project, research, or business partner? With your dormmates?
>
> What kinds of harms arise if we don't critically design the system to mitigate them?

I designed a theme park for people to come together!

Yikes! Fix your theme park, quickly!

Gentle parkgoers, this is a space for family fun. Please cut out the behavior, or be removed.

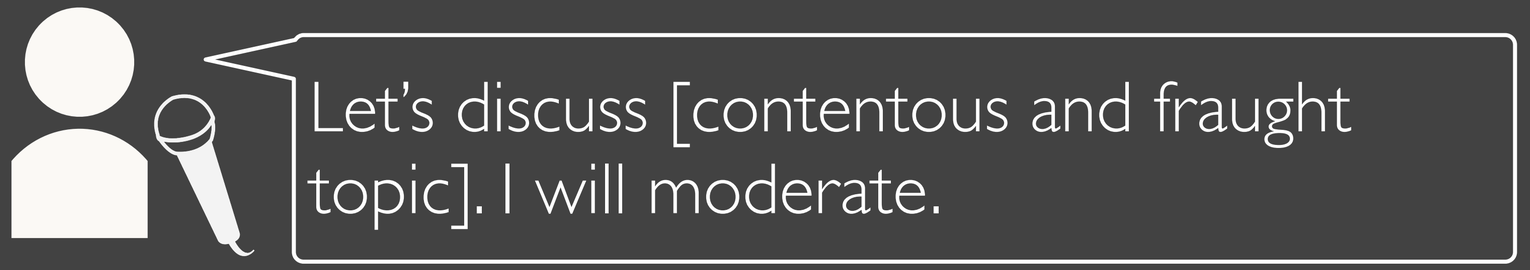
Also, let's redesign this area to make it a photo op rather than a space where fights are likely to break out.

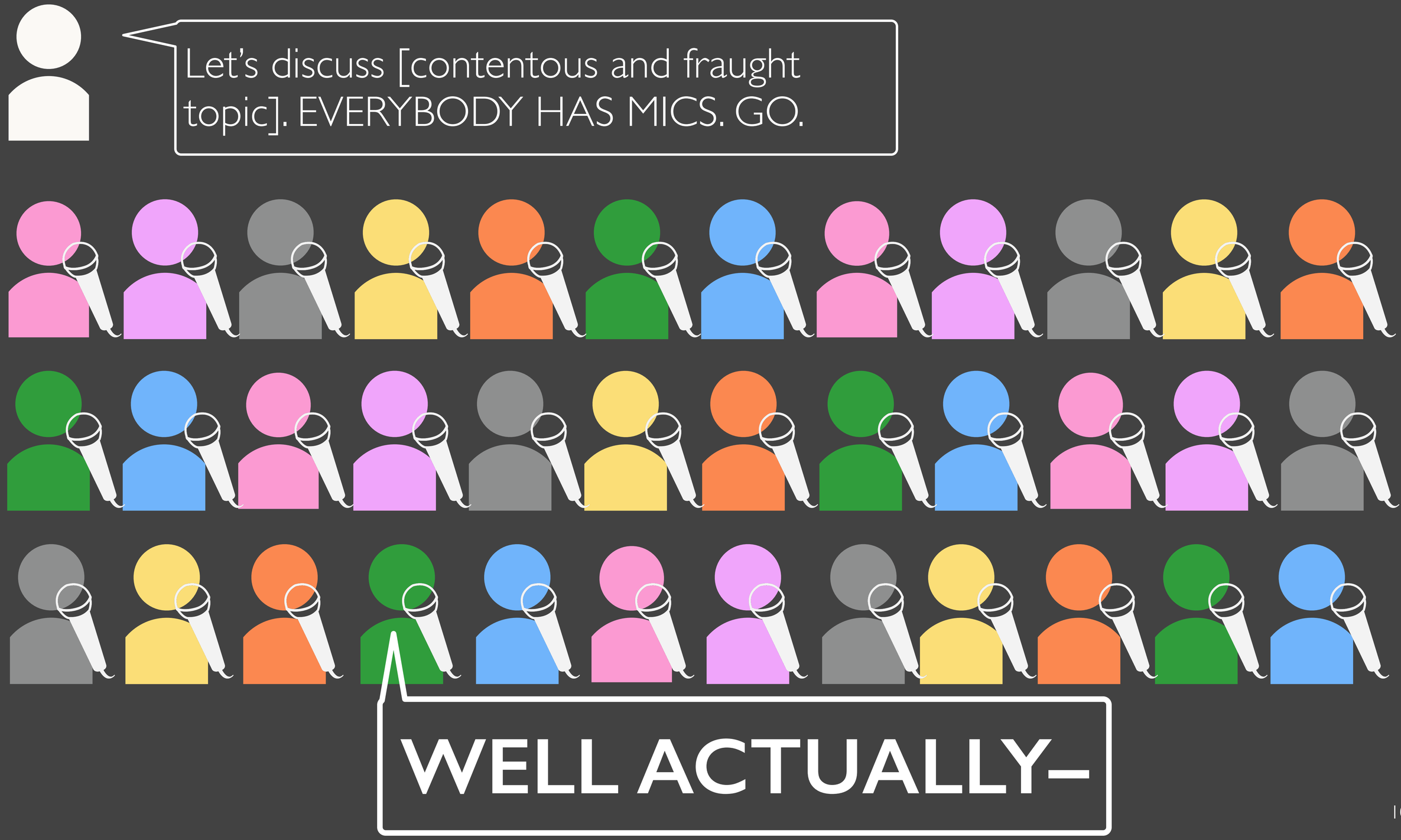
I designed a theme park for people to come together!

Yikes! Fix your theme park, quickly!

No: this is a public square, we shouldn't intervene.

Theme parks are responsible for both the design and the behaviors inside their walls. Let's redesign it.


Let’s discuss [contentous and fraught topic]. I will moderate.


Let's discuss [contentous and fraught topic]. EVERYBODY HAS MICS. GO.
WELL ACTUALLY–

There are right and wrong ways to design social spaces

We cannot force good behavior or exclude the possibility of bad behavior.

But our design—the way our system empowers people to establish norms and enforce them—shapes the social outcome.

"We shape our buildings; thereafter, they shape us."
– Winston Churchill

Why is social computing design hard?

The Daily Dot

Culture

The demise of a social media platform: Tracking LiveJournal's decline

Aja Romano—

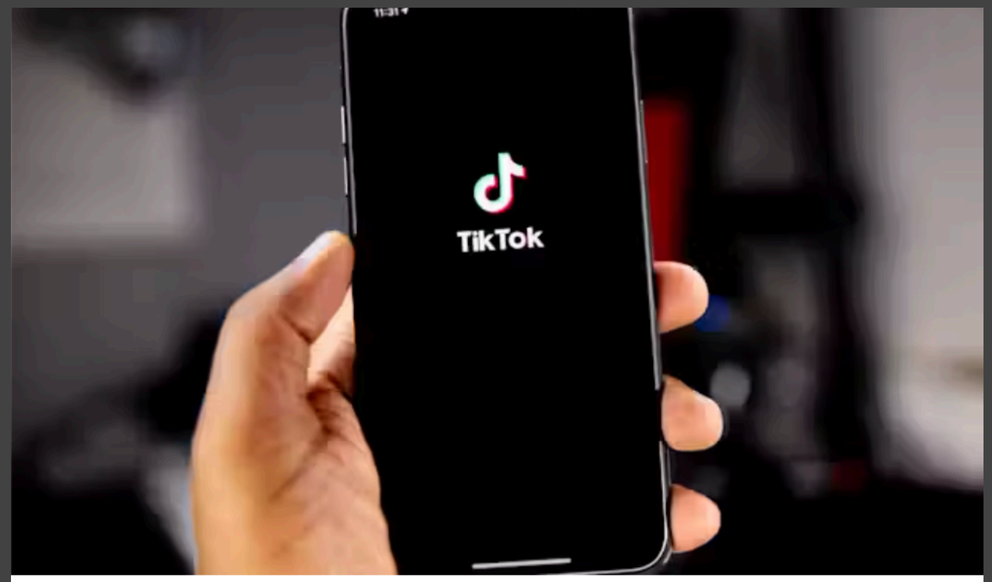


Photo by Solen Feyissa on Unsplash, CC BY

How TikTok became a breeding ground for hate speech in the latest Malaysia general election

Snapchat

Snapchat update: mo 800,000 angry users s petition to change rec

Why is social computing design hard?

Or maybe it never takes off and winds up a ghost town.

Why is social computing design hard?

Never just paste social bits into another application. It's not about whether you have points, or friend/follow models, or real names or pseudonyms. At least not directly.

It's like saying your bridge will work if you have strong ropes. The materials matter, but if the global design stinks, even the best materials won't save you.

Why is social computing design hard?

How do you design a social computing systems that helps promote the behaviors that the group wants to see in the system?

What about a design makes people…

- Feel comfortable sharing and asking for aid?
- Post funny memes?
- Engage in thoughtful discussion?

Why is social computing design hard?

How do I encourage specific norms on the system?

How do I prototype my idea?

What changes as my social computing system grows?

How do we govern these systems?

How do I manage antisocial behavior, trolls, and ghosting?

How do I get the world to collaborate with me on something?

Do AIs impact social environments?

How do I manage ethical design tradeoffs between groups of people?

Can I design for groups unlike me?

How do I support groups in acting intelligently and not like mobs?

Why is social computing design a serious responsibility?

These systems have the opportunity to help us create a more {thoughtful, deliberative, fun, emotionally connected, empathic, just} society. However, they can also have the opposite effect.

What power do you have as a creator, and what responsibility do you have when creating? How do we draw on positive opportunities without unleashing Pandora's Box?

This class will teach…

1. How we design effective social computing systems
2. The social scientific principles through which our designs influence behavior
3. The challenges we face in designing these systems ethically, and some strategies for addressing those challenges

This class will not teach…

Engineering principles for applications

Take CS 193C/P/X: Web and application programming

Algorithms and mathematical models for the social web

Take CS 224W: Analysis of Networks
Take MS&E 135: Networks

The process of human-centered design

Take CS 147: Introduction to Human-Computer Interaction

Expectations

The Social Computing Fundamental Standard

In our social computing designs for assignments, use reasonable judgment to (1) create joy and meaning in peoples' lives, and (2) mitigate risks and harms.

Code of Conduct

Create an engaged and positive course environment. See the Community Covenant for specific guidelines.

Assume good intentions of your classmates and staff.

We remove folks from the class social environments if they violate.

This is a “be here” class.

This is not a “Netflix binge the Panopto recordings class”

Attendance at lecture and section is part of your grade

Class structure

Tuesdays+Thursdays: Lecture

Weekly discussion section

One reading per week

Three assignments

Exam

Group final project

Final project

Groups of three to four: sign up with potential teammates together for a discussion section

Pick your team carefully! Your team dynamic determines much of your experience in class. Talk through:

- Your mutual expectations of each others' **level of commitment**
- **When you'll meet**; how quickly you **expect responses** from each other

Your goal: design, build, launch, and manage a social computing system


Technical Focus
Social Focus

Zone 1

Code a functional application.

Only pilot users expected

Zone 2

Code to substantially extend a no-code tool.

(Framer · Webflow · SQUARESPACE · .bubble) + your code

Moderate usage (e.g. 15) and high-level analysis

Zone 3

No-code tool.

Framer · Webflow · SQUARESPACE · .bubble

Heavier usage (e.g. 30) and deeper analysis

Technical Focus ← → Social Focus

http://cs278.stanford.edu

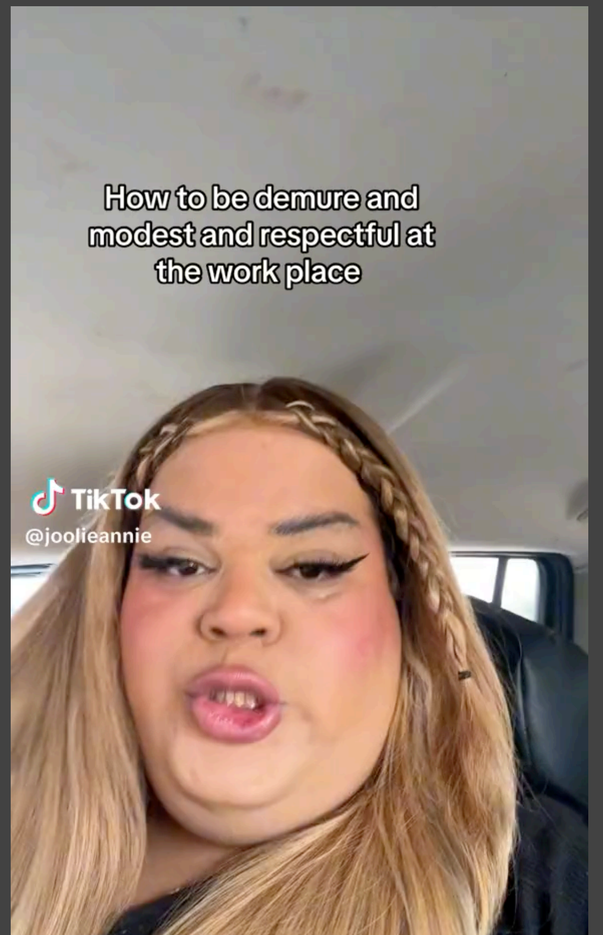
Questions so far?

Going Viral

Starting the class in microcosm

Viral content

What makes something go viral? [3min]



Surface features of a meme

Sharable URL

Simple message

Low friction to share

#catchyhashtag

…but these characteristics are themselves insufficient, and relying on them means you're not really trying.

Backing up: where does cultural innovation come from?

Often, we discuss cultural innovation from the perspective of the structure of the communities that produce it, referred to as core and periphery

Core: mainstream
Periphery: marginal communities

Cultural innovation is often greatest amongst those occupying an intermediate, bridging position between core and periphery [Cattani and Ferriani 2008; Dahlander and Frederiksen 2012].

Backing up: where does cultural innovation come from?

Why would intermediate positions in the network be the sources of cultural innovation?

And what does this mean about how you go about designing social systems that spread?

Discuss [2min]

What peripheral communities are you a bridge into? How might they bring new perspectives?

Innovate in intermediate positions, broadcast from the core

If you, like me, were to scrape every single image meme posted to the entire English-language internet for a month [Morina and Bernstein 2022], you will find…

It's the core of the network that is the first to share the most popular memes! (e.g., Instagram, Twitter, Reddit, Facebook)

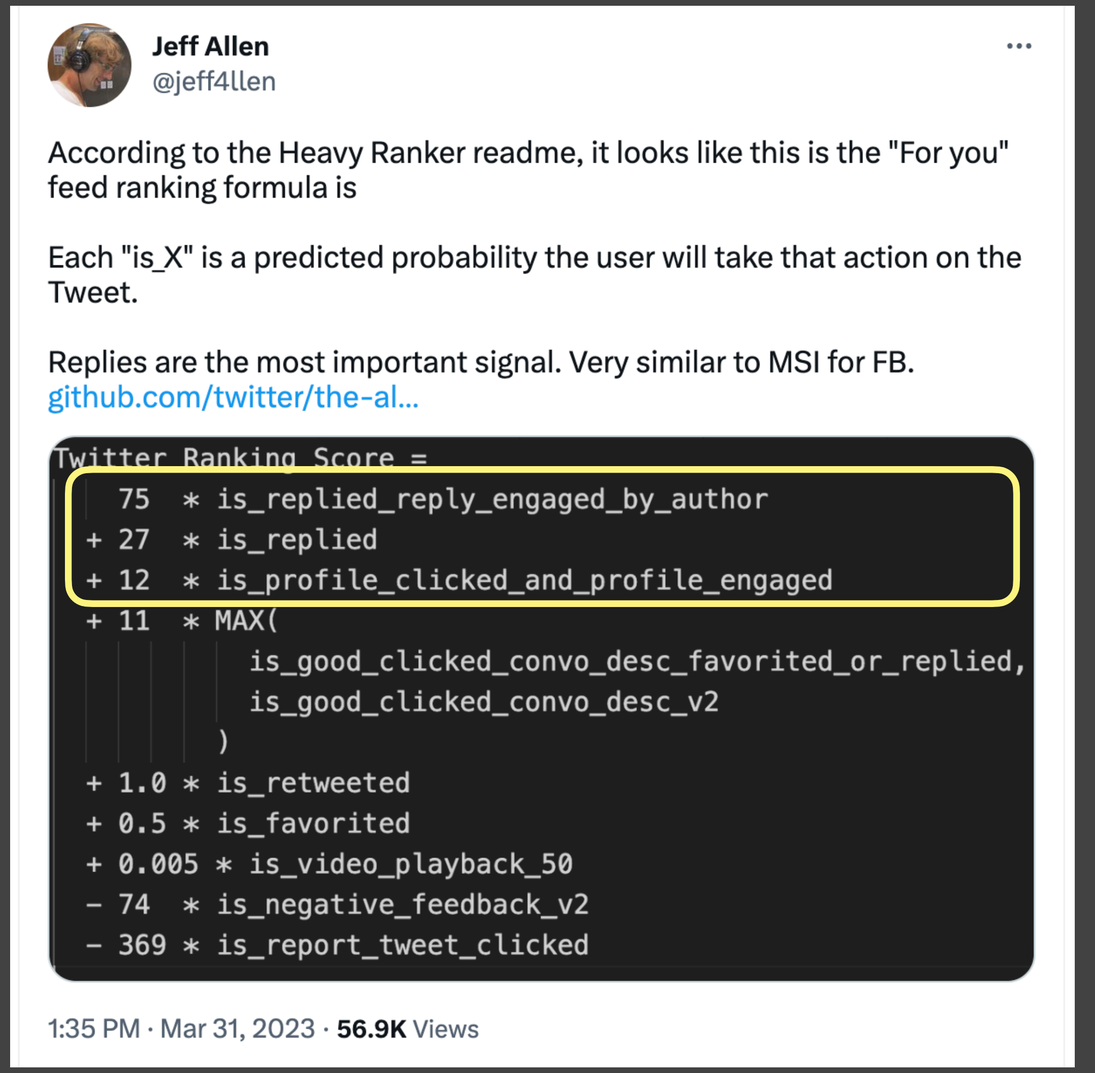
How do we square this circle? Didn't we just say the opposite?

> No — innovation comes from intermediate positions, but it's the core where it finds its audience

Feed algorithms amplify these effects

"For You" feeds show you what they predict that you will engage with

So, going viral often means optimizing for what the algorithm is optimizing for, which means that the algorithm continues feeding the content to more people



So it's deterministic?

[Salganik, Dodds, and Watts 2006]

Experiment: gather 48 songs of unknown songs from indie bands. Create a Spotify clone for online music listening.

Recruit ~14,000 participants from an online teen forum

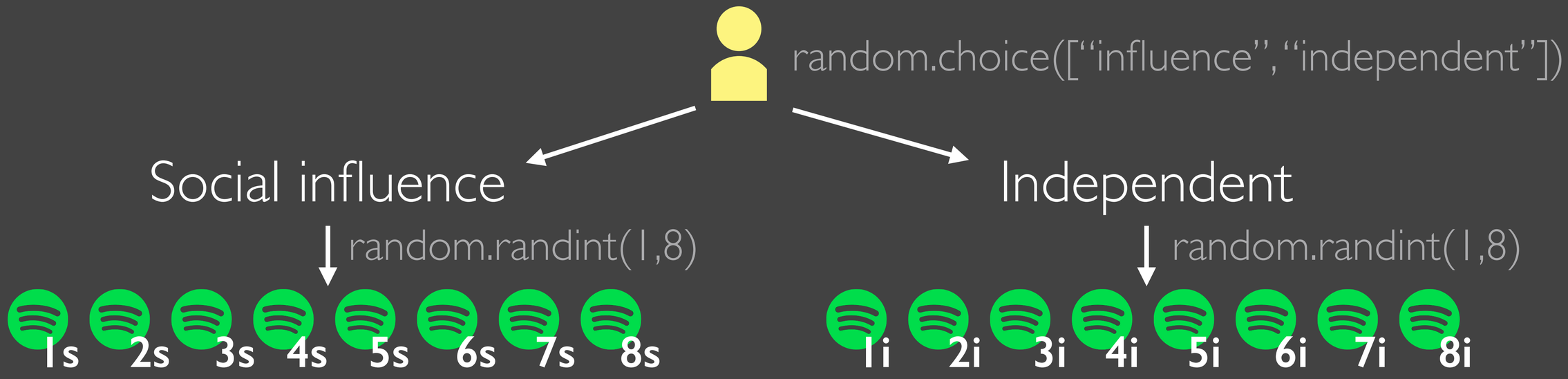
Randomize participants into an independent condition or a social influence condition.

- Social influence: can see the number of previous listens for the song
- Independent: no information about the number of previous listens

So it's deterministic?

[Salganik, Dodds, and Watts 2006]

Further randomize each participant into one of eight possible parallel "worlds" where the listen counts all start at 0.



So it's deterministic?

[Salganik, Dodds, and Watts 2006]

Result One: social influence increased both inequality and unpredictability of success.

Result Two: The best songs rarely did poorly, and the worst rarely did well, but any other result was possible.

Further evidence from a social content aggregator: randomly bumping up initial scores inflated final scores; randomly penalizing initial scores had few long-term effects [Muchnik, Aral, and Taylor 2013]

Why? Social proof.

[Cialdini 2009]

Social proof: when people copy each others' behavior

In social situations when people are unable to determine the appropriate behavior, they look to what others are doing.

The assumption is that others know what they are doing, so their behavior becomes a kind of proof.

Looking up at a building
[Milgram, Bickman, and Berkowitz 1968]

Why? Social proof.

[Cialdini 2009]

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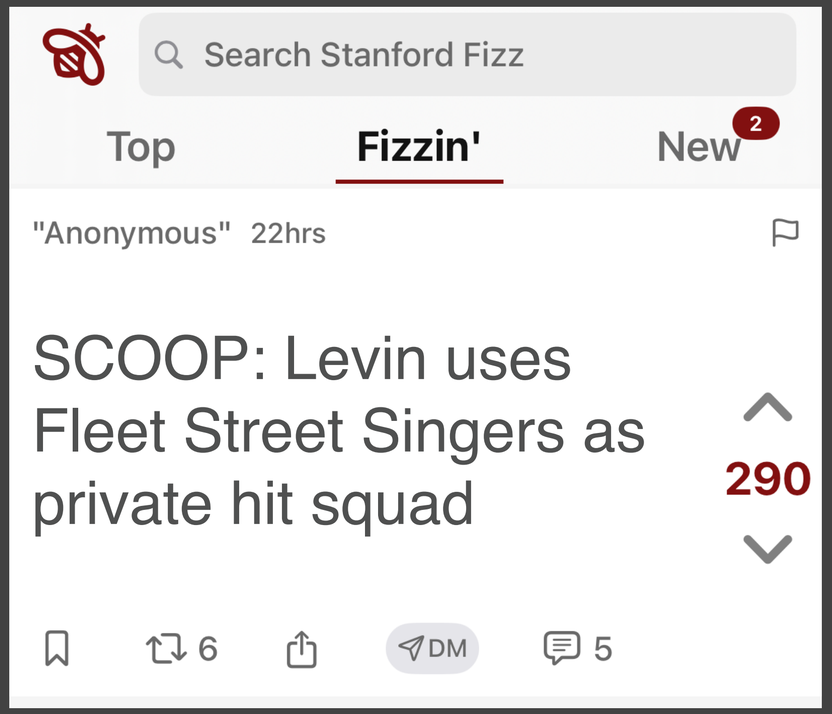
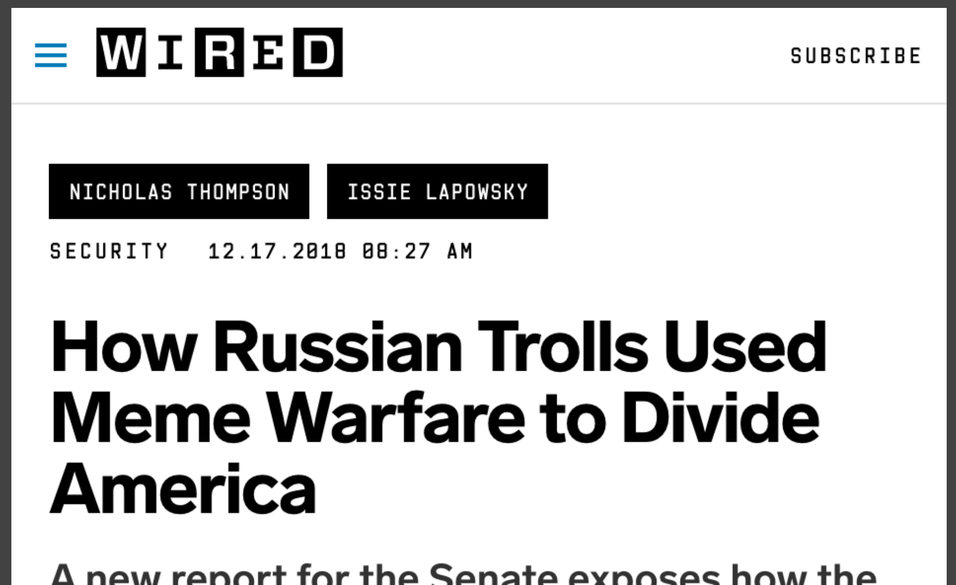
Looking up at a building
[Milgram, Bickman, and Berkowitz 1968]

Viral truth

Discuss: How would you make a correction, truth, or debate go viral? [2min]

See also: Reddit and the Boston Bomber incident





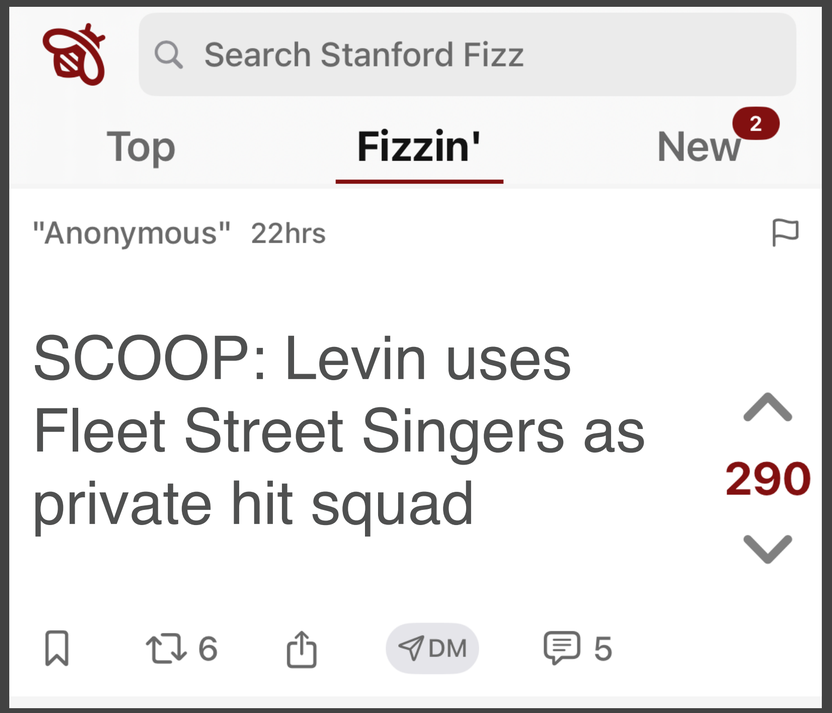
Viral truth: it's hard

[Vosoughi, Roy, and Aral 2018; Juul and Ugander 2021]

Investigation of rumors spread on Twitter:

False news tends to be more "infectious": its cascades are larger.

The top 1% of false news cascades diffused to between 1000 and 100,000 people, whereas the truth rarely diffused to more than 1000 people.



So now what? What makes a meme?

Michael's synthesis:

1) Capture an unspoken, unacknowledged, or unarticulated zeitgeist.

2) Focus on one simple message, conveyed in a creative way

3) Know that you may need to take multiple cuts at it before you find the right angle or randomness falls in your favor.

4) Acknowledge that false, negative and aggressive content spreads faster, but don't give in. Focus on doing good in the world.

Assignment 1: Going Viral

Goal: Wrestle with the challenges in designing social behavior, and build intuitions for the challenges of social computing design.

Goal: create a piece of content that goes viral.

> You must create it. You may remix others' content. Make multiple attempts and iterate! No negativity; create joy, not pain.

Due next Tuesday at 11:59pm: submit meme to our class server, and submit reflections to Gradescope.

Class voting to come.

Details at cs278.stanford.edu

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